



# IFAJ Congress book 2022

**Feed your brain  
– challenge preconceptions**

Danske Fødevarer- og  
Landbrugsjournalister



# IFAJ 2022 Congress book



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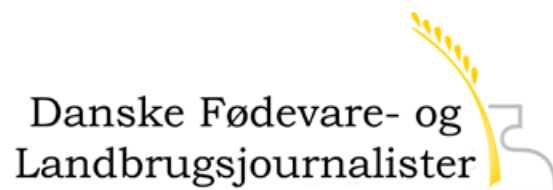
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**All articles may be used freely outside Denmark, in Denmark only after agreement with DFLJ. If you need photos or illustrations, please contact the editors.**



## Thank you to our partners and hosts

Without financial support from the food cluster companies and organisations advertising in this book, DFLJ could not have hosted the IFAJ 2022 congress.

We are looking forward to presenting the latest news from our partners on the exhibition day Wednesday 29 June in Vingsted.

Thank you also to the 50 families and companies hosting the 20 congress excursions. In DFLJ we are looking forward to showing colleagues from Africa, Asia, Australia, North and South America and Europe the Danish food cluster anno 2022 and, not least, to hearing about ongoing plans and visions.

Thank you to the leaders and experts who will be giving talks during the meetings in Vingsted and Herning.

The IFAJ congress in Denmark has been planned since 2016, first for 2020 and then for 2021. Covid 19 put a stop to our plans. Thank you to IFAJ for letting us hold the congress in 2022.

## Thank you to colleagues for coming to Denmark

Thank you to colleagues coming to Denmark in the period 27 June to 3 July. This congress book will give you information about the many challenges you will meet. Use it to prepare for meetings and visits. Preparation will save time and make more room for Q&A.

Be aware of departure and arrival times. The buses will leave at the stated dates. If you miss the bus, you will need to catch up with a taxi. The book provides addresses for all stops.

We also encourage you to bring the book to meals and meetings. We will follow the Danish tradition of singing a song now and then. The congress book includes the words for the songs.



# Come and feed your brain

## Let's challenge preconceptions



Editors: Jørgen Lund Christiansen & Hanne Gregersen

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Photo: Aage Krogsdam



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## Finally time to meet again



*By Lena Johansson, IFAJ president*

How we have been longing for this. After three years of being separated, we can finally meet in person again. And thanks to the persevering work of our Danish colleagues, we will meet in Vingsted, in the beautiful agricultural landscape of Jutland.

When we said goodbye to each other in Minneapolis 2019, we were convinced that we would meet a year later in Denmark. But the pandemic came in between, and forced us to settle with Zoom calls. I really hope it's finally time to put this behind us, and start our normal lives again.

Meeting in Denmark is a wonderful way to restart our business. Denmark is a very interesting agricultural country. We Swedes are both impressed by and envious of our neighbours. How does Denmark, despite its rather modest size and population, manage to be such a powerful agricultural nation and a leader in several areas?

Agriculture is often accused of being a threat to the climate, but in fact it is a prerequisite for a sustainable society. No other industry can capture and store carbon dioxide and at the same time contribute to a circular and bio-based economy. Denmark is a leading player in making agriculture more sustainable. Studying how this can be done successfully and meeting some of the eminent profiles in this work will be very interesting.

During the congress we will also have the opportunity to taste some of the first class food that Danish agriculture provides the rest of the world with, not least the famous Danish pastries and beer (but preferably not at the same time). And I'm sure we will also enjoy some real Danish "hygge", freely translated as cosiness. We have a lot to catch up on, and we are grateful to our Danish hosts who enable this reunion. Finally, it's congress time again!



*The hotel and conference centre VINGSTED in the middle of rural Denmark is close to Billund Airport.*

## You are more important than you think



*By Frederik Thalbitzer, chairman of the Danish Association of Agricultural Journalists*

You cannot imagine how happy we are to carry out this congress, which we have worked on since 2016.

All participants in the IFAJ congress have something in common in that we communicate about food and agriculture.

In just a few years, the world's population will grow from almost 8 to 10 billion people. They all need something to eat.

Farmers are learning new things every day, researchers are finding new and better ways and animal breeders and plant breeders are constantly making progress. As agricultural communicators, it is our task to disseminate new knowledge so it can be applied in the field as quickly as possible. Without the press that can communicate via the internet, radio, television, and print media, knowledge dissemination would be far too slow.

Today, the concern is not only food security. The agenda is also about better animal welfare, energy security, climate change and the environment - the green agenda.

A huge amount is happening in this area. We are becoming wiser about how to use seeds, fertilisers, and pesticides optimally in relation to yields and the environment. And livestock producers are becoming more skilled at feeding their animals so that input is optimised. In organic farming, nutrient recycling is moving higher up on the agenda to secure food production.

The theme for the congress is Smarter Farming and Food Production for Green and Sustainable Growth.

During the congress you will participate in four of 20 different excursions. The excursions will go to a variety of farms and companies that are above average with regard to developing a sustainable business in terms of economy, environment, and social issues.

We will also talk about journalism. How can we help each other carry out independent and professional agricultural journalism? We will discuss this in our workshops, over a glass of beer or wine in the evenings and during the coffee breaks. Networking and sharing knowledge are perhaps some of the most important things we can do at an IFAJ Congress.

Welcome to the IFAJ 2022 congress in Denmark.

# Smarter Farming and Food Production for Green and Sustainable Growth

**Denmark** is among the leading nations in ensuring a better, greener and more sustainable future \* **Legislation**, consumer demand and the 17 UN Sustainable Development Goals are all a major part of a new platform for the whole farming, agritech and food cluster \* **Based on science**, we achieve results that benefit food quality, animal welfare, biodiversity, bioresources, nature, environment, carbon footprint, food waste, work environment, housing and production \* **The cluster** is taking the lead in setting goals - not only to live up to the demands from society, but also to document results. \* **To do it smarter**, it takes innovation, new technologies, new partnerships in the value chain and new ways of collaboration \* **During the congress**, we will show you how the cluster is delivering on our promises



The congress theme, left, and the 17 UN Sustainable Development Goals are a new platform for farming, agritech and the food cluster.



## Welcome Dinner

Showcases IFAJ Star Prizes, Young Leaders  
and Master Class

### The Stars Come Out



By Steve Werblow,  
Oregon, USA,  
IFAJ vice-president



Owen Roberts, IFAJ past president, presents the Star Prize for Print to Lindi Botha of South Africa at the IFAJ congress in Minnesota, USA 2019.

#### Star Prize Ceremony

The welcome dinner on Monday, 27 June, will celebrate high achievement. The dinner will serve as the IFAJ Star Prize award ceremony, honouring the work of journalists from around the globe whose work has been judged to be the world's finest.

The IFAJ Star Prize is awarded in print, audio, video and digital categories. Winners are selected by an international panel of judges, each an expert in the field.

The award ceremony showcases the inspiring work of winners and runners-up, and is a perennial highlight of IFAJ congresses.

#### Meet the IFAJ/Alltech Young Leaders

The IFAJ/Alltech Young Leaders will be introduced at the welcome dinner. Each Young Leader—age 35 or younger—has been selected by his or her guild to represent their organisation, then chosen by a panel of judges for their professional skill and leadership potential. Over the years, Young Leaders have risen to top positions in their guilds and contributed greatly to IFAJ through their involvement, energy and leadership. Make a point of meeting the 2022 IFAJ/Alltech Young Leaders and see why.

#### Welcome IFAJ/Corteva Masterclass

For more than a decade, the IFAJ/Corteva Masterclass has brought together outstanding journalists and communicators from non-member countries and emerging guilds for leadership training and skill-building workshops. Many alumni of the Masterclass have established guilds that strengthen agricultural journalism in their countries, bring new energy to IFAJ, and widen our global network. Please be sure to welcome the members of the 2022 IFAJ/Corteva Masterclass.

## Responsible production and enough food for 10 billion people in 2050

We have asked five professionals to open the IFAJ Congress 2022 with concise talks based on the congress theme (see page 8). The idea is to introduce the 20 excursions that comprise approximately 50 visits over the coming five days – in addition to the activities here at the conference centre.

In 1950, the human population was 2.5 billion. Today it is almost eight billion and in 2050 it is expected to be 10 billion – a quadrupling in 100 years. We have invited professionals from the Danish food cluster to tell us of their ideas related to ensuring climatically, environmentally and economically sustainable global food production and food security.

Danish farmers produce food that could feed its own population of just under six million people three times. Besides supplying the domestic market, the Danish food cluster exports products and services to the tune of 170 billion DKK, corresponding to 15 percent of total exports. Denmark's GDP is approximately 2,400 billion DKK. 1.00 euro = 7.46 DKK, 1.00 USD = 6.57 DKK (as per 10 January 2022).

#### Climate neutral in 2050

The Danish parliament (Folketinget) has decided that Denmark must reduce its greenhouse gas emissions by 70 percent by 2030 and be completely climate neutral in 2050. The large Danish agribusinesses that are owned by farmers have collaborated with other parts of the food cluster to take up the challenge. Is the scenario realistic or utopian? What effect will the climate efforts and their inherent costs mean with regard to consumer prices and exports?

#### Research, meat, milk, crops, and technology

- Jais Valeur, group CEO at Danish Crown, and Henrik Damholt Jørgensen, CEO at the Danish Dairy Board, account for how the meat and dairy sectors, that are both important players on the global market, view the challenges and possibilities.



Jais Valeur



Henrik Damholt Jørgensen

- Truels Damsgaard, CEO at DLF Seeds, that has a 35 percent share of the global market in grass and clover seed, relates how plant breeding and sustainable and resource-efficient crop production can contribute to the goals.



Truels Damsgaard

- Henrik Stiesdal, inventor and owner of Stiesdal A/S, and with a past as front runner in the wind turbine sector, describes why he sees pyrolysis as an important tool for a greener and CO<sub>2</sub>-neutral agriculture.



Henrik Stiesdal

# Smarter Farming and Food Production

# for Green and Sustainable Growth



Eduardo Mansur



Denise Campbell Baur



David Leishman



Arnold Puech d'Allisac



Henning Otte Hansen



Lise Walbom

How do we produce feed, food and energy for 10 billion people in 2050 while protecting the environment, nature and climate?

We have invited VIPs and experts from some of the world's most important organisations, authorities and universities dealing with agriculture to help us debate and answer the question.

The world's population is growing, the middle class is growing, and demands for feed, food and energy are growing enormously. At the same time, sustainability has become an increasingly important issue. Meeting sustainability goals requires innovation, new technologies, new partnerships in the value chain, and new ways of collaboration. We would like to receive input from some of the most influential people on these issues.

We expect to hear views on how we can include Sustainable Development Goals (SDG) related to agriculture and how to achieve results that benefit food quality, animal welfare, biodiversity, biorefining, nature, environment, carbon footprint, food waste, etc.

Our speakers will stay for Q&A and interviews.

## The panel

- **Eduardo Mansur, Director of the Office of Climate Change, Biodiversity, and Environment (OCB) at the Food and Agriculture Organisation of the United Nations (FAO).**

Mr. Mansur, a national of Brazil, holds a Master of Science in Forest Economy from the University of Helsinki. He began his career in 1981 as a researcher in Mozambique and Ecuador. In 1997 he joined FAO, from 2002 in Rome. In 2007 he moved to Ghana, in 2008 to Japan, and in 2016 back to Rome.

- **Denise Campbell Baur and David Leishman, Ambassador and Agricultural Counsellor at the US Embassy in Paris, respectively.**

Denise Campbell Baur was raised on a farm and has a degree in journalism. She began her career in Los Angeles working for two international TV networks. From 2013 to 2017 she served as the US ambassador to Belgium and is now head of the representation in France.

David Leishman, educated from universities in US, London and Bologna, will present a recorded video with Ambassador Baur, after which he will speak to congress participants and join the Q&A session. Mr. Leishman joined the USDA in 2002 and has held positions in Rome, with the EU in Brussels, and as attaché for India, Bangladesh and Sri Lanka. Back in Washington he helped lead negotiations with Morocco and South Korea. From 2016 up till his current position he worked with agricultural trade in Russia, the Middle East and Africa.

- **A representative from the World Farmers' Organisation, WFO**

The WFO brings together producer organisations and ag-cooperatives around the world and advocate for farmers worldwide. At the annual meeting 8 June 2022, Arnold Puech d'Allisac from France was elected new president. Arnold or another board member will represent the WFO.

- **Henning Otte Hansen, Senior Adviser, Department for Production, Markets and Policy, University of Copenhagen**

Henning Otte Hansen collaborates with individuals and companies within the agri-food industry. He is a member of a group of experts under the Directorate-General for Research and Innovation of the European Commission.

- **The Danish government**

At deadline no minister was available. We still hope for government participation.

- **Moderator will be Lise Walbom, CEO at Food Nation.**

Food Nation's purpose is to promote Danish know-how and interests. Its members are agricultural industries and organisations, the Ministry for Food, Agriculture and Fisheries of Denmark, Ministry of Foreign Affairs of Denmark and Ministry for Industry, Business and Financial Affairs.



## Organisers

**Jørgen Lund Christiansen**, journalist, organiser of 40 study tours to six continents, participant in 20 IFAJ congresses, columnist

**Aage Krogsdam**, journalist, globetrotter, participant in more than 25 IFAJ congresses, chairman of the 1999 IFAJ organising committee Denmark



## An extra congress day allows you to visit food cluster booths and meet Danish ag leaders one-to-one

Danish agricultural and related industries are ready to tell us about the latest results from science and R&D as well as their visions for the future. We will, as always at IFAJ congresses, visit farms, organisations and companies.

In Europe a congress normally lasts four full days after arrival day and the welcome dinner. We have added a fifth day. In the morning we will, as mentioned on the previous page, offer you a seminar with VIPs from ag-related global organisations.

After lunch, specialists, CEOs, company chairmen, etc. will invite us to the congress centre's exhibition hall. As partners and congress supporters they will offer you time for talks and interviews from individual booths.

### Meals for socialising and growing your network

There will be no commercial presentations during our meals, which will give you optimal conditions for socialising and growing your international network.

### Your working conditions are on our minds

During the four excursion days you can choose between 20 day tours and a total of about 50 visits.

You will have opportunities for direct meetings with leaders in the Danish food and agricultural sector so you can produce relevant articles for print as well as background and news for web, radio and television programmes.

### Networking and mingling

Our guests and our partners are invited to have dinner with us. During the congress - including meals and late evenings - we will all have possibilities for good talks, networking and mingling.

## Global IFAJ Activities at the 2022 Congress



By **Adalberto Rossi**,  
Argentina, IFAJ secretary general

### Bootcamps for Agriscience Masterclass and Young Leaders

The IFAJ Bootcamp held at each congress is a unique event that provides professional development activities, including training, farm visits and on-site writing or broadcasting assignments for two important groups of participants. The first is the IFAJ-Corteva Agriscience Masterclass, which brings together agricultural journalists and communicators from developing countries, from both IFAJ member and non-member countries. The second group is the IFAJ-Alltech Young Leaders programme which recognises the leadership potential of young agricultural journalists and communicators (under 35 years of age) from IFAJ member countries. The IFAJ Bootcamp, held on the three days prior to the congress, is an important annual activity to support and nurture those who are destined to develop in the profession, to help IFAJ grow and to contribute positively to the global advancement of agricultural journalism and communications.

### Delegate Assembly with election of Presidium

The Delegate Assembly is IFAJ's primary authority. It is comprised of delegates appointed by member associations, who represent, speak and vote on behalf of their guilds. The number of delegates is determined by the size of the association's membership. The Delegate Assembly (equivalent to an annual general meeting) determines and approves all IFAJ business, including recommendations put to it by the Executive Committee. The 2022 Delegate Assembly will be an election year for President, Vice-president, Secretary General & Treasurer, so there will be added excitement to the proceedings.

### After a decade the IFAJ Foundation will be established

IFAJ has been working on establishing a foundation in order to raise funds for professional development programmes and other activities that support agricultural journalists and communicators around the world. The foundation is in the process of being set up in the UK as a registered charity. The final steps of approval for the foundation and the election of directors and officers will take place at the 2022 congress. The establishment of the foundation will be the culmination of a decade of effort in strategic planning and constitutional change.

## IFAJ Business Meetings, 1 July

# On 1 July all members are welcome to attend the IFAJ Delegate Assembly and Presidium election

By Steve Werblow, IFAJ vice president

The Delegate Assembly is the annual general meeting of IFAJ, where representatives of each member guild hear about the business of the federation and make the decisions that keep the organisation moving forward. Each guild is represented by its officially selected voters according to its size, but all members are welcome to attend the meeting at 8.30 on 1 July 2022.

This year, we will have our first hybrid Delegate Assembly, a combination of in-person and live-streamed participation. Our goal is to give each member guild the opportunity to join in the meeting, the conversation and the votes, even if the representatives cannot make it to Denmark. We have learned many lessons during the pandemic, and one of the most important ones is the power of Zoom or other conferencing programs to bring us together across vast distances.

Delegates will hear reports from the officers of the Presidium—President Lena Johansson, Vice President Steve Werblow, Treasurer Adrian Bell and Secretary-General Addy Rossi. Representatives of several committees will also be present, including Owen Roberts of IFAJ’s Task Force on Education, Katharina Seuser of the Membership, Outreach and Benefits committee and Micke Godtfredsen of the Freedom of the Press committee. President Johansson will also report on the work of the Governance committee.

The 2022 Delegate Assembly includes the biennial election of the Presidium. This year’s election is being held online. The votes will be tallied and certified at the Delegate Assembly, with the new slate of officers being announced at the end of the meeting.



Adrian Bell

Steve Werblow

Lena Johansson

Addy Rossi

We will also be voting on a revision to the IFAJ Constitution, a new statement of principles that includes the roles of journalists and communicators, as well as full and affiliate members of the federation. The statement is the result of a motion brought forth by one of our guilds, extensive discussion in the IFAJ Executive, and diligent drafting by the members of the Governance Committee, who have put forth this recommendation.

Please join us at the Delegate Assembly to see how your federation works, be part of our growth, and celebrate the chance to bring all our member guilds together. While you are there, thank the members of the IFAJ Executive, who work hard all year long in meetings, committee discussions and other tasks that keep the federation’s wheels turning.

### IFAJ Foundation will open doors to a wide range of new partnerships

The dream of a registered charity that can support our activities is getting close to coming true. An IFAJ foundation can accept funds from other foundations, government agencies, NGOs, corporations and other sources, opening doors to a wide range of new partnerships.

With additional funding, we can increase our programmes and bursaries that support professional development, education and networking.

Our goal is to create opportunities for members around the world — young journalists and seasoned professionals, colleagues from developing countries as well as those with more resources — to build their skills, take on new challenges, participate in IFAJ and other events, and continually improve the quality of agricultural journalism and communications.

Establishing a foundation is a target that was set as part of IFAJ’s strategic direction a decade ago. It is a complicated process, and over the past several years, we have worked with the UK Charities Commission to register the foundation. We believe we are very close to accomplishing our goal. During this year’s congress, we will share the latest details on our progress.



Katharina Seuser

Owen Roberts

Micke Godtfredsen



# Agricultural journalism – three workshops 2 July 2022

We look forward to inviting you to the workshop sessions on Saturday morning 2 July. We have planned three workshops. You can participate in the two that you find the most interesting.

## Freedom of the press – including agricultural journalists

We have colleagues around the world who have to risk their own freedom and security just because they try to do their job. Members of IFAJ have been arrested, tortured, and put into jail because they have reported about market prices or growing season forecasts for farmers. They work in countries where governments cannot tolerate news or reports jeopardising their reputation and their power.



Mogens Blicher Bjerregaard

What can IFAJ do to support its members when they are victims of pressure from companies and sometimes even publishers? How can IFAJ support members in countries or regions with no freedom of the press?

These issues will be addressed by Mogens Blicher Bjerregård, president of the European Federation of Journalists, and former president of The Danish Union of Journalists. He has extensive experience with fighting for journalists' rights and freedom to work independently.



Photo: Claus Haagensen

## Dialogue between agriculture and consumers

By Marie-Louise Boisen Lendal, CEO & Founder,  
Frej think tank, Denmark

A climate and biodiversity crisis is knocking on our door and food production is facing a major transformation. Agriculture has done it before and it can do it again. But who should set the direction? If the industry does not do it itself, politicians and consumers will. It's about being at the forefront. The Frej think tank builds a bridge between country and city and mediates the dialogue between farmers, entrepreneurs, consumers, authorities, researchers and interest organisations.

How can we engage the young 'Generation Sustainability' and food producers in creating an increasingly sustainable agriculture through knowledge, dialogue and cooperation?

The Frej think tank is a politically independent organisation.



## The agricultural press - a critical partner or a stout defender of the ag sector?

What is the role of the agricultural press? Should it be a stout voice for the farmers and the ag sector or a watchdog that works in accordance with the arm's-length principle? Christian Friis Hansen, editor-in-chief of Landbrugs-Avisen (Denmark's largest and most read agricultural media), takes a critical look at agricultural media.



Christian Friis Hansen





An aerial photograph of a rural landscape in Denmark. In the center, a farmstead features several large, red-roofed barns and smaller white buildings. The surrounding fields are vibrant green, showing distinct curved tracks from agricultural machinery. A single utility pole stands in the middle of the fields. A paved road curves through the bottom left corner. The background is filled with rolling green hills and clusters of trees under a clear sky.

**About  
Denmark, the Danes  
and agriculture**





# DANISH AGRO

## A STRONG PARTNER FOR FARMERS

Everyday we aim to be the best possible partner to farmers who demand high quality products and services.

Together with farmers we aim to increase the value in their business and support them in producing world-class food.

**We call it Cultivating Value.**



*Cultivating Value*

## A few practical details

### About the congress centre Vingsted

The main congress will take place at the congress centre Vingsted, Vingsted Skovvej 2, DK-7182 Bredsten. Tel. +45 75855533, [www.vingsted.dk](http://www.vingsted.dk), [info@vingsted.dk](mailto:info@vingsted.dk)

Vingsted is a modern 4-star meeting and conference centre and hotel with 187 rooms in a rural setting. The centre is owned by the sports organisation Danske Gymnastik- og Idrætsforeninger.

Distances: Billund Airport: 20 km, Vejle, the nearest city with rail connection: 17 km

**Breakfast:** Breakfast is served from 7:00-9:00 am, Saturday and Sunday 7:30-10:00 am. Breakfast is included.

**Internet:** There is wireless Internet all over at Vingsted. Use of the Internet is at your own risk.

**Reception:** The reception desk is normally open from 7:30 am to 10:00 pm.

At the reception and in the centre's bars you can only pay with a card.

**NB: The centre and all the rooms are non-smoking areas.**



### About the currency

Denmark has its own currency, Danish kroner (DKK). One Danish krone = just under 0.7 USD and just over 0.7 euros.

You can use most card types, such as Mastercard, Diners Card, American Express, and Visa in shops and ATMs.

### About tips

Tips are included in the price in taxis, hotels and restaurants. If the service has been particularly good, you are naturally welcome to leave a tip for the driver, chambermaid or waiter.

### About electricity

You are advised to bring our own adapter that matches the European electricity system. Danish plugs have two round pins. The electricity supply is 220 V.

### About the language

Most Danes speak English.

### About the weather

The congress will take place during the Danish midsummer with average temperatures of 15-20°C. This can vary 3-4°C both ways. There can be up to 20 days of rain, so remember to bring an umbrella or rain-wear and a warm sweater.





DANBRED

# The sustainable future is in the genetics

And ours continue to be improved...

Meet us at IFAJ Congress in June 2022

Our reliable R&D department constantly works to optimise our breeding programme to make sure we follow the progress in a changeable industry.

By focusing on:

- ✓ Excellent feed conversion
- ✓ High meat quality
- ✓ Great survival rates
- ✓ And much more...

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## Where is Denmark?

Denmark can be hard to find on the map so here is some help: Find the world's largest island, Greenland, up by the North Pole.

Go directly south until you reach latitude 56 then turn east and continue to longitude 10. Then you are in the middle of Denmark and quite close to Vingsted, where the IFAJ 2022 congress will be held.

Denmark has a 68 km long land border with Germany but is otherwise surrounded by water, which includes the North Sea, Kattegat and the Baltic Sea.

### Denmark in numbers

Coastline: 8,750 km. The coastline is so long because in addition to the peninsula Jutland, that borders on Germany, there are 1419 islands. Of these only 74 are inhabited, of which Funen, Zealand and Bornholm are the largest.

Height above sea level: On average 31 metres

Highest point: 170 metres (Møllehøj in East Jutland)

Population: 5.8 mill.

Capital: Copenhagen (pop. 1.3 mill.)

Ethnicity:

86.1% ethnic Danes

10.2% immigrants

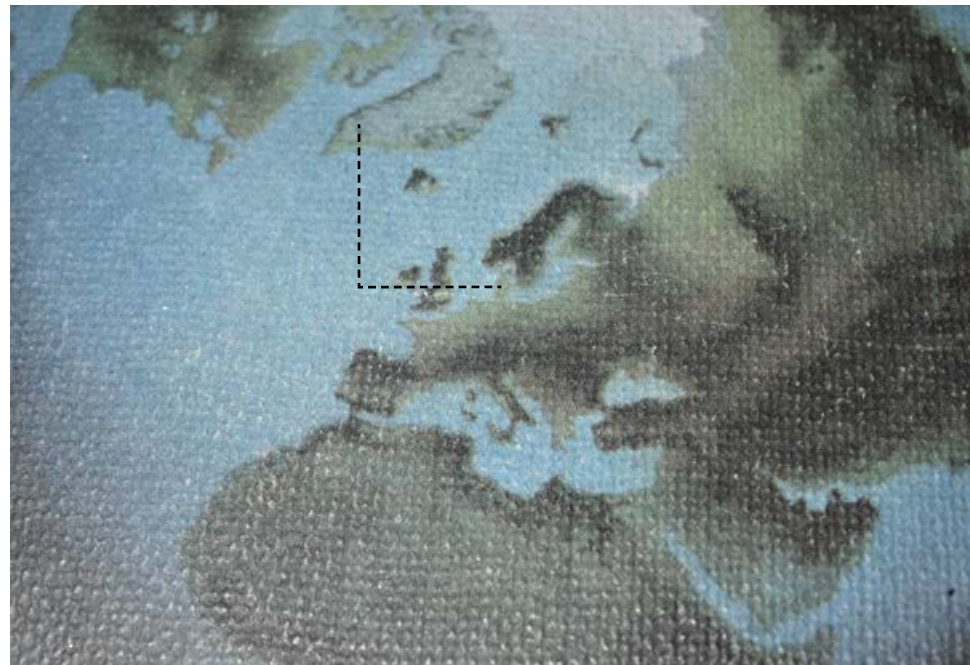
3.3% descendants of immigrants

Population density: 136/km<sup>2</sup>

Population growth: 0.835% per year

Religion (approx.): 4.3 mill. Christians, 275,000 Muslims, 35,000 Buddhists, 25,000 Hindus, and 6,000 Jews

Time zone: Greenwich +1 hour, Daylight Saving Time +2 hours



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## Briefly about Denmark and Danes

Time and time again Danes pop up in surveys as one of the world's happiest people. One of the reasons is that we basically have no corruption, and we have a high level of trust in the authorities, our societal system and to ourselves and each other.

The high level of happiness can also have something to do with our concept of "hygge". It is difficult to define precisely, but it is connected with enjoying each other's company, taking a break and talking with your colleagues or your neighbours over a beer or a cup of coffee. Danes are actually the fourth most coffee drinking people in the world.

So – welcome to a cup of coffee! Welcome to Denmark! The following will give you a brief overview of Denmark and Danes.

### Famous Danes

Some old, some young – and some almost Danish

**Hans Christian Andersen** (1805-1875), writer of fairy tales that have been translated to more than 100 languages. Among the most famous fairy tales are The Nightingale, The Snow Queen, and The Little Mermaid, which have been the basis for many cartoons and animations by e.g. Disney.

**Vilhelm Hammershøj** (1864-1916), painter, often interior subjects, in shades of grey, white, black, and brown. The most expensive Hammershøj painting was sold in November 2018 at Christie's Auctions in New York for \$5 mill. – approximately 32 mill. DKK.

**Paul Gauguin** (1848-1903), French impressionist. Married to a Dane and lived in Denmark. Travelled to Tahiti while his wife stayed in Copenhagen with their five children. The marriage lasted until his death.

**A.P. Møller** (1876-1965), ship owner, founder of the shipping container company Maersk Line, the world's largest shipping company.

*The seven-pointed star is the logo on the ship chimneys in the world's largest shipping container fleet, Maersk Line, which is Danish-owned by the Mærsk Mc-Kinney Møller family. Photo A.P. Møller*



*The Little Mermaid made by sculptor Edvard Eriksen  
Photo: Robert Fisk, Pexels*



**Niels Bohr** (1885-1967), physicist, developer of quantum mechanics, described the hydrogen atom. Had to flee Denmark during WWII. Participated in the United Kingdom Tube Alloys nuclear weapons programme. Advocated for international collaboration on atomic energy. Nobel Prize winner

**Karen Blixen** (alias Isak Dinesen) (1885-1962), author of many books published worldwide, including Seven Gothic Tales and Out of Africa, the latter of which was cinematized in 1985 starring Meryl Streep and Robert Redford

**Jørn Utzon** (1918-2008), architect, designed the Sydney Opera House in Australia, one of the world's most iconic buildings

**Caroline Wozniacki** (1990-), former professional tennis player, ranked number one in singles for 71 weeks. 30 WTA titles in singles and won Australian Open in 2018. Retired from professional tennis in 2020

## Denmark – with the world's largest island as part of its realm

With its approximately 43,000 km<sup>2</sup> Denmark is one of the smaller nations in the world. And yet!

The world's largest island, Greenland, is part of the Danish Realm or Commonwealth, along with the Faroe Islands in the North Atlantic. So, if we count all the countries in the commonwealth, the Danish monarchy stretches over about 2.2 mill. km<sup>2</sup> – a size that is something like an average of Alaska and India – and somewhat more visible on the map.

The history of the commonwealth is quite colourful as history often is after the fact.

We start with the Vikings – big men with wild beards, helmets, swords and shields, who crossed oceans in open ships and brought home women, slaves and riches. In a somewhat more nuanced light, the Vikings also set out to sea to explore and barter with others, and they colonised widely in places east, west, south and north of their original homes.

The Vikings came from Scandinavia, an area which now comprises Denmark, Norway and Sweden – countries whose destinies have been intertwined for centuries. We have sometimes had kings in common and sometimes fought violently with each other.

One of the Vikings was Eric the Red. He was born in Norway and lived in Iceland but had to flee to Greenland due to repeated clashes with his neighbours. He settled in the verdant West Greenland fjord area – hence the name Greenland. Greenland was Norwegian until Sweden, Norway and Denmark



## A democracy – with an elected queen on the throne

The Danish monarchy is one of the oldest in the world. Our current queen, Margrethe II, can trace her roots back to the year 950 and the Viking Gorm the Old, who is considered the first king of Denmark. In the following 900 years the ruling monarchs have been more or less autocratic, and more or less popular – but right up to 1849 the king was actually autocratic based on the principle “I alone know.”

The 1849 constitution put an end to that.

The Constitutional Act of Denmark introduced a representative democracy where the power was placed in the hands of a legislative parliament chosen by the people. More correctly, chosen by some of the people. Only reputable men over the age of 30 and with a suitable income and own household were given the right to vote. Servants, poor people and mistresses could not be entrusted with such important matters.

In 1908 women gained the right to vote in local elections but not until the constitution was amended in 1915 were they considered worthy to vote for parliament. Nine years later Denmark had its first female minister.

### The Queen is not allowed to vote

As a Danish citizen residing in Denmark and over the legal voting age of 18 years, Queen Margrethe II should be fully eligible to vote. However, since Denmark has a restricted monarchy, the royal family is obliged to keep out of politics and thereby also to refrain from voting. They are not found on electoral lists.

This is ironic in a way, because Queen Margrethe II was actually chosen by the people in 1953.



The Danes chose Queen Margrethe II in 1953, and every year on her birthday people flock to Amalienborg Castle to honour her and her family. Her father and grandfather were also honoured like this. Photo: Jørgen Schytte. BAM/Ritzau Scanpix

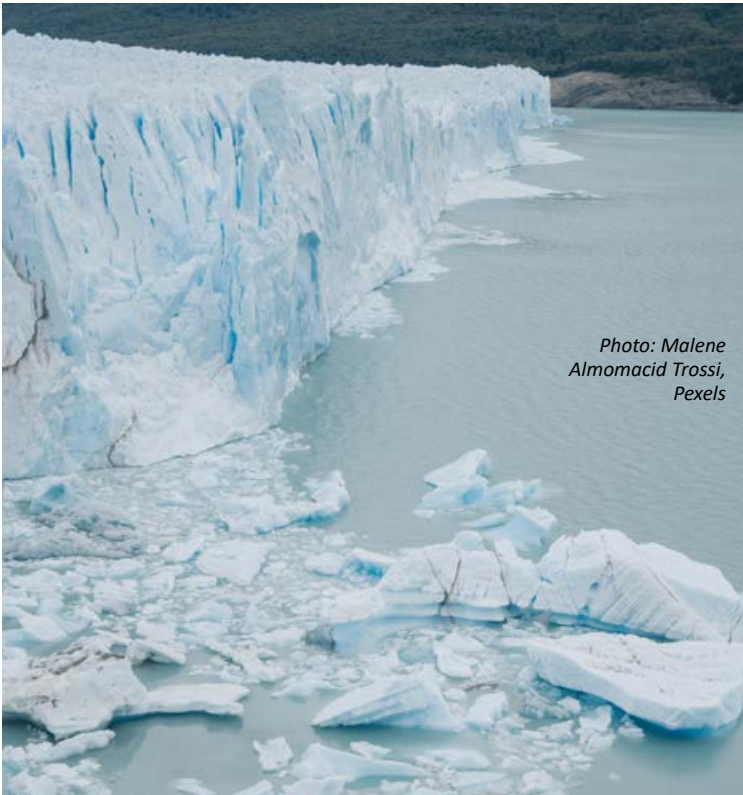


Photo: Malene Almomacid Trossi, Pexels

in 1397 acquired a common Danish king, after which it remained in Danish hands.

### What is a commonwealth?

The Danish Commonwealth comprises Denmark, Greenland and the Faroe Islands. The Faroe Islands achieved home rule in 1948 as did Greenland in 1979. Greenland achieved self-rule in 2009. Both have their own governments and flags but, according to the constitution's §1, belong to the Kingdom of Denmark.

Greenland and the Faroe Islands deal with most of their own internal affairs while foreign affairs are usually controlled from Denmark. The Danish State gives financial support to Greenland and the Faroe Islands, but in both places strong political forces desire independence from Denmark and thereby an exit from the Danish Commonwealth

### Greenland

Area; 2.1 mill. km<sup>2</sup>, population 55,860

Capital: Nuuk

### Faroe Islands

Area: 1,400 km<sup>2</sup>, population 49,884

Capital: Thorshavn

At that time the line of succession was only valid for male heirs, so even the daughter of a reigning king could not inherit the throne.

For years, the politicians had been trying to change the parliament's two chambers to a unicameral system but they were not able to get a majority vote for it in a referendum. The topic did not interest the people. In 1953 the politicians tried again, but now they connected it with the question of succession to the throne, among other things. This was a scoop. The issue of the future of the extremely popular then 13-year-old princess attracted people to the polling stations. A unicameral system was introduced, princesses gained the right to inherit the throne, and the throne can now be inherited by the reigning monarch's firstborn, no matter which gender.

In a hereditary, restricted monarchy like the Danish one, the power of the ruling monarch is limited. He/she must sign all laws together with the responsible minister, is briefed about political developments at set meetings with the prime minister and minister of foreign affairs, and, when Denmark gets a new government, says goodbye to the old government and appoints the new one – which one or more of the parliament's parties has put together beforehand. The monarch also has a wide range of representative domestic and foreign duties.

## Facts about the political system

Folketinget – the Danish parliament – has 175 members plus two elected on the Faroe Islands and two elected in Greenland.

Folketinget elections must be held at least every four years.

A party can stand for election to Folketinget if it has signed supporting declarations from voters corresponding to 1/175 of the total number of valid votes at the latest election (20,800).

After the 2019 election, 10 parties had seats in Folketinget. The voter turnout was 84.5%.

The cast votes are distributed according to a ratio method which means that each party gets a number of seats in Folketinget corresponding to their number of votes. As a main rule, the party must have more than 2% of the cast votes.

At the latest election the power shifted from Venstre (centre right) to Socialdemokratiet (centre left).

The current prime minister is Mette Frederiksen, who leads a Social Democrat minority government.

Folketinget is divided into red block (left) and blue block (right). There is, however, a long tradition of collaboration across the blocks.

On the local level Denmark is divided into 98 municipalities and five regions. The municipalities are led by a locally elected city council, have independent taxation, and receive a block grant from the state. The regions are funded exclusively by the state but are led by an elected council. Their main task is administration of the health sector.

## Based on the constitution

When the wise fathers of the Kingdom of Denmark – and it was only men at that time – gathered in 1849 to sign the Constitutional Act of Denmark that said goodbye to autocracy and set the guidelines for the structure of the society, and stated that all other laws must comply with it, they were not re-inventing the wheel. The men took into account the thoughts of the French philosopher Montesquieu on the threefold division of power, and the Norwegian and Belgian constitutions.

Initially, the constitution states that the power in Denmark is in three hands – Folketinget, the government, and the courts.

In other words, Folketinget's 179 members pass the laws. The government and the monarchy, with its signature, enforce the laws. The courts decide if the laws are upheld or not and punish offenders.

In addition to the threefold division of power, the constitution ensures another important principle, namely the constitutional right to freedom.

## Freedom of speech, expression and religion

Personal freedom is thereby inviolable. This means that you cannot be imprisoned or detained arbitrarily and that an arrested person must be brought forward before a judge in a so-called constitutional hearing within 24 hours.

House and property rights are also inviolable. The authorities may only enforce access to a citizen's home if they have been granted permission from a judge beforehand, and the state must compensate partially or fully if they appropriate a citizen's property.

Danes take advantage of their constitutional rights every day. We express ourselves in cartoons, speech and writing, we gather at meetings or demonstrations, and we form unions and associations. It is a standing joke that if three Danes are together, they will form an association.

Danish newspapers have a long tradition for satire drawings. Neither queens nor prime ministers are protected

*Here is Prime Minister Mette Frederiksen allocating money for pensioners who have been hit hard by inflation. The text is: And you will remember me when I call an election soon, right? Cartoon: Julius*



Another liberty is written into the constitution – the right to religious freedom. The Danish National Church is based on Evangelical-Lutheran beliefs and is supported by the state. Most Danes become members of the national church when they are baptised but can opt out at any time and thereby no longer pay the special church tax. It follows that everyone has the right to worship one's own god freely and in a way that is in accordance with one's religion. Only consideration to morality and the public order can stand in the way.

In addition to freedom rights, the constitution also states that citizens have the right to social security, and are obliged to receive education and to perform military service.

### Difficult to change

The constitution is a robust law that cannot easily be amended. In its 173 years this has only happened four times, at the latest in 1953.

The process is difficult. First, a majority in Folketinget must vote for an amendment after which an election is called. The new Folketing must also have a majority in favour of the amendment which is then put to a referendum. Here, at least 40% of all eligible voters must vote in favour of the amendment. There are approximately 4.2 mill. eligible voters.

It has often been debated if the constitution should be updated. The role of the monarchy and the division of power are issues that have been mentioned. In 2001 Folketinget allocated 10 mill. DKK for a popular debate about the constitution but afterwards there was neither political nor popular support for amendments.

## The Danish welfare society – solidarity and expenses

The Danes are not only some of the happiest people in the world. We also have the world's highest taxes. According to the OECD, 46.50 øres of each krone Danes earn go to taxes and various kinds of tariffs. Partly as tax that is automatically held back by the state before your net salary is paid, and partly in the form of sales tax on all products we purchase – good and services both. All of which end up in the public coffers.

It must be said, though, that experts disagree on the calculation methods and thereby on our ranking on the global tax list.

No matter the ranking, Danes do not need to bring money to the doctor, hospital or school. These services are all free – in a manner of speaking, because they are paid for by the government with money from the treasury that we have all contributed to.

It is a poor business deal for those who do not use the common benefits but a good deal for those who do. No one is forced to keep their children home from school or their ailing mother away from the hospital if their wallet is empty. Old age pension when you turn 67 years, housing support and other social benefits are all paid for via taxes. A high level of solidarity is characteristic of the Danish welfare society.

And one more thing: Taxes also help keep the price down on tickets to cultural goods such as theatres and museums.

### A labour market with flexicurity

Another Danish phenomenon that is sometimes debated in other countries is our labour market model.

The special thing about the model is that salaries and terms of employment for employees are determined in two- or three-year agreements in negotiations between the labour unions on the one hand and the employers' associations on the other hand. The negotiations include areas such as minimum wages, pension schemes, special working hour rules, and notice periods.

The only political stamp set in this area is the general labour legislation, such as public welfare and job placement if people lose their jobs. The interplay between legislation and agreements is called "flexicurity". This means that Danish companies can easily hire and fire employees who in turn have a certain degree of financial security while they are unemployed.

Politicians can ultimately enter the scene if unions and employers cannot reach an agreement. In such cases negotiations continue in the Conciliation Institution under the leadership of a judge with the aim of finding common ground in a conciliation proposal. The proposal is sent for a vote among the members of the organisations involved. If the conciliation proposal is rejected, then Folketinget can as a last resort enact it as a law. This rarely happens. Strikes and lock-outs are legal in connection with renewals of labour agreements.



Denmark is the world's largest exporter of forage and turf grass seed for the temperate climate zone. So there is a good chance that your favorite teams play on grass produced in Denmark. Photo: Fodboldbilleder.dk



## UN + NATO + EU

Denmark became a member of the UN after World War II in 1945.

After the conclusion of peace, the resistance movement, that had played a major role during the German occupation, demanded that Denmark abandon its traditional policy of neutrality. Many people regarded this neutrality as a central reason for Hitler's occupation of the country.

The demand put the Danish politicians on the spot. Quarrels had already begun between USA and the Soviet Union, who strongly believed that there needed to be a balance between East and West. The rescue came in the form of the new world union, the United Nations. Membership united the demands of domestic policy with foreign policy considerations for the two blocs. Denmark subsequently became a full-fledged member of the UN and is now seeking a seat on the Security Council in 2025.



Five years later, in 1949, Denmark became a member of NATO.

With a harsher foreign policy climate and in recognition of its own military weakness, Denmark attempted a Scandinavian defence union with Sweden and Norway. However, the strong country Sweden wanted to continue to remain neutral while Norway was eyeing NATO. Denmark tried for a compromise that the USA could also accept – this was, after all, where the weapons assistance would come from. Uncle Sam said no; if you wanted help then you needed to be a member, so Denmark hesitantly said yes.

From 2009-2014 the former Danish prime minister Anders Fogh Rasmussen was the secretary general of NATO. Following the outbreak of war in Ukraine, the Danish parliament agreed that by 2033 Denmark's contribution to NATO will increase up to the promised two per cent of GDP.



The next big international step was saying yes to membership of the EC in 1973.

Denmark, Great Britain and Ireland applied for EC membership already in 1961, but France was against British membership so Denmark stayed out, too. The politicians and the agricultural sector did not want to say goodbye to such a lucrative export market.

In 1972, time was ripe for a new attempt. A referendum resulted in almost 2/3 of Danes saying yes and Denmark could then follow Great Britain into the EC. However, there was not undying love for the EC. The Danes voted no to the Maastricht Treaty, that turned the EC into the EU in 1993. The deal was only subsequently accepted through a national compromise. The compromise means that Denmark does not participate in the euro, is against Union citizenship, and does not participate in collaboration on a common asylum and immigrant policy nor a common defence policy.

The reservations can be scrapped with a referendum, but until now the Danes have been dismissive. With Russia's invasion of Ukraine, Folketinget has sent the defence reservation to a referendum vote on 1 June 2022.



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## Agricultural Denmark

### From slaves to owners of multinational companies

In Denmark we like to say that we were the first nation to ban the slave trade – at that time Denmark owned the Danish West Indies. That was in 1792. However, life for Danish farmers at that time was akin to slavery.

Stavnsbåndet – a serfdom-like institution – was introduced in Denmark in 1733. When it was at its most rigid, no man between the age of 4 and 40 years was permitted to move from the estate where he was born. The estate owner had complete control over men and their labour. He decided when the farmer was obliged to work the estate's land and animals, could force him to serve in the military, and had the right to punish him. This could be carried out by flogging, wooden horse or other inventions. Previously, under the institution called vornedskab, which was only applied on the islands, farmers could even be sold. On the other hand, there were a few areas in Denmark where Stavnsbåndet was not implemented.

Stavnsbåndet was repealed in 1788 and gradually phased out until 1800. The Freedom Obelisk in the centre of Copenhagen was raised in the memory of the liberation of the farmers.

Today, more than 200 years later, Danish farmers are independent and self-owning. They own the whole chain of production, from their own farm to processing plants and marketing through global companies such as Arla and Danish Crown, DLG, Danish

Agro and DLF. They are even gathered under one umbrella, namely the Danish food cluster Danish Agriculture & Food Council. In 2020, the Danish food cluster exported goods valued at 164 bn DKK to 208 countries. 36.6 percent of the exports were high value goods. The total number employed: 188,000.

A success story.



*The wooden horse was a common form of punishment during the Stavnsbåndet period. The offender was sat on the horse with his hands tied behind his back and often something heavy tied to his feet. Photo from Vordingborg Museum*

## From farm to fork with the Danish food cluster

The Danish food cluster is among the largest in the world in terms of employment. Measured by global market shares, many aspects of the food cluster have strong international competitiveness.

The Danish food cluster comprises companies whose main focus is agriculture, fisheries and food production. Large companies such as Arla and Danish Crown, with direct roots in agriculture, are included as are a range of small and medium size companies within food production and processing.

The cluster also includes companies dealing with feed, chemicals, ingredients, enzymes, capital, and more. Added to that are companies that produce food and agricultural machinery and technology, and those that supply solutions for aquaculture, slurry management and biogas production. The cluster also includes food service and catering companies, flowers and potted plants, petfood manufacturers, and packaging.

There are several examples of large, Danish high-tech growth companies that have their roots in agriculture, at least partially. This applies for Novo Nordisk, Novozymes and Chr. Hansen, that still have significant interests in the food cluster. The food cluster also includes advisory services and research institutions. They do not have a production as such but collaborate with the industry and complement its activities, and therefore contribute to the strength of the food cluster.

The Danish food cluster thus entails much more than food, agriculture and fisheries and should be viewed in terms of the common and complementary factors that connect the companies, such as agriculture's organisation, the high level of food safety, competences in biotechnology, and the great extent of internationalisation.

*From the Ministry of Food, Agriculture and Fisheries of Denmark.*



**The Danish food cluster has its base in the main organisation, Danish Agriculture & Food Council, which has its main office in Copenhagen. The cluster was formed in 2009 by a merger between food and agricultural organisations representing 28,000 farmers and 300 companies related to the food sector.**

## Self-ownership – land for the landless

The repeal of Stavnsbåndet enabled farmers to manage their own farms because forced labour on the estates disappeared. However, as the years went by, the demand for land for the numerous landless farm labourers and cottage farmers grew. The government had loan schemes so that more farmers could establish smallholdings – typically four acres – but it was far from enough. Therefore, the large estates came under scrutiny.

With the so-called fief replacement from 1919, Denmark's largest estates were forced to part with one third of their land to cottage farms – with compensation, which they actually paid themselves. The landowners were obviously not pleased and sued the government for violating the Constitution's words about the inviolability of property rights, but they were defeated in the Supreme Court. What were previously rectory lands were also used for land for smallholders.

With various legislation approximately 32,000 state smallholdings were established in the period 1899-1964. Regardless of whether it was smallholder or farmer – the difference lay in how much land you owned – it meant that the number of independent farmers grew.

The main produce was milk, and processing took place on the farms themselves or else the milk was sent to the closest estate which then sold the end product. After a while, the smallholders and farmers wanted to stand on their own two feet. If the estate could earn money from their milk, then they might as well earn it themselves.

## One man – one vote

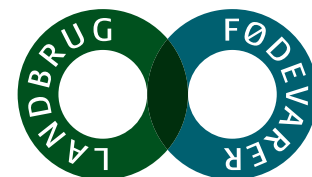
The growing self-awareness among the farmers was partly due to general enlightenment and partly to two strong and enterprising Danish men.

N.S.F. Grundtvig was a priest, poet and debater who gave birth to the idea about high schools, where adult men and women mainly from rural areas could acquire knowledge about the community and take responsibility for their own and the country's future. The high school movement thrives to this day, albeit with a much broader reach and aims.

The other influential person was the agriculturalist and farmer Anders Nielsen, who laid the foundation for the coop movement upon which Danish agriculture and its international companies rest.

The idea was known in England and the first coop dairy saw the light of day in Denmark in 1882. However, Anders Nielsen really got the wheels rolling with the establishment of a series of coops concerned with feedstuffs, fertiliser, dairy and even in the bank sector. He was the practical person behind the well-known brand Lurpak Smør and took the initiative to gather agriculture's associations in a common organisation which acted as a mouthpiece in Rigsdagen. The organisation is now called the Danish Agriculture & Food Council and is the whole food cluster's face to the world.

The democratic foundation for the coop movement of one man-one vote still applies today in the farmer-owned companies. The small landowner and the owner of the manor each have one vote when deciding matters.





## Key figures for development in Danish agriculture 2005-2020

	2005	2010	2015	2020
Number of farms	50.069	42.099	36.636	33.148
Total farm area, 1000 ha	2.676	2.646	2.633	2.620
Average farm area, ha	53	65	72	79
Employees in Danish food cluster (x 1000)	199	173	191.000	188
-of which primary production	76	67	66	65
No. of cattle farms**	8.808*	12.126	10.532	9.621
No. of pig farms	9.015	5.068	3.769	2.921
No. of cattle herds, No. of cattle (x 1000)	564	568	561	567
Pig herd, No. of pigs (x 1000)	13.534	13.173	12.538	13.163
Cereal % of farmland	56	56	55	52
mn tons	9	9	10	10
Total sales (mill. DKK) total mn DDK (Animal and vegetable)	55.182	64.861	69.130	80.815

\* Year 2006

\*\* All types of ownership

Sources: Danmarks Statistik, IFRO, LF.

## Agricultural area - 2021

	Hectares	Percent	Number of farms
Denmark's total area	4,293,300		
Total agricultural area	2,620,000	61	30,148*
Of the agricultural area:			
-Min-till and no-till	575,053	22.0	5,364
-organic	313,111	11.9	4,151

Source: Danmarks Statistik

\*8,458 farms with full time employment make up more than 90 per cent of the industry's production. In 1938 Denmark had 215,000 farms with a total of 3,300,000 hectares. At that time 30 per cent of an average family's income after tax was needed for food, in 2021 less than 10 per cent.



## Modern agriculture

### When agriculture took giant steps forward

Until the end of WWII, Danish agriculture was characterised by numerous small and large farms with combinations of pigs, dairy cows and crops. In 1946 there were 208,000 farms with an average size of 15 ha.

With the Marshall Plan the little grey Ferguson tractor entered the scene and changed things. Work horses disappeared and the land used to grow feed for them – which was actually 10-15 percent of all farmland – could be used for other things. Technological development led to increasingly larger and more specialised tractors, harvesters and dairy equipment. This meant that farmers who could afford to invest in more land bought and merged the smaller farms so that the advantages of large scale of the new machines could be exploited. Structural changes were initiated.

Specialisation was also underway. The combination of pigs and cows was abandoned so that the farmer could concentrate his knowledge and energy on one species: pigs or cows. Today only 1.7 percent of farms have both pigs and cows. At the same time, crop yields have increased significantly with the growing use of commercial fertiliser and, not least, the advent of pesticides.

The development is illustrated by the fact that in recent decades farming has occupied approximately 60 percent of the Danish land area, but the number of farms has fallen from 98,500 in 1982 to 18,000 in 2020, while the average area per farm has increased from 28.8 ha to 79.



*It became soon clear that the little grey Ferguson could be used for the majority of the farming tasks. Several of the implements used for horses were adapted so they could be attached to the tractors – and it had electric light, so the farmer could drive when it was dark. Photo: Det Grønne Museum*

### Agriculture subsidies

Denmark became a member of the European Community in 1973. The Danish politicians had been in a waiting position for quite a while because they wanted to see what our big export market, Great Britain, would do. A possible membership captured people's minds and led to heated debates. This was reflected in a voter turnout of 90.1%. The final result was 63.4% in favour.

Membership gave Danish farmers steady, regulated prices for their products. It has sometimes been a hot topic of debate whether the agricultural subsidies pushed the structural development even further. Some believed that the subsidies helped secure small farms while others believed that it gave the big farms the means to buy the small farms.

In any case, the politicians have taken stock of the structural developments and amended the agricultural legislation on an ongoing basis. Previously, there were very strict rules for who could buy and cultivate agricultural land. The rules have since been relaxed so that funds, pension companies and foreign capital can invest in Danish agriculture.

The shift is partly due to recognition of the fact that a young farmer is not normally able to dish up with a large enough amount of money in order to buy a farm. External capital can help solve this problem. Despite severe indebtedness, self-ownership is still prevalent in Danish agriculture. In 2020, 84% of farms were sole proprietorships.

### Short way from theory to practice

Machinery and farm size are not the only things that have developed. Agriculture has been able to untie the Gordian knot so that the environmental impact has lessened while production in the fields and barns has grown.

This is due to the fact that agriculture has always had its own advisory services, that are connected to the local farmers' associations that give direct advice to the farmers. In 1971, the local advisory services were supplemented with the national one, which is now called Seges. The aim was to help farmers implement new knowledge as quickly as possible. The interesting thing is that even though the advisory services are owned by farmers, the advice is based on knowledge that is carried out at universities as well as studies and analyses carried out by Seges. These studies are carried out in close collaboration with farmers who establish research plots on their land and open their barn doors for studies in feeding, weight gain, management, etc.

In collaboration with the food sector's main organisation, Danish Agriculture & Food Council, Seges has been the driving force behind the establishment of Danish Food Park, which has 80 food and agricultural businesses with a total of 1200 employees.

### Untying the Gordian knot

Close collaboration and knowledge sharing between researchers, advisers, and farmers in the food and agricultural sector has led to a total production increase of 31% in the period 1990-2019. Today, a dairy cow yields on average 29 kg milk per day, while a sow weans an average of 33.9 pigs per year. Crop yields have also increased.

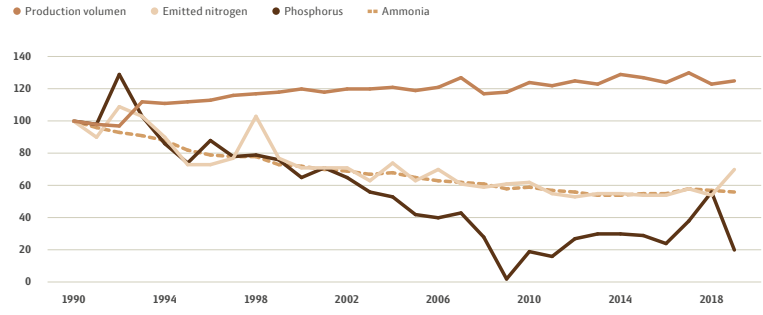
Simultaneously, the environmental impact has been reduced. Table 1.1 and Figure 1.2 show a 17% decrease in CO<sub>2</sub> emissions in the period 1990-2018. The surplus of phosphorous and loss of ammonia to the environment have





Danish farmers' own advisory services, Seges, has been the driving force behind Danish Food Park, which is a trade-related food cluster. Photo: Seges

Figure 1.2  
Production and environmental impact  
Index 1990=100



Source: DCE rapport nr. 451; DCE: Agriculture (<http://envs.au.dk>); Danmarks Statistiks Nationalregnskab; EIONET. Central Data Repository; A. National emission inventories (CLRTAP)

carries out every year on fruit and vegetables grown in Denmark, the EU and countries outside the EU.

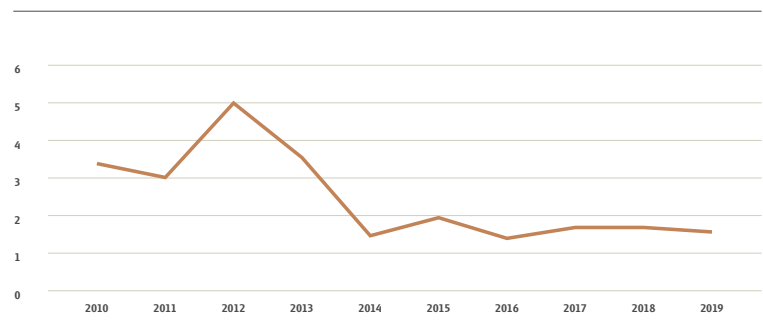
While no pesticides were found in 44% of the samples of Danish fruit, this was the case for only 29% of the samples of EU fruit and 20% of fruit from outside the EU.

The corresponding figures for vegetables were 82% from samples of Danish production and 51% and 69% for the EU and countries outside the EU, respectively. None of the Danish fruit was over the limit while 1% of the Danish vegetables were over the limit.

### Battling headwind

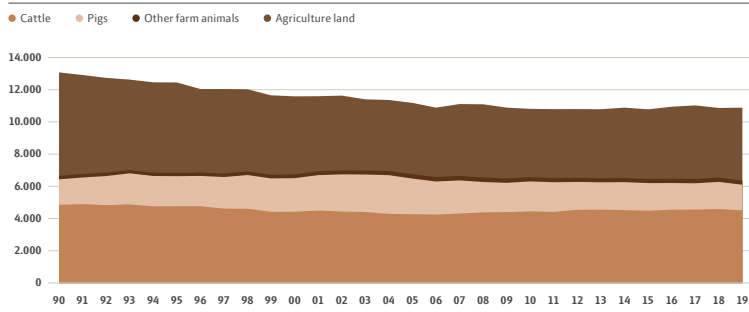
The increased production has provided income from exports, which has lined the public coffers and ensured affordable food for Danish families. Through-

Figure 1.3  
Development in Pesticide Load (PL)



Population Correction Units (PCU) is an indicator used to calculate antibiotic use in food-producing animals. It indicates the biomass of an animal population and takes into account the number of animals and their estimated weight.

Figure 1.1  
Agricultural CO<sub>2</sub> emission  
1000 tons



(Source: DCE, Denmark's National Inventory, Submission 2020)

also been reduced, although the past couple of years have seen an increase in nitrogen after several years of decrease.

The pesticide burden has also been reduced, as can be seen in Figure 1.3, partly because the pesticide tariff has been put together in a way that makes using the most protective pesticides most profitable. There is, however, a risk of resistance because the same products are used repeatedly.

The decreasing pesticide burden can be seen in the comparative measurements that the Danish Veterinary and Food Administration, among others,

out the years the average Danish family's food budget has been 10% of their income, which is much less than in other countries.

However, agriculture is not always a favourite with Danes.

One stumbling block has been and still is EU's agricultural subsidies. Many Danes view the subsidies as a gift to agriculture – and believe that farmers should feel obliged to deliver the goods. In 1978, the artist Mikael Witte created a poster with the words "Danish pigs are healthy – they are bursting with penicillin", a slogan that still haunts the pig industry.

In the years that followed, much attention has been paid to the use of growth regulators and pesticides, and people have been worried about the groundwater, slurry smell, high piglet mortality, lengthy animal transports, animal welfare and, not least, agriculture's nitrogen emissions. The worries about N emissions came after several cases where inland waters suffered from severe oxygen depletion.

The headwinds that agriculture must battle against have blown stronger with the advent of climate and biodiversity on the political and popular agendas. Recently, a political party called the Vegan Party has been approved to stand for election to Folketinget. The party is very critical of agriculture and – as its name indicates – against any use of animal products.

Agriculture has reacted to the hefty criticism along the way – sometimes on its own initiative with voluntary schemes, such as phasing out the use of growth regulators and reducing the use of penicillin, sometimes forced by consumer pressure, which has led to legislation. One example is the regulation of nitrogen emissions from agriculture. Since 2009 this has resulted in continuous periods with aquatic plans, the third one being applicable until 2027.

Legislation can also have drawbacks. The strict environmental legislation in Denmark is one of the reasons that Denmark has become a leader with regard to export of live weaners, with approximately 15 million going to primarily Germany and Poland annually. The environmental rules do not leave much leeway for fattening pigs in Denmark, and combined with the high Danish

*Approximately 15 million Danish live weaners going to Germany and Poland for fattening. Photo: Frederik Siiger Hansen, Landbrugsmedierne*



wage and tax levels, it is more profitable for farmers to send their pigs elsewhere. This has led to criticism because the practice has cost jobs in Danish slaughterhouses.

Despite criticism, there can be no doubt that Danish consumers prefer buying Danish agricultural products. This is seen again and again in various surveys. However, this cannot be interpreted as acceptance of current agricultural methods.

### All pesticide residues under the limit

The ongoing, hefty debate about the threat of pesticides to drinking water prompted the Danish Environmental Protection Agency to carry out a mass screening of the groundwater in 2021. Danish drinking water stems mainly from groundwater outside the big cities. The results of the screening have just been published (May 2022). They show that nine different compounds were found – in some cases in only one-two samples out of 250 samples, and they were all under the permitted limit. The Danish Environmental Protection Agency has therefore recommended not to follow up on the investigation. Danes can continue to drink water directly from the tap.



*All pesticide compounds were under the permitted limit.*





### Food schools for children

Despite its name, food schools have nothing to do with the Danish public schools that, together with private schools, are responsible for the 10-year compulsory education in Denmark, including teaching in home economics.

A food school is a leisure time activity launched by 4H, a farm organisation for children. The aim is to give children and youth good experiences with food, cooking and exercise so they learn how to eat a varied diet and have fun at the same time. It is a very popular scheme despite the fact that it costs money, takes place during the children's summer break, and lasts for a week. The cost varies from 245 DKK for ethnic food schools to 670 DKK for food schools for teenagers.

Adult volunteers do the teaching, so the amount covers ingredients, food and beverages during the week, and a 4H membership for the rest of that year. 40 food schools all over the country are planned for the coming summer break.

The food schools are run in collaboration with the Danish Agriculture & Food Council and the department store chain Rema 1000.

**CREATING THE FUTURE  
OF DAIRY TO BRING  
HEALTH AND  
INSPIRATION TO THE  
WORLD, NATURALLY**



## Collaboration led to improved transport

Transport mortality for slaughter pigs is about 0.15 permille, which is probably close to being the lowest in the world and ten times less than in the beginning of the 1980s.

The significant reduction in transport mortality is partly because breeding undertaken in the 1980s removed the so-called stress gene from pigs and partly because the sector, with support from the EU, elucidated the importance of the interior design of the transport lorries with regard to ventilation, floor heights and animal density. The result was a handbook with a series of design requirements. The slaughterhouse demands that lorry drivers fulfil these requirements.



Flower strips along roadsides is an eye catching proof of an increased focus on initiatives, that ensures greater biodiversity. Photo: DLF

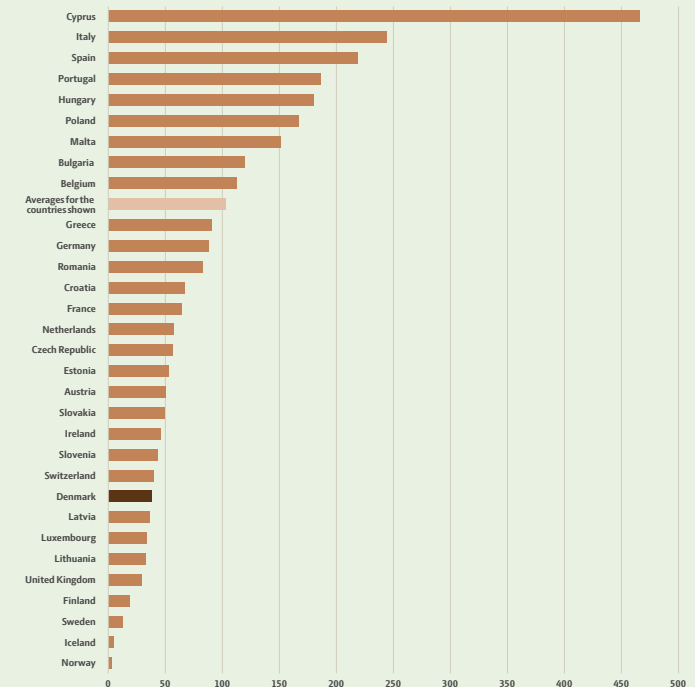
## Now the pigs burst mostly with health

Through the years, pig farmers have reduced their use of penicillin – and especially their use of the types of antibiotics that are important for the treatment of humans. In the period 2009-2019, consumption fell by 29% per kg pig produced.

This was due to the combination of efficient efforts by veterinarians and restrictive Danish antibiotics policy with sharpened control. An example is that red or yellow cards are given to farmers that have too high a consumption of antibiotics. The result is that Denmark has one of the lowest levels of antibiotics use compared to other countries with extensive pig production.

With regard to antibiotics use in all farm animals, Denmark is in the lowest third of 31 European countries. The average for the 31 countries is 110 mg per kg produced animal. Danish consumption is approximately 40 mg.

① Figure 1.6  
Sale of antibiotic for farm animal in 31 European countries  
Mg./PCU 2018



Anm. Population Correction Units (PCU) er en enhed, som opger de forskellige populationer af husdyr i biomasse (kg, produceret dyr) (EMA/294674/2019).



## 15 million dead mink



In his cartoon Jens Julius combines Mette Frederiksen's statement "Nothing has been swept down into the mass graves" with a well-known Danish political quote: "We have not swept anything under the carpet." (Cartoon: Julius)

*"In the first place, it is necessary to cull all mink in Denmark. Unfortunately, this includes the breeding animals."*

*That was the message from Prime Minister Mette Frederiksen on 4 November 2020 at a press conference, where she dealt the death blow to a whole farm sector, a sector that was a leader on the global market, namely the Danish fur animal sector.*

# Grønt fagligt fællesskab

**BIO**

dm.dk/bio

The reason was Covid-19, where a special strain found on mink farms made the health authorities nervous. All mink had to be culled in the course of one month, and police and military personnel were called in to help the mink farmers.

There was only one small problem, which the public did not hear about until some days later:

The law only gives the authorities the right to cull animals that are sick, test positive for the disease in question, or are within a certain safety zone – not healthy animals outside the safety zone.

A commission is currently investigating where the responsibility for the decision lies. So far, the then agricultural minister has lost his job. It is difficult for the commission to untangle who knew what and when, partly because high-ranking officials and the prime minister have deleted their internal text messages.

The mink were buried, then subsequently dug up and incinerated. The mink farmers have been promised compensation. The whole miserable affair will cost the Danish taxpayers about 20 m DKK.

Whether the sector will revive or not is the big question now. Several political parties, that for years have been against fur farming in Denmark, believe fur farming should continue to be prohibited.

**Danish Crop Protection Association**  
Chemistry  
Biology  
Biotechnology

**Innovative solutions for integrated pest management – ensuring a safe, healthy and sustainable food production.**

Member of **CropLife EUROPE**

### Over and above Folketinget's climate plan

Even though many people think that agriculture has dragged its feet with regard to climate and the environment, the sector is in full swing with regard to exceeding the climate agenda.

In 2020, the Danish Parliament, Folketinget, passed a climate law that determines that Denmark must reduce its greenhouse gas emissions by 70% by 2030 – eight years – compared to conditions in 1990, and be climate neutral in 2050.

However, in 2019, Danish Crown had already launched its own climate ambition, namely to reduce its greenhouse gas emissions by half in 2030 compared to 2005, and to deliver climate neutral meat from 2050. The road towards this goal is that farmers who deliver their pigs to Danish Crown must have the slaughterhouse's sustainability certificate. Today, 90% of their farmers have it.

Shortly thereafter, Arla announced that it would cut its greenhouse gas emissions by 30% by 2030 – but in comparison to 2015, which is a much shorter time frame than the Danish climate law. Arla aims it will be climate neutral by 2050. The dairy has even gone a step further. The goal of 30% has been adjusted to 63%. The reason is that the first 24% have already been achieved and data from 8,000 cooperative owners show that they produce raw milk with an average emission of 1.15 kg CO<sub>2</sub>. This is far below the global average.

In the autumn a broad majority in Folketinget agreed to a green transition of agriculture. This implies that agriculture must reduce its greenhouse gas emissions by up to 65% in 2030 compared to 1990. With this agreement Folketinget is allocating an extra 3.8 billion DKK to the green transition pool. The Danish Agriculture & Food Council is pleased with this deal. It provides peace of mind for the future of the sector and ensures the necessary funding for the transition, they say



Protein from mussels and grass can replace imported soya. Photo: Kindel Media, Pexels.

### An Achilles heel – and help from grass and mussels

The crop sector has also jumped on the climate bandwagon. The Achilles heel of agriculture is its large import of animal feed – particularly soya for pig production. This amounts to approximately 1.7 mill. tons yearly. According to the University of Copenhagen, a reorganisation of the import would mean that 20% of the imported soya is certified deforestation-free. In addition, crop farming is working hard to become self-sufficient in terms of domestic protein feed. Fava beans are one example of a crop that is becoming more common in Danish fields and studies to develop new varieties are underway. The research centre at AU Foulum is working intensively on developing protein from grass for monogastrics. Some of the large feed companies in the food sector are following up with newly opened research plants.

Animal farming is also getting help from unexpected marine sources: mussels and seaweed.

With 10 million DKK from the Ministry of Food and Agriculture's Green Development and Demonstration Programme, some feed companies have launched a project that will transform mussel to protein-rich feed and thereby phase out soya. This will be done using fermentation. The participants are European Protein, Emmelev A/S, Aller Aqua, Vital Petfood Group and the consultancy service Agrovi. European Protein has worked with fermentation for several years and extracts protein-rich animal feed from seaweed.

### Ready for alliances

Agriculture has traditionally been good at collaborating with various political parties and green organisations, such as The Danish Society for Nature Conservation, Animal Protection (Dyrenes Beskyttelse) and Greenpeace.

Attention was justifiably aroused in 2019 when the Danish Agriculture & Food Council in collaboration with The Danish Society for Nature Conservation came up with a proposal to set aside 100,000 ha lowland soils. The land would be exchanged for good agricultural land and the then government promised money for the project. However, there were three times as many applications as there was funding for.

This is a common scenario which has also been seen with other environmental initiatives, such as forestation and establishment of mini-wetlands. The government allocates money for the purpose, the number of farmers who would like to convert exceeds the financial framework, and the transition loses momentum.

Collaboration between agriculture and green organisations does not mean all is peaceful. The green organisations believe that agriculture goes too far with its product claims. Most recently, Danish Crown had to discontinue its campaign "Climate-controlled pork", which is part of the slaughterhouse's climate plan. Greenpeace was of the opinion that it was greenwashing, threatened legal action, and persuaded a large number of supermarket chains to boycott the meat. Danish Crown gave up the fight. Their efforts regarding climate pork continue but cannot be used in consumer marketing.

Arla has also been caught out. Last autumn, the message from The Danish Veterinary and Food Administration to Arla was that they could call their organic milk "CO<sub>2</sub>-neutral, compensated via climate credits". This was misleading, according to the green organisation NOAH and the consumer organisation Tænk. They have now appealed the decision. However, the two com-



panies have taken stock of the new consumer trends and are leaning towards plant-based products.

Arla is in the process of launching oat milk and similar non-animal beverages, while Danish Crown ages ago launched a mince containing a certain percentage of vegetables. Now the companies have speeded up and are launching veggie patties and plant mince. The ambition is to sell plant-based meals for an amount exceeding 10 million DKK already this year. The small dairies are also treading new paths. For example, Naturmælk in South Jutland has launched a whole series based on biodynamic farming, while the farmers behind These in North Jutland will no longer use soya in their cattle feed with effect from the autumn of 2022. Any imported feed must be of European origin.



*In 2020, Arla launched a new, independent brand called JÖRD, that primarily comprises plant-based products. So far, the brand includes four oat drinks consisting of pure oats, oats with hemp, oats with barley, and oats with vanilla. All of them are organic. The ambition is to play a leading role in the category within the coming years.*

## Biogas – a natural gas of sorts

In many ways, agriculture is part of the solution to our current climate problems, not least with regard to energy, where the fossil fuel natural gas must be phased out.

In 2019, agriculture and forestry delivered biomass corresponding to 19 per cent of the total energy production in Denmark. Straw alone accounts for 9 per cent.

In addition is biogas based on animal manure and biomass from agriculture, industry and households. In the period 2010-2019 biogas production increased four-fold and now accounts for approximately one fourth of gas consumption.

Biochar is the next step. Researchers from Aarhus University, DTU and Seges, among others, are working on solving the riddle about how biomass from animal and crop production can be transformed through pyrolysis to biochar and at the end of the day become a climate-friendly fuel for air and sea traffic.



*Straw makes up half of the total biomass in Denmark. Photo: Bradley Hook, Pexels*

## Organics – a Danish global success

As the first parliament in the world, Folketinget passed legislation in 1987 regarding organic farming. This was followed by a state control scheme symbolised by a red Ø. Today, Denmark has the world's largest organic dairy and the world's leading organic pig slaughterhouse, Arla and Friland, which is part of Danish Crown, respectively. Organic products, including eggs and horticultural products, are exported to the tune of 3.3 bn DKK.

Denmark is also world class with regard to domestic retail. Organic products make up 13% of Danish grocery purchases. This corresponded to 16 bn DKK in 2020. Danes have adopted organics with eggs and vegetables as their favourites. Every third egg that is eaten in Denmark has been laid by an organic hen.

However, when organic farming was just emerging, there was a sharp divide, not only between organic and conventional farming, but also amongst organic farmers. Concerned organic farmers believed that if a farm grew too large, then the biodynamic, holistic mindset regarding cohesion between the soil, animals, nature and the environment, from which organic farming originated, would evaporate. Added to this, in the beginning, organic products were often sold directly from the farm through special associations. Since then, organic farming has distanced itself from biodynamics by, among other things, establishing an independent organic farmers association in 1981. In the last part of the 1990s the area that was farmed organically was 39 ha per farm. That has now grown to 68 ha, just 10 ha under the conventional farm average.

*The red Ø shows that the food is organic and state controlled.*

*Every year in April, organic cows are released into the pastures. It is a very popular event that attracts thousands of Danes to watch the prancing cows leave their barns. There are approximately 200,000 organic cows in Denmark with an average annual milk yield of 9,000 kg. In 20 years, the area farmed organically has grown from 2.4 to 11.3 per cent of the agricultural land area. Photo: Torben Worsøe, Landbrugsmedierne*





*New technology can cut agriculture's climate footprint by half and make flights more climate-neutral. Photo: Claus Haagenen*

Conventional farms cast sidelong glances at the new mindset and felt that organic farmers denounced them by shying away from conventional farming methods. Commercial fertiliser, pesticides, and cultivation methods were suddenly no-go.

They felt that the story about organic farmers being dependent on conventional manure was not being told, nor the story about lower yields. The most painful issue was that the trend among politicians and consumers was towards organic farming.

On the organisational level, the parties were sensible enough to collaborate and as the years went by, they have been more at peace with each other. There is a large contingent of organic farmers in the Danish Agriculture & Food Council. An organic pig farmer has even been chairman of the organisation's pig committee.

The continued rejection by organic farmers of gene modification, commercial fertiliser, and chemical pesticides means that this form of production still maintains the awareness of consumers and thereby retailers and politicians, supported by the whole debate about biodiversity, nature and the environment. This is reflected in the fact that the number of organic farmers is increasing and established organic farms are growing in size.

These developments are also related to the fact that during some periods organic products have achieved higher prices. For example, in the spring of 2020, the on-account price for organic milk was 3,73 DKK/kg, or 0,60 DDK more than the price for conventional milk produced under Arla's climate brand and without the use of GMO feed.

### **More successes underway**

Conservation Agriculture (CA) and precision agriculture are two relatively new forms of cultivation that Danish farmers have adopted in a big way.

CA was first introduced in Denmark in 2011, but the idea of dropping the plough and disturbing the soil as little as possible began in 1999, when the Danish min-till association was established. The fact is that the less the soil is disturbed, the better the soil structure gets due to microbiological activities and an increased number of earthworms.

Data from the Danish statistical organ Danmarks Statistik showed that from 2016 to 2021 min- and no-till exploded. In 2021 it made up a total of 575,053 ha or 22% of cultivated farmland, thereby exceeding the organically farmed area (313,111 ha).

CA as defined by FAO is based on three pillars: A) no-till, permanent soil cover by crop and/or crop residue and healthy crop rotation (never the same crop twice in a row). The slogan used is "Healthy soil makes healthy crops" – and this is documented by the fact that CA-grown crops have a higher content of minerals.

Regenerative Agriculture (RegenAG) is another word for the principles of CA combined with other factors, such as grazing with sheep or cattle. As it is now RegenAG seems to be the buzzword that the biggest companies in the food sector will use in the future.

Precision farming is also growing rapidly. The method involves the use of data from satellites, sensors, etc., so the farmer can apply precisely the right amount of fertiliser, pesticide, etc. on precisely the right spot in the field. This saves fuel, labour, and auxiliary products.

According to Danmarks Statistik, in 2020, every third farm used precision technology – that is 12% more than two years previously – on a total of 70% of Danish farmland. It must be said, though, that farmers do not necessarily use the new technology on every hectare of their land. Most popular is RKT-GPS, that can operate with two cm accuracy. Next most popular is the use of section management of e.g. sprayers, where each nozzle can be controlled independently.

It is primarily large farms that use precision technology because it typically begins with the purchase of new machinery. Half of the farmers that do not use precision technology say that it is too expensive in relation to gains.

## **Go out and see for yourself**

This was a long story about Denmark and the Danish food cluster, but there is no reason to take our word for it. Go out and see for yourself.

In the following descriptions of the congress' 20 excursions you will find much more about forward-looking research, farmers, dairies, feedstuff companies and others in the food cluster that carry farming in their hearts.

Read and whet your appetite.

Enjoy yourself and have a good congress!

**Welcome to Denmark**



An aerial photograph of a green combine harvester operating in a vast, golden wheat field. The harvester is positioned in the lower-left quadrant, moving towards the right. It is actively harvesting, with a large plume of dust or chaff being kicked up behind it. The field is divided into neat, parallel rows of wheat. The overall scene is bright and captures the busy atmosphere of a harvest day.

**Food cluster booths  
at  
Exhibition Day**



## Partner presentation, visit DLF Seeds at the exhibition 29 June

### DLF – seeding green solutions

DLF Seeds was founded 150 years ago by Danish farmers. During the last three decades it has evolved from being a Danish grass seed company and is today a global seed company active in forage and turf, sugar and fodder beet seeds, vegetable seeds, and seed and ware potatoes. The core business is forage and turf seeds, and DLF holds a leading position in Europe, Oceania and South America and is among the top five seeds businesses in North America. DLF's plant breeding focus is on resource efficiency and crop security.

#### Truels Damsgaard, CEO, DLF

"When we look at the climatic challenges we are facing, it's basically a new unknown in the plant breeding world. That's why innovation is becoming even more important. So we need to add this to the equation.

It is basically about setting new targets and new milestones for our plant breeding. Yet we want – at the same time - to keep the focus on the output. You cannot be green if you are in the red. So it is very important for our customers – the end users of our products - that they are buying seeds that deliver a higher output for them – a higher return of their investment of seed."

Forage grasses and legumes are extremely efficient when it comes to the green transition. They are very profitable crops for the farmer, they deliver a high output of proteins and biomass, ensure a high carbon build-up in the

soil, and of top of that, there is very little nitrogen leaching from perennial grass. Seeds for forage grasses can be bred to be more drought resistant and require less water. Grasses can also become easier to digest which in turn lowers methane emissions.

***You cannot be green if you are in the red!  
We keep focus on the output - come  
and see us at the partner event in Vingsted.***

"We are working heavily on perennial crops with higher digestibility that will lead to animals producing less methane, which is another one of the challenges we are facing. We are also working to optimise production of proteins from pastures with grasses and legumes, which I think could be a game-changer when we consider feeding of monogastric animals," says Truels Damsgaard.

Forage production from legumes, grass and beets is one source of achieving climate and environmental benefits. In relation to annual crops such as maize and cereals, perennial grass fields help to reduce soil preparation and erosion while increasing carbon sequestration in the soil. Grass and beet fields also have minimal nutrient leaching to the aquatic environment. Legumes also contribute to symbiotic nitrogen fixation, which reduces the need for adding fertiliser to the crops, and the need for plant protection products is minimal. We are therefore meeting increasing understanding and recognition of the fact that grass field production and beets also drive the green transition.

DLF's plant breeding, seed production and processing generally focus on finding solutions that accommodate eco- and climate considerations. In the future, we expect to identify more specific areas where the company can help to reduce the climate footprint.



#### FACTS:

- 2,000 employees in more than 20 countries
- # 7 largest seed business worldwide
- Market leader in forage and turf seeds
- R&D in grasses, clover, alfalfa, beets and potatoes

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# Seeding green solutions

Agriculture, sport fields and landscapes are subject to climate change. Farming activities and green areas directly depend on the climate. At DLF we constantly work to ensure our varieties are resilient and

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Partner presentation, visit BASF at the exhibition 29 June

## Maize grown with nitrification inhibitors in slurry can potentially reduce annual CO<sub>2</sub>e emissions from Arla farmers by up to a billion kg

Nitrogen (N) is an essential plant nutrient and is widely used in agricultural crop production systems across the world to increase crop productivity. However, crops utilise only part of the added N and the rest is at a risk of being lost to the environment in the form of nitrate (NO<sub>3</sub><sup>-</sup>) leaching to the aquatic environment, as well as gaseous ammonia (NH<sub>3</sub>) and nitrous oxide (N<sub>2</sub>O) into the atmosphere. Nitrous oxide is an important contributor to climate change since it is a very powerful greenhouse gas (GHG) with a global warming potential that is 298 times higher than that of carbon dioxide.

Agriculture is an important source of greenhouse gas emissions in Denmark with the most important contributors being dairy and pig production systems. Denmark has an ambitious target of reducing 70% of its total GHG emissions by 2050 and this can only be achieved by mitigating agricultural emissions.

Nitrification inhibitors can potentially be used as a new strategy to reduce N<sub>2</sub>O and NO<sub>3</sub> emissions from application of N containing mineral and organic fertilisers. Nitrification inhibitors are compounds that can reduce N<sub>2</sub>O and NO<sub>3</sub> emissions by suppressing the activity of microbes that are involved in N transformation in the soil, for a certain period of time. The nitrification inhibitor 3,4-dimethylpyrazole-phosphate (DMPP)\* developed by BASF is widely used with mineral and organic fertilisers to increase N use efficiency in crops by reducing N losses. Researchers from Aarhus University tested the efficiency



of DMPP to reduce N<sub>2</sub>O emissions and NO<sub>3</sub> leaching from maize cultivated as dairy feed using cattle manure and grass-clover crop residues as sources of N. Using free drainage lysimeters, the researchers measured N<sub>2</sub>O emissions and NO<sub>3</sub> leaching from maize grown in sandy soil with and without DMPP application. The measurements were conducted under normal and simulated extra high rainfall conditions. Results from the one-year study show that DMPP reduced N<sub>2</sub>O emissions 46% to 67% under normal rainfall and 44% to 48% under high rainfall conditions. The study also indicates trends in increments of maize yield with the use of DMPP. (<https://doi.org/10.1016/j.jenvman.2020.110165>).

Another study by the researchers included the life cycle assessment of maize and milk production in terms of carbon footprint (CF) with and without the use of DMPP in the production of maize. In the dairy system under consideration, it was assumed that cows were fed with maize grown with and without the use of DMPP along with other feedstuffs. The results show that CF of maize was reduced by up to 16% with the use of DMPP in manure. The total CF of one litre of milk was reduced by <1% with the use of DMPP compared to the control treatment without DMPP. In a model calculation with the total annual milk produced by Arla farmers (13 billion kg) it could be shown that the use of DMPP results in CO<sub>2</sub>eq savings of up to 1.04 billion kg for Arla.

Overall, the results indicate that the adoption of DMPP in maize can significantly reduce N<sub>2</sub>O emissions at a field scale and yield benefits in terms of climate mitigation. Despite a relatively low effect on, e.g. the production of 1 L milk on the farm level, the CO<sub>2</sub>eq savings for the whole Danish dairy sector would be quite significant.

\*DMPP is the active ingredient in the nitrification inhibitor VIZURA.

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29. June from 13.30 to 16.00 and  
in BASF press room from 16.00 to 18.00



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Partner presentation, visit Yara at the exhibition 29 June

## Creating a more sustainable and resilient food system

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Our ambition is to grow a nature-positive food future that creates value for our customers, shareholders and society at large, resulting in a more sustainable food value chain.

Fertilisers are food for plants and play a crucial role in feeding the world, contributing to 50 percent of the world's food production. Yara works closely with partners throughout the food value chain to improve the efficiency and sustainability of food production.

Our more than 800 agronomists support farmers with agronomic advice, digital precision farming tools and crop nutrition solutions so they can optimise yields, produce healthier crops and protect the soil, while simultaneously reducing their carbon footprint.

### Fossil free green fertilisers in 2023

Yara also helps farmers select the most suitable fertilisers. Our nitrate-based mineral fertilisers produced in the European Union and Norway have a carbon footprint that is about 50 to 60 percent lower than most non-EU fertilisers thanks to the use of a best available technology (BAT) catalytic process that reduces greenhouse gas emissions (GHG) during production.

We are taking this one step further. In 2023 Yara will begin producing fossil free green fertilisers using renewable electricity instead of fossil fuels. These



fertilisers will have an 80-90 percent lower carbon footprint than fertilisers produced with natural gas. This is a fossil free, impactful and effortless way to decarbonize food production.

Yara has a portfolio of "green" ammonia projects, which will be key to producing green fertilisers, in Norway, the Netherlands and Australia. Through our focus on clean ammonia production, we aim to enable the hydrogen economy, driving a green transition of shipping, fertiliser production and other energy intensive industries.

### Recycled nutrients

Yara is also committed to contributing to the circular economy and playing a bigger role in organic farming. We have launched new organic fertiliser products in several European countries and are looking at potential opportunities worldwide. Yara's core competence lies in managing nutrients in the most sustainable and efficient way, regardless of whether this is for organic, conventional, regenerative or other farming systems.

Through our strategic partnerships with food and waste management companies, such as Veolia, and by leveraging our crop nutrition knowledge, we are working to find optimal ways to recycle nutrients that would otherwise end up as waste and then process these to produce organic fertilisers.

### Founded in 1905 – aiming to be climate neutral in 2050

Yara has reduced its total scope 1 and 2 GHG emissions globally by about 45 percent since 2005. Our goal is to reduce our global emissions by a total of around 60 percent by 2030, and we aim to be climate neutral by 2050.

Founded in 1905 to solve the emerging famine in Europe, Yara has around 17,000 employees and operations in over 60 countries and a proven track record of strong returns. In 2021, Yara reported revenues of USD 16.6 billion.

### Press contact:

Vibeke Larøi

Communications manager for Yara Europe

Mobile phone: +47 94285337

Email: [vibeke.laroi@yara.com](mailto:vibeke.laroi@yara.com)





Partner presentation, visit Case IH at the exhibition 29 June

## Case IH is proud of being an IFAJ 2022 Congress partner

Communication is critical to any industry, and independent journalism is a core element of that. Whether briefing potential customers about product launches, assessing new equipment or providing in-depth examination of business and environmental issues, the agricultural media plays a crucial role in keeping farmers and the wider public informed.

This is why Case IH is delighted to be an IFAJ 2022 Congress partner. We know your job often requires more than simple product information, and we understand the difference between marketing directly to our customers and communicating to them via your independent media. In addition to providing details on its machines, Case IH is always on hand to provide the information, contacts and leads you need.

We have 25 years' experience in minimising soil compaction via our tracked Quadtrac and Magnum Rowtrac tractors, innovative solutions such as our Axial-Flow combines, and a similar breadth of knowledge in precision farming and connected agriculture from our AFS Connect technology. And we have expertise in fuel-saving engine and transmission developments through our CVX continuously-variable transmission and our engine partner FPT.

With our long experience in agriculture, which stretches back over 180 years, we are also a great source of comment on farming throughout history. This also means that, from modern-day equipment to milestone machinery developments, we can provide you with a vast media library to meet your picture needs.

Case IH is a trusted partner for many farmers - and we aim to be a trusted partner for the farming media too. For more information, email [cornelia.krischak@caseih.com](mailto:cornelia.krischak@caseih.com) or visit [www.caseihmediacentre.com](http://www.caseihmediacentre.com). We hope you enjoy the IFAJ 2022 Congress.



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# CASE IH





## MEJERIFORENINGEN

Danish Dairy Board

### We're well on our way

Danish dairy farmers excel at production optimisation, and now rank among the most climate-efficient milk producers in the world.

So far so good.  
But not good enough.

In the dairy sector we have committed to becoming CO<sub>2</sub>-neutral by 2050, and achieving that goal calls for optimisation of every link of the food chain.

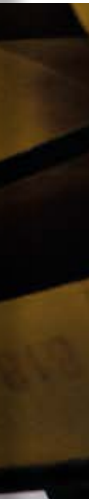
**We are well on our way.** With new climate-friendly feed types and trials to capture methane in the cow-house. With recirculation of water and energy in the dairies and use of green fuel for the transportation of milk and dairy products. At the same time we carry out research to find ways to remove methane from the cow's rumen.

**We could tell you a lot more.** And we will, if you take the chance to drop by the many milk producers, dairies and research institutions playing hosts to participants of this year's IFAJ Congress in Denmark.

Another well of information is the Danish Dairy Board, joint association to 31 dairy companies in Denmark and representing more than 98% of the Danish milk pool.

See more at [danishdairyboard.dk](http://danishdairyboard.dk)  
Or give us a call: +45 8731 2000

Best regards,  
Henrik Damholt Jørgensen  
CEO, Danish Dairy Board

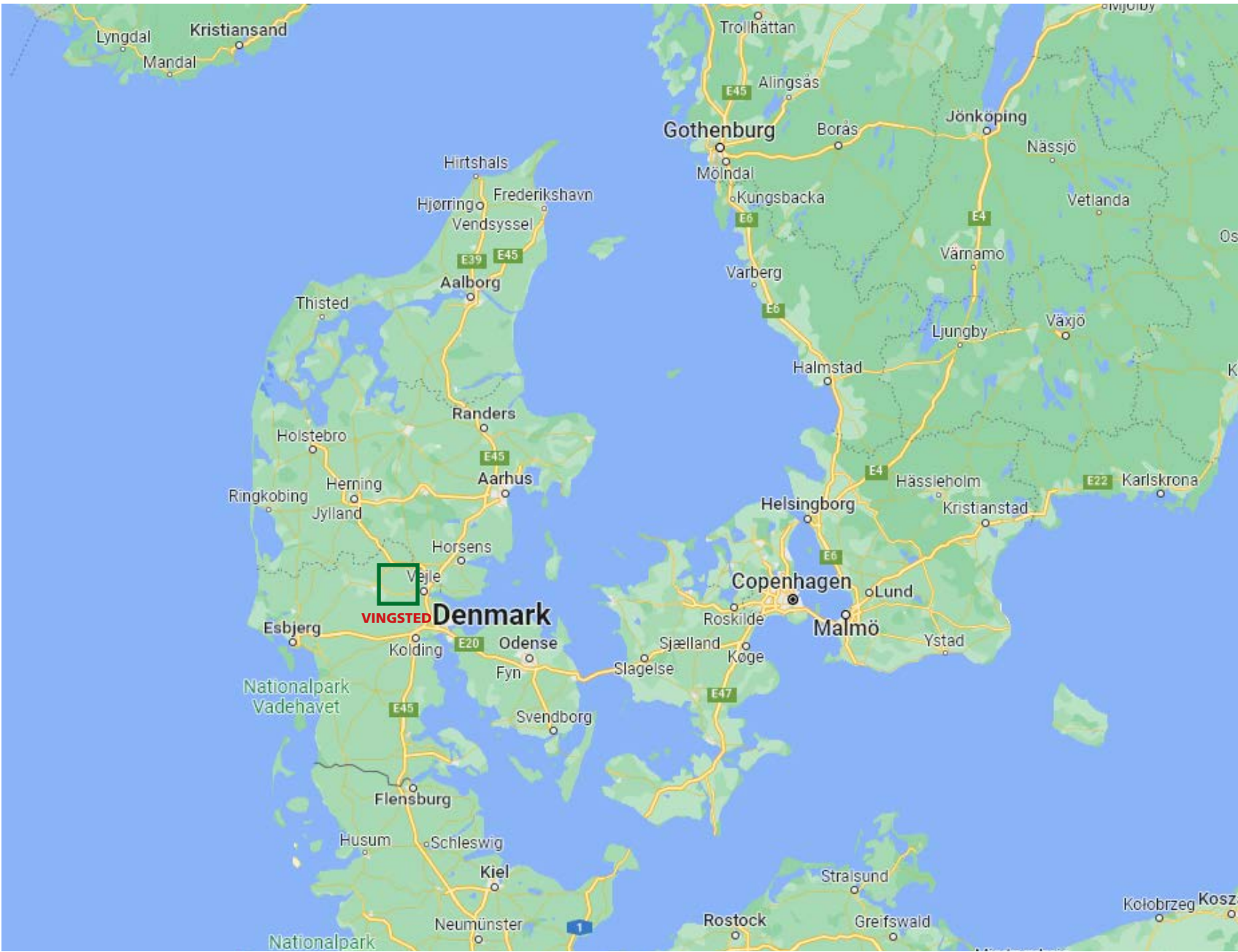






**20 Excursions**





# Tour A1, 28 June



## Tour leaders:

**Jørgen Lund Christiansen**, journalist, organiser of 40 study tours to six continents, participant in 20 IFAJ congresses, columnist

**Henning Otte Hansen**, senior adviser, PhD, Department of Food and Resource Economics, University of Copenhagen



## The Danish way of handling challenges

The Danish dairy sector encompasses about 2,500 farms with an average of 220 cows, of which 20 per cent are organic. In 1882, Danish farmers established their first dairy coop. In 1905 there were a total of 1,300 coops and the Lurpak brand was designed to promote export of butter to the UK. Today, only a few coops handle 95 per cent of all Danish milk. Arla Foods is one of the world's leading dairies and handles 90 per cent of Danish milk. Arla is a multi-national company, including its ownership. The headquarters are in Denmark, but there are more than 9,000 member in Sweden, Germany, UK and Benelux. At Arla Innovation in Skejby we will meet Lars Dalsgaard, Senior Vice-President of Product & Innovation, Arla Foods Amba. Lars Dalsgaard has for the past 39 years held various management positions at Arla Foods, including dairy manager, dairy director, production director in Ingredients, Business Group Director in the UK, and Group Vice-President in Supply Chain. Since 2019, he has had the overall responsibility for innovation at Arla, the world's fourth largest dairy company as measured by the amount of milk received. Lars will give us the inside story on the dairy industry and the areas of focus in Innovation.

We will visit Holger Hedelund's farm with one of the finest Jersey herds in Denmark and hear about export of heifers and young cows. Holger aims to be independent from protein import. New crops are taken in and have today replaced more than 80 per cent of soya and other protein sources from abroad.

At Sejet Plant Breeding Station, owned by DLG, a leading Danish farm supply coop serving more than 25,000 members, Managing Director Birger Eriksen will tell us about goals and methods to achieve higher yields and quality adapted to local climate and environmental conditions.

At the end of the day, we will have dinner with group A2 at the cultural centre Vestermølle. Throughout the day your tour guides will tell you about mandatory education of all children starting in 1814 in response to Denmark's bankruptcy in 1813. This was followed by folk high schools and establishment of coops, which currently have more than 90 per cent of the market shares in all major sectors. That story is part of the foundation of the Danish welfare society.

### TOUR A1, 28 JUNE – TIME AND PLACE

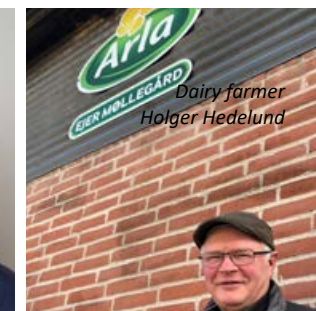
- 10.00:** Departure Vingsted Skovvej 2, Bredsten
- 11.00:** Arrival Sejet Plant Breeding Station, Nørremarksvej 67, 8700 Horsens
- 12.30:** Lunch in the field at Sejet
- 13.00:** Departure
- 14.00:** Arrival at Arla Foods Innovation, Agro Food Park 19, 8200 Aarhus N
- 15.45:** Departure
- 16.30:** Arrival at Ejer Møllegaard, Lindbjergvej 6, 8660 Skanderborg
- 18.00:** Departure
- 18.30:** Arrival at Vestermølle, Oddervej 80, 8660 Skanderborg
- 19.00:** Dinner at Restaurant Vestermølle
- 20.30:** Departure
- 21.30:** Arrival at Vingsted Skovvej 2, Bredsten



Managing Director  
Birger Eriksen



Lars Dalsgaard



Arla  
EJER MØLLEGAARD  
Dairy farmer  
Holger Hedelund



## Plant breeding will contribute significantly to growth of climate-friendly crop production

The starting point for the plant breeder is the seed that will transform into a robust and productive crop that can 1) utilise water and added substances optimally, 2) withstand disease and weather phenomena, and 3) utilise solar energy and photosynthesis to produce high quality yields for human and animal nutrition.

### Saves land and reduces greenhouse gas emissions

Plant breeding contributes to an annual yield improvement of 0.8 to 1.1 per cent. In the course of 10 years, this means, for example, that the yield from a wheat field increases from 7.5 to 8.1 tons per hectare – or, all things being equal, an additional harvest in Denmark in 2029 of 335,000 tons. Plant breeding thus reduces land use and greenhouse gas emissions per harvested ton.

In addition to yield increase, adaptation to increasingly extreme weather events has been an area of focus. Crops with improved disease resistance, strong root systems and good straw strength must be developed in order to resist drought as well as heavy rain.

### Tissue culture, DNA markers, big data and genetic selection

Ongoing optimisation and application of new plant breeding technologies can contribute to achieving global food security and the UN Sustainable Development Goals. European plant breeding is not permitted to use GMO but has access to other tools, including the following :

- Quick breeding with use of plant tissue culture
- DNA markers that can contribute to efficient selection of plants with good disease resistance
- Big data and genetic selection that can boost breeding progress and thus increase the climate benefits of new varieties

*Plant breeding at Sejet is based on 100,000 field plots.*



### Looking forward to snipping with CRISPR

CRISPR technology has significant potential for continued yield and quality improvements, but the EU is currently subject to GMO restrictions. A relaxation of the rules and thereby an opening of the door to efficient mutation breeding is expected. CRISPR stands for Clustered Regularly Interspaced Short Palindromic Repeats. The snipping method is based on nature's own mechanisms and will, according to Birger Eriksen, provide us with varieties with improved traits to the benefit of agriculture and the food and feed industries.

### Breeders and universities collaborate and share results

Danish plant breeders working with cereals, grasses, potatoes and more collaborate and share results with several universities in a targeted selection programme. This has so far among other things led to improved water and nutrient utilisation. Work is being carried out on developing wheat varieties with biological nitrification inhibition (BNI). BNI reduces nitrous oxide emissions from crop production, which presently account for half of the carbon footprint per area unit.

#### FACTS:

Founded in 1947  
Owned by DLG, see tour B2  
Located by Horsens Fjord  
CEO: Birger Eriksen, bee@sejet.dk  
35 full time employees and 10 harvest helpers  
Breeding of cereals and faba beans  
Leading varieties in Denmark and in a number of European markets  
20,000 new lines of barley and wheat per year  
100,000 field plots per year  
Strict selection - only 10 percent continue to the following year  
Ultimately, only one or two varieties per species become a market success per year  
Turnover: 70 million DKK  
Bottom line: 21 million DKK  
Assets: 189 million DKK  
Equity: 181 million DKK  
www.sejet.dk



## Arla - World's most multinational farmer-owned dairy

**8,956 OWNERS IN SEVEN COUNTRIES**  
**13.6 BN KG MILK IN 2021**



Arla Foods' roots go back to the 1880s, when dairy farmers in Denmark and Sweden formed small cooperatives to invest in common dairy production facilities. Since then, dairy cooperatives have dominated the dairy market in both countries and have around 90 per cent of the market share of milk intake.

The present Arla Foods was established in a merger in 2000, when the Danish MD Foods and the Swedish Arla Ekonomisk Förening decided to merge. This was the first large cross-national merger in the Nordic dairy industry, but many more came after.

In the years to come more mergers were completed – mergers where farmers in other countries became owners – cooperative members – of Arla Foods. Today, Arla has members in Denmark, Sweden, Germany, the Netherlands, Belgium, Luxembourg and the UK. The headquarter is in Aarhus, Denmark. Arla is the world's fourth largest dairy company based on milk intake, and the world's largest producer of organic dairy products.

Arla now has a market share of about 90 per cent of the milk intake in Denmark. Since the 1930s, the number of dairies has declined and the size of dairies has increased. Merger waves, consolidation, and acquisitions among Danish dairy cooperatives have year-by-year created one big company.

Arla is a cooperative. Being a farmer cooperative means that all of Arla's profits go back to its farmer owners, and that the owners take an active part in deciding how to grow and develop the business.

Arla has 8,900 farmer owners who are responsible for over 1.5 million cows. Arla processes milk at 60 sites. The international share of revenue is 24.1 per cent.

Sustainability is a very important element in Arla. Since 1990, Arla farmers have reduced emissions per kilo milk by 22 percent (1990-2020), and Arla's CO<sub>2</sub>e emissions are about half the global average. By introducing all Arla farmers to climate checks that suggest methods to minimise emissions, Arla expects to reduce CO<sub>2</sub>e even more. Arla's climate ambition is to become



Photo: Claus Haagensen

carbon net zero by 2050, but with commitment to reduce CO<sub>2</sub>e emissions significantly by 2030.

Arlagården, the quality assurance programme for the farms, is an important part of Arla Foods' strategy. The four cornerstones of the Arlagården policy are: "Milk composition" (fat, minerals, protein, etc.), "Food safety", "Animal welfare" and "Environmental considerations".

Arla Food Ingredients – a wholly owned subsidiary of Arla Foods – is a leading whey ingredient supplier for infant nutrition, baking, dairy, medical applications and sports nutrition. With an annual profit close to 100 m euros per year and a quite high growth rate, the company is a major contributor to Arla's and the farmers' income.

Even though Arla is a cooperative with members in seven European countries, acquisitions, mergers and production also take place on other continents. Arla Foods has, for example, established a joint venture with China Mengniu Dairy to produce milk powder.

Arla Innovation Centre - built in 2017 - ranks first in the EU in terms of business investment in food and drink R&D. The centre has several world class laboratories including a 2000 m<sup>2</sup> test dairy plant. Here research and new product development teams work together to build on science, new technologies, local knowledge, consumer tastes, and regulatory networks to develop formulations for launch.

### FACTS: Key figures (2021):

Revenue:	11.2 bn euros
Milk volume:	13.6 bn litres
Milk price to farmers:	39.7 euro-cents/kg
Equity:	2.9 bn euros
Supplementary payment	290 mn euros

### Number of owners

Owners in Sweden	2,236
Owners in Denmark	2,274
Owners in Germany	1,497
Owners in the UK	2,127
Owners in the Netherlands, Belgium and Luxembourg	822
Total number of owners	8,956



**Chairman:** Jan Toft Nørgaard, jan.toft.norgaard@arlafoods.com  
**CEO:** Peder Tuborgh, www.arla.com

## Hedelund Poulsen and one assistant have increased the production 30-fold in 50 years

Fifty years ago, Karen and Holger Hedelund Poulsen bought Ejer Møllegård, the farm with the highest elevation in Denmark in the area of Ejer Bavnehøj. They are still there and have no current plans to stop.

The couple are hospitable and willingly open their barn doors to visitor groups, where they spend an hour or hour and a half talking about their farm and agriculture in general. You are most welcome to ask questions and they will answer you.

- Ejer Møllegård is the farm in Denmark with the highest elevation above sea level.
- Møllehøj, Denmark's highest point, is close to the barn.
- Public footpaths have been established from the farm to Ejer Bavnehøj and Møllehøj.
- In 1972 Hedelund Poulsen took over the 15 hectares farm Ejer Møllegaard and became a "mountain farmer" with 17 cows.
- In 2022 the farm has expanded to its present 270 hectares, of which 125 hectares are leased, and 180 Jersey cows plus heifers and calves.
- The average milk yield is 11,000 kg standard milk. Milking is automatic with three robots.
- Sex-sorted semen from Jersey bulls is used for heifers, and from Angus to produce bull calves, which are sold at 8-10 weeks.
- The herd's average lifetime yield is 50 tons of milk over 4.5 lactations with 0.8 calvings per year. Low lactation numbers = excessively high costs, says Hedelund. Half of the heifers are exported for breeding and the other half kept in the herd.
- The farm has expanded 30-fold but is still managed as it was in the beginning, with the owner, one assistant and a trainee.
- The farmer grows maize, grass, barley, wheat, rye, rapeseed and fava beans. More than half is used as fodder for the farm's animals while the rest is sold.
- The milk is delivered to the coop dairy Arla, which is owned by Holger Hedelund and farmer colleagues in seven countries.

### First with maize, wants freedom from protein import

Through all his years on the farm, Hedelund has focused on feed self-sufficiency and minimising the purchase of protein. He was a pioneer when maize replaced fodder beets as roughage for cattle. He has been involved in organisational work for many years with regard to information about maize as a feed ingredient and has conducted almost 50 study tours to European countries and Wisconsin in midwestern USA.

Rapeseed and fava beans have also become important crops at Møllegaard. Both whole and ground rapeseed and ground beans are included in

80 per cent of Ejer Møllegaard's feed is produced on the farm. With regard to concentrate, the figure is two thirds. Holger Hedelund shows the components of his own harvest.

Behind to the left are ground fava beans and in the small pile in front whole beans. To the right in front are whole and ground rapeseed from own harvest. Behind to the right is a pile of grain, which will be mixed with bought protein.



the roughage while grain is mixed on the farm with protein – that still needs to be purchased – and Danish rapeseed cake.

### Knowledge, technology and creativity

People listen when Holger Hedelund speaks at gatherings and shares his knowledge about technology, plants, animals, air, soil, nature and climate conditions and, based on his own management methods, shares possibilities and ideas. His experience is that farmers can still increase their yield per working hour by acquiring knowledge and new technology.

According to Holger Hedelund Poulsen, the way forward for agriculture's contribution to reducing greenhouse gas emissions is by using R&D and creativity. Neither does he hold back when it comes to dispensing advice to the dairy's management.

When Arla launched Kærgården, which is Lurpak butter mixed with vegetable oil, he acknowledged the initiative but criticised that the dairy used imported soya oil instead of Danish quality rapeseed oil. Three weeks later, Kærgården, just like Lurpak since its launch in 1905, has solely been based on quality ingredients from Danish farms. This was also the case with the export variety Lurpak Spreadable, which came into being a few years later.



The feed wagon has just done its round.



## Vestermølle - The Danish way of handling challenges

The last stop for tours A1 and A2 will be at Vestermølle, a farm and water mill more than 500 years old beside Skanderborg Lake. Today it is home to a dozen organisations and a historical centre with a museum. We will have dinner at Restaurant Vestermølle.

En route, tour A1 will recapitulate the visits during the day as stepping stones on the Danish farmers' way of handling challenges via cooperation. We will have visited a plant breeding station and Arla Innovation Centre, both farmer-owned and run, in addition to a farmer.

At Vestermølle Museum visitors can learn more about the following historical background:

### It began with bankruptcy

In 1813, the Denmark went bankrupt. Our ancestors reacted by saying: "We might be innocent, but we will not be ignorant." In 1814 it therefore became mandatory for all children to learn reading, writing, history, literature, etc. In 1844, the first folk high school opened. Youngsters from rural areas took half a year off, boarded at the schools, studied Danish, mathematics, national and world history, and more. Many returned home and became inspiring lights in their local communities.

In 1849 Denmark enacted a relatively free constitution. In 1864 Denmark lost a war and one third of its land to Germany. The response was to cultivate huge, new areas in Jutland under the motto "What we lost externally, must be gained domestically". After World War I, citizens in the borderland which had been lost to Germany voted themselves back to Denmark in a referendum.

Due to American railways and steamships, cheap grain from the prairies flooded Northern Europe from 1870. Danish farmers saw the need of added

value and formed the first coop dairy in 1882, farm supply cooperatives from 1883 and coop slaughterhouses from 1887. In 1905 Denmark had 1,300 dairy coops (and Lurpak), a similar number of farm supply coops, dozens of farmer-owned slaughterhouses, and Danish pork. The UK became the first major market. Coops for the production and marketing of clover and grass seed, cement, fur, and potatoes, and banks and credit institutions followed. With regard to dairy, pork, poultry, seeds, potatoes, grain, feed, fertilisers and pesticides, the farmer-owned companies currently have about 90 per cent of the Danish market and, until two years ago, 100 per cent for mink! Producers take the risk and profit, not shareholders.

### The museum will be enlarged

The coop history's main figure is Anders Nielsen. Vestermølle Museum is based on his and his wife Kirstine's work, and the results of more than 200,000 of their contemporary farmers. Today about 8,000 full time farmers produce high quality food for 16-18 million people. More than two thirds of the products are exported. The local coops have merged into huge companies, many of them international. They still meet challenges with innovation. The museum will be expanded to 400 square metres.



*Anders Nielsen, the main figure in the development of Danish farmers coops*

### Bread and water

Before dinner at Vestermølle, we will spend half an hour on two activities:

- We will visit the old mill and see how the best Danish flour is made from a water-driven stone grinder from 1887 - carbon free.
- We will visit Jernkilden, a 1000-year-old holy water source. Chris Mortensen, born in 1882, drank the water here for 19 years before he emigrated to the United States. He died in California in 1998 at the age of 115 years and 252 days. He credited the water from Vestermølle for helping him become the oldest man the world had ever seen at that time. Don't drink the water if you have a lousy pension!



*Jørgen Lund Christiansen, chairman of Vestermølle Museum*



# Tour A2, 28 June



## TOUR A2, 28 JUNE – TIME AND PLACE

- 10.00:** Departure from Vingsted Skovvej 2, Bredsten
- 10.45:** Arrival Nature Energy Månsso, Grarupvej 1A, 8330 Brande
- 12.15:** Departure. Lunch in the bus
- 13.30:** Arrival Aarhus University, Blichers Allé 20, Foulum, 8830 Tjele
- 17.00:** Departure
- 18.30:** Arrival Cultural Centre Vestermølle, Oddervej 80, 8660 Skanderborg, see article Tour A1
- 19.00:** Dinner at Restaurant Vestermølle
- 20.30:** Departure
- 21.30:** Arrival Vingsted

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### Tour leaders:

**Egon Kjøller**, journalist,  
North Jutland newspapers 1971 – 2016

**Søren Andersen**, journalist. MSc in Sociology,  
Master of Journalism  
Employed by the energy company Barry  
Danmark Aps, volunteer at the think tank Frej



## Climate and global warming Farming is an important part of the solution

Farming is a considerable contributor to the alarming global warming, but is also an important part of the solution. The Danish agricultural sector accounts for at least 20 per cent of Denmark's total emission of greenhouse gases. In October 2021 a wide majority of political parties in Denmark agreed to reduce these emissions by 55-65 per cent in 2030 (1990: 100 per cent). This means reducing emissions by 6.1-8 million tons CO<sub>2</sub>-equivalents.

Nitrogen leaching to the Danish aquatic environment will have to be reduced by 13,100 tons in 2027 to obtain a water quality that adheres to the EU Water Framework Directive. The agreement creates reductions of 10,800 tons.

As for greenhouse gas emissions, the agreement creates reductions for 1.9 million tons of CO<sub>2</sub>- equivalents. The rest is to be found via innovation or further political demands.

The solutions are simply not yet created or fully developed.

The agricultural sector will receive an extra 3.8 billion Danish kroner (0.51 billion euros) and more of the EU Common Agricultural Policy funds will be allocated to green initiatives.

On this tour we will see research and development facilities and industrial initiatives contributing to make the vision real at:

- Nature Energy, a leading producer of biogas
- DCA - Danish Centre for Food and Agriculture, AU Foulum, Aarhus University.



DCA – Danish Centre for  
Food and Agriculture, AU  
Foulum, Aarhus University



A Nature Energy facility



## Biogas: A key driver in the future green energy supply

### A visit to one of Nature Energy's large-scale facilities

At Nature Energy, we believe our source of biogas is among the key solutions for the future of sustainable energy along with wind and solar energy. The sun's rays are captured by solar cells, while the power of the wind is transformed into green power by wind turbines. Biogas plants convert biological waste into climate-friendly biogas and green manure for agricultural food production. That is what Nature Energy does at its large-scale biogas plants, including Nature Energy Månsson.

Nature Energy Månsson is centrally located in Jutland, near the city of Brande – and near to the Månsson farm that has a focus on growing vegetables and producing eggs. The Månsson farm and Nature Energy built the biogas plant together. It opened in 2018.

The biogas plant uses manure primarily from the Månsson farm organic cattle and hens, but also from other local farms to produce biogas and fertiliser. Around 150,000 tons of manure are used. The resulting fertiliser has an even better quality than regular manure because its high plant uptake reduces nitrogen leaching. This reduces the need for chemical fertiliser with great environmental benefits. The collaboration is a good example of circular economy.

"Biogas and organic farming are a good match. When manure, green waste, organic clover-grass and other organic waste products are sent through the biogas plant, the biomass is degassed. Organic fertiliser is a scarce resource. Because of the production at Månsson, more organic farmers in the area can access good quality fertiliser and thereby produce more organic products. At the same time, the farmers contribute to sustainable and efficient energy and food production. Quite simply, Nature Energy Månsson is a win-win collaboration," Henrik Højager Nielsen, COO of Nature Energy states.



Slurry gives biogas



Nature Energy Månsson

The biogas plants also deliver climate-friendly biogas which can replace the fossil fuel natural gas. Nature Energy is experiencing an increased demand for biomethane. The energy-intensive industry and the heavy transport sector in particular are on the lookout for biomethane as a green alternative to fossil fuels.

The green transition of the gas grid is moving fast. In 2022, Nature Energy will produce around a third of all the biomethane in the Danish gas grid – which is already the world's greenest of its kind with biomethane covering almost 25 percent of the gas consumption last year and 100% before 2035.

It is with this expertise that Nature Energy manages 11 biogas plants in Denmark, and is now expanding internationally. When Nature Energy founded its first biogas plant in 2015 in Holsted, 65 kilometres south of the Månsson plant, large-scale biogas production was unknown territory for the industry. Nature Energy is a first mover with regard to upscaling biogas production to an industrial scale because its biogas plants are able to take in large amounts of biological waste.

As the demand for more biogas is growing, so is Nature Energy as an organisation. Since 2015 in Holsted, the company has expanded and has employees working with biogas in Denmark, France, United States, the Netherlands, and Canada.

#### FACTS:

Established in 1979

First biogas plant opened in 2015. There are now 11 plants in Denmark.

No. of employees: 300

Production: 200 m<sup>3</sup> green gas corresponding to 15,000 lorries' energy consumption per 30,000 miles annually or heating of 110,000 homes.

Contact: Press Officer Feodora Wester, [fewr@nature-energy.com](mailto:fewr@nature-energy.com)  
<https://nature-energy.com/about-nature-energy>

## AU Foulum Research for a green world

AU Foulum is part of Aarhus University and home to most of the university's research in agriculture, which includes crops, animals, food, organic farming, bioenergy, environment, climate, soil, genetics and technology.

Here you will find the Department of Animal Science, research groups from the Department of Agroecology and Center for Quantitative Genetics and Genomics, and parts of the Department of Biological and Chemical Engineering. DCA –Danish Centre for Food and Agriculture – is based here as a supporting body for collaboration with the industry, organisations and authorities.

### Bioeconomy

A particular research area is circular bioeconomy. In a biobased economy, fossil raw materials are replaced with renewable plant and marine-based biomass, and energy consumption is based on renewable resources, including sustainable biomass and organic waste.

In 2017, Aarhus University established Aarhus University Centre for Circular Bioeconomy (CBIO) to carry out research and develop bioeconomy production systems and recirculation concepts, such as biorefining methods and high value products based on green crops, marine biomass, and residual and by-products from the agricultural and food sectors.

### Green biomass

An example is protein extraction from green biomass. Cultivation of perennial crops, such as grass and clover-grass, has many benefits for the environment and climate. Grass can be cultivated without the use of pesticides, and trials at experimental fields at AU Foulum have shown that nitrogen leaching to the

*Field trials with perennial crops for green biomass at Foulumgaard.  
Photo: Jens Kjeldsen, Aarhus University*

*At the Power-to-X facility, Aarhus University researchers test how to store electricity as other forms of energy.  
Photo: Lars Kruse, AU Foto*



aquatic environment is significantly reduced when perennial grass crops are grown.

In Denmark, several areas have a particularly high risk of nitrogen loss. In these areas leaching can be avoided by cultivating permanent grass instead of grain. Similarly, grass cultivation without the use of pesticides may be an option in water extraction areas.

This grass can be used for cattle feed, but there are many other options. Fresh grass contains about 20 per cent protein, and research at AU Foulum has shown that protein extracted from green biomass can be used as protein feed for pigs and poultry.

### The biorefinery plant

In 2019, agricultural organisations and foundations allocated the money required to establish a demonstration-scale biorefinery plant at AU Foulum. It allows researchers to work with the optimisation of biorefining processes, almost in full scale, and provides new opportunities for further development and tests of new products in larger quantities.

The new plant can process 10-20 tons of fresh green biomass per hour, so researchers at AU Foulum will have sufficient feed to carry out extensive feed experiments.

If the protein is further refined, it may be used as a food ingredient. In addition, by-products from the production may be used as cattle feed or as a basis for the production of building materials, textiles, chemicals, and bioenergy.

### Bioenergy

AU Foulum includes the following research facilities for bioenergy:

A biogas plant used for research in technologies for management and treatment of animal manure from animals to plants, e.g. energy crops.

A Power-to-X test facility connected to the biogas plant. The purpose is research in biological and chemical energy conversion technology.

An HTL pilot plant, which is an experimental facility for hydrothermal conversion of biomass into chemicals or fuels that can be mixed with or replace motor fuels, a process popularly known as HTL (hydrothermal liquefaction). Basically, organic materials are mixed with water and subjected to high pressures (150-350 bar) and high temperatures (300-450° C). After a short process you get a viscous oil that can be refined to diesel fuel and numerous other products.

#### FACTS:

AU Foulum, Aarhus University  
Blichers Allé 20  
DK-8830 Tjele  
Telephone: +45 87 15 60 00  
E-mail: dca.au.dk  
Web: <http://dca.au.dk>

Area: approx. 590 ha  
Buildings: 120,000 m<sup>2</sup>  
Staff: approx. 600 persons





## Tour A3, 28 June

### Tour leaders:

**Birgitte Pedersen**, 15 years of experience in business development and branding in the food and agriculture value chain in Denmark and internationally

**Peter W. Mogensen**, journalist and editor at LandbrugsMedierne. Agricultural technician with cattle as a specialty



## World-Leading Milk Production with Focus on Climate and Animal Welfare

Animal welfare, high productivity and low carbon footprint are the strongholds in Danish milk production. Over the years, the milk industry has been through a huge professionalisation and structural development. But the demand for a more sustainable and greener future sets all parts of the value chain under even more pressure with a demand for innovation, optimisation and documentation.

We will start our day with an insight into Arla and its goal to reach CO<sub>2</sub> neutral milk in 2050 – and with a 30% reduction of emissions before 2030. You will see and hear about the role of the dairy in Rødeskærnsbro, where mozzarella cheese, pizza cheese topping and shredded cheese for cooking are produced. The dairy uses biogas collected from local farmers for heating. You will hear about what Arla requests from the farmers, and how they support them as a key stakeholder in reaching the goal.

You will experience the new cattle research facilities at AU Foulum, Aarhus University. In 2020, AU Foulum took new barns in use that set new standards for innovation and research within milk production. Two of the most recognized professors within climate research will lead us through the visit with focus on feed, milk and methane.

At Sandagergaard, you will meet the Forum family and their milk production. The family built the farm in 1997 - and today they milk 500+ cows in a modern robotic milking solution. The family runs one of the best performing dairy herds in Denmark. Among other things, they have received an award for the best work environment in the agricultural industry in Denmark.

### TOUR A3, 28 JUNE – TIME AND PLACE

- 10.00:** Departure from Vingsted Skovvej 2, Bredsten
- 11.15:** Arla presentation, meeting at the main office at Sønderhøj 14, Viby J
- 12.30:** Departure, lunch in the bus
- 13.50:** Arrival at Aarhus University, Blichers Allé 20, Foulum, Tjele
- 16.00:** Departure
- 16.30:** Arrival at Sandagergaard, Præstevej 18, Skals
- 18.00:** Dinner at Sandagergaard
- 19.30:** Departure
- 21.30:** Arrival at Vingsted





## Working with cows and climate

Arla and its 8,900 farmers across seven countries have an ambition to become net zero carbon by 2050. CO<sub>2</sub>e emissions have been reduced by 25 percent from 1990 to 2021 and by introducing the Climate Check scheme on all Arla farms emissions will be minimised in the years to come.

Because of the different farm systems across countries, Arla decided to develop a Climate Check tool that takes into account the regional differences that influence the calculations on each member's farm. Arla farmers have signed up to the Climate Check and submitted answers to 203 questions in an online questionnaire. The tool provides a preliminary carbon footprint result which is then validated by an external agricultural climate adviser who also visits the farms and reviews the data.

All internationally recognised areas for climate assessment of dairy farms are included in Arla's Climate Check. These include data on the animals' entry to and exit from the farm, breeds, feed used, produced and sourced, use of fertiliser, waste and manure handling, and fuel and energy consumption, including own renewable electricity.



Photo: Claus Haagensen



Besides the classic parameters, there are other emissions on and outside the farm that different climate assessment tools may or may not include, or that are internationally discussed as potential parameters to include, such as peat soil, deforestation and carbon sequestration.

Results from Arla's Climate Check in 2021 show that Danish Arla farmers on average emit 1.13 kg CO<sub>2</sub>e per 1 kg milk produced. The average of all Arla farmers was 1.15 kg CO<sub>2</sub>e per kg milk. These results include peat soil. Without peat soil the emissions would be seven percent less.

To bring emissions further down, 50 of Arla's farmers will be experimenting with the feed additive Bovaer®, which is set to reduce emissions by 30 percent. 10,000 Arla cows will be fed with Bovaer this year going up to 20,000 cows in 2023.

See also the Tour A1 article about Arla.



Photo: Claus Haagensen



Photo: Claus Haagensen



## Fresh milk and zero carbon footprint through world-leading research

A future with fresh milk and zero carbon footprint starts with innovative research in new methods and new technology. AU Foulum, narrowed down to the Department of Animal Science, and further down to the Danish Cattle Research Centre, is where leading research for a sustainable dairy industry takes off - with research within feed, milk and methane as key indicators.

Animal farming is one of the most important sources of GHG emissions. With a growing population globally, the production of products from animals will also grow. To reach global and European targets for a sustainable and greener future, we therefore need to focus on a reduction of the climate and environmental footprint from animal production.

The Danish dairy industry is already one of the most climate and environmentally efficient production systems in the world. Denmark is a large producer of milk and other dairy products on a global scale. The carbon footprint from our milk industry therefore plays a huge role in our national climate reporting.

One important factor is methane emission from animals. Enteric methane from fermentation in ruminants is the by far the most important source of agricultural GHG, accounting for about 37% of total GHG emissions from Danish agriculture.

The vision for the Department of Animal Science is to bring knowledge and solutions to sustainable animal production and human nutrition and health. This is done through thorough strategic and applicable research.

### Enjoy a deep insight into the cattle research centre

Scan the QR-code

Read more about the cattle research centre:  
[www.dkc-foulum.dk](http://www.dkc-foulum.dk)



© AU Foulum, Aarhus University



Results and new projects within feed, milk, and methane

### New facilities enhancing research for the demands of tomorrow

At the end of 2019 and into first quarter of 2020, the Danish Cattle Research Centre at AU Foulum built new facilities for their future feed, milk and methane research. The facilities are bringing the research work into the next steps for a sustainable and greener future.

#### Feeding value of pulp

AU researchers have studied the feeding value of pulp for cattle and the results look promising. Pulp is a fibre-rich by-product, emerging from the protein refining of grass-clover. The pulp can be ensiled and used as feed for cattle thus ensuring an improved resource efficiency of grass-clover and its positive effects on the environment and climate.

#### New feed additives for cattle

With the research projects NO-METHANE and Climate Feed, AU researchers want to develop new feed additives for cattle that can reduce their emission of the highly climate-incriminating methane. In NO-METHANE the work is based on combining three different agents, that together can reduce the methane-forming processes in the cow rumen without affecting the cows' productivity and health.

#### New feed additives for cattle

With the research projects NO-METHANE and Climate Feed, AU researchers want to develop new feed additives for cattle that can reduce their emission of the highly climate-incriminating methane. In NO-METHANE the work is based on combining three different agents that together can reduce the methane-forming processes in the cow rumen without affecting the cows' productivity and health, whereas in Climate Feed the work is based on bioactive components from macroalgae.

#### NEW FACILITIES

- 9,075 square meters production and test barns
- Open dairy barn with:
  - 96 stall beds with mattresses
  - RIC feeding stations
  - GreenFeeder system
  - Industrial 2x12 milking parlour
  - Technician basement
  - Eight separation boxes
  - New intensive barn
  - 20 specially designed single animal boxes
  - Four climate chambers
  - New Flex Barn
  - Large isolated section
  - Less isolated section
  - New feeding barn
  - Specially designed feed-mixer system
  - Separation milking system
  - Section wash
  - Reuse of wash water

## Family farm has 490 dairy cows with an average yield of 13,000 kg

In 1989, Solveig and Gunnar Forum bought the farm Sandagergård in the town of Skals north of Viborg. In 1997, they moved the farm out of town and established a new farm from scratch on an empty field. They built a house for themselves, and a dairy barn, storage barn, bunker silos, etc. They began with a traditional milking system, but when the new dairy barn was completed in 2008, they switched to a Lely automatic milking system. The robots have helped give the family and staff more flexible workdays, and they no longer need to arrive very early in the morning or stay until late in the afternoon to milk the cows. The eight milking robots take care of that chore.

Solveig and Gunnar Forum are committed to taking care of their employees, several of whom have gone on to establish their own dairy farms. In 2014 the couple were awarded a prize for agricultural work environment, Landbrugets Arbejds miljøpris, for their efforts to create a secure, instructive and enjoyable work environment. Besides a very informal tone and delegation of chores, the couple also stresses maintaining a sense of community on the farm, where everyone meets for a cup of morning coffee.

The dairy farm is focused on efficiency and health. The 490 dairy cows are housed in freestalls (cubicles) with sand and deliver almost 13,000 kg milk per cow per year to Arla. The cows are fed a TMR ration in a feed barrier and receive concentrate at the milking robot. They are fed home-grown grass silage, maize silage, and corn cob silage. Additional ingredients are purchased. All the cows are purebred Danish Holstein. Both sex-sorted semen and beef cattle semen are used so that only the best females are used for pure breeding. Crossbred calves and other bull calves are sent for fattening to a veal farmer.

430 hectares are farmed with grass, maize and cereals. The family has 40 hectares of grass in a particular lowland area. This land might be set aside to



*Asmus Forum, next generation at Sandagergaard*

help lower the farm's carbon footprint. The family views the climate agenda as an interesting development of the farm and is sure that technological developments will help reduce the climate footprint of dairy production. Until then, the family can help the climate by ensuring that their production is as efficient as possible.

The Forum family is currently in the process of changing generations, where the farm will be taken over by their son Asmus Forum and his partner Agnethe Mandrup Thomsen. The plan is to take over the farm with effect from 1 January 2023. Prior to that, they will build a new welfare barn for the empty cows, calving cows and cows that have recently calved.

"When we build the barn we will make room for solar panels that can be set up some time later, so that we can produce some of our own energy. It will also be a financially good solution," says Asmus Forum.

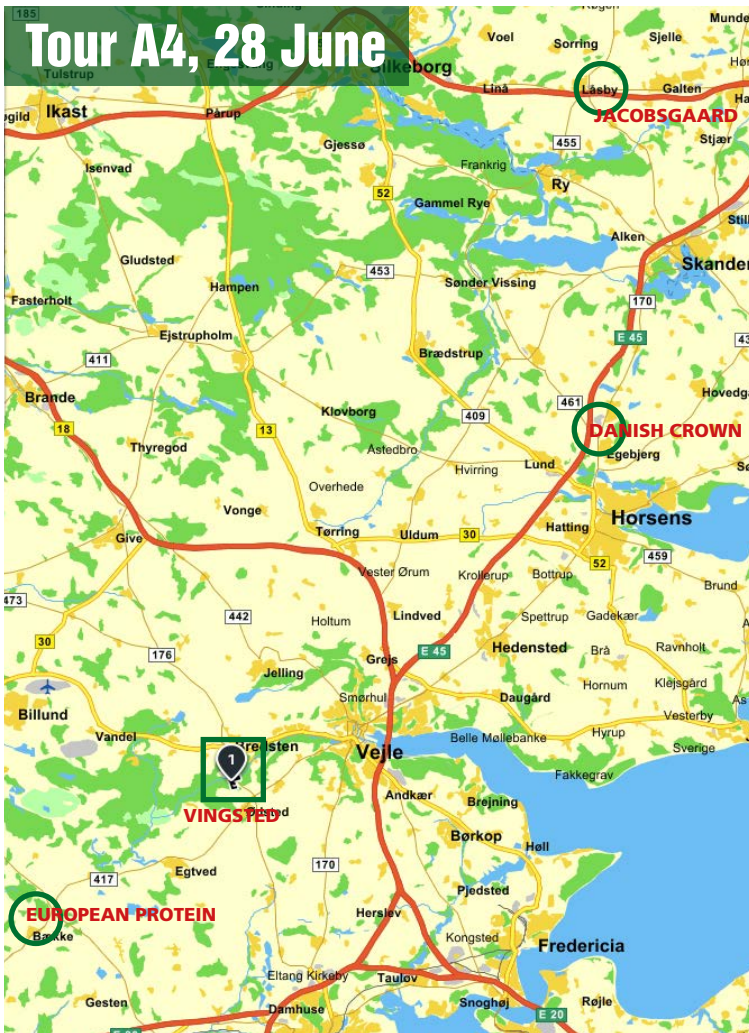
### FACTS:

- 490 Danish Holstein dairy cows
- The farm delivers approximately 6.2 million kg milk per year to Arla Foods AmbA.
- 430 hectares are farmed with grass, maize and cereals.
- The farm was built from scratch on an empty field in 1997 and new housing was built in 2008.
- There are five employees in addition to Solveig, Gunnar and Asmus Forum.

[www.facebook.com/sandagergaardholstein](https://www.facebook.com/sandagergaardholstein)



# Tour A4, 28 June



## Tour leaders:

**Henrik Lomholt Rasmussen,**  
freelance journalist

**Anne-Marie Glistrup,**  
journalist, communications officer,  
biographer



## More than 30 million Danish pigs

Denmark has 13.4 million pigs, and more than 30 million pigs are born annually. 70 per cent of them have their roots in semen from Hatting A/S, which houses boars from the DanBred breeding system. 16-17 million pigs end up at a Danish Crown abattoir at the age of five-six months. Most pork from Danish Crown is exported just as the Danish breeding system has increased its export of breeding genes. You will learn more on this tour that begins at Danish Crown's abattoir in Horsens. Danish Crown is one of the world's largest meat companies with divisions in Germany, England, Poland and Sweden. The company is cooperatively owned by Danish farmers. A tour of the abattoir – with 1,330 employees who slaughter up to 109,000 pigs per week – follows the pigs from arrival to the packaging plant.

### High focus on welfare

Second stop is at Jakobsgaard, a modern farm with an annual production of 38,000 finishers annually and a 70 per cent degree of self-sufficiency. With a high focus on welfare, Jakobsgaard has halved the weaner mortality from 3.5 per cent in 2012 to 1.8 per cent – well below the Danish average of 3.0 per cent.

At Jakobsgaard, you will also have a presentation of the boar station Hatting A/S. The company makes genetic progress by using genomic selection of all breeding candidates combined with technical expertise. This has given farmers with sows and own finishers considerable added value.

### Better protein, efficient and sustainable

The tour finishes at European Protein, a company producing fermented functional proteins from oil seed rape, soya beans, and algae. Fermentation benefit the gut flora, develops the immune system and increase digestibility which makes the products more resource-efficient and sustainable. European Protein invites us to a BBQ dinner.

As a participant, you must not have visited another pig farm or have been in contact with pigs within the 24 hours preceding the tour.

Photo: L&F



### TOUR A4, 28 JUNE – TIME AND PLACE

- 10.00:** Departure from Vingsted Skovvej 2, Bredsten
- 10.55:** Arrival at Danish Crown, Østbirkvej 2, Horsens
- 13.00:** Departure, lunch in the bus
- 13.45:** Arrival Jakobsgaard, Ersholtvej 17, Låsby
- 15.30:** Departure
- 17.00:** Arrival European Protein, Vorbassevej 12, Bække  
Programme together with tour A5, EP will host a BBQ dinner
- 21.00:** Departure
- 21.30:** Arrival Vingsted



## Danish Crown Horsens slaughters up to 109,000 pigs per week

Denmark has 13.4 million pigs, and more than 30 million pigs are born annually. While 70 per cent of them have their roots in semen from Hatting A/S boars in the DanBred breeding system, 16-17 million pigs end up at a Danish Crown abattoir at the age of five-six months. Most pork from Danish Crown is exported.

Our tour begins at Danish Crown's abattoir in Horsens. It is one of the world's largest meat companies with divisions in Germany, England, Poland, and Sweden. The company is cooperatively owned by Danish farmers. A tour of the abattoir – with 1,500 employees of 40 nationalities who at full capacity slaughter 109,000 pigs per week from Monday to Friday – follows the pigs from arrival to the packaging plant.

As one of the most modern abattoirs, all logistics are automated. Boning and shredding take place at the abattoir from where the fresh meat is shipped to Danish Crown's own or other processing plants.

Only pigs from Danish Crown's shareholders are slaughtered and 100 per cent of the animals is used.

Before Covid-19, some 20,000 visitors annually were taken on a tour of the abattoir.

You can find more information about Danish Crown in the Tour C3 article.

[www.danishcrown.com](http://www.danishcrown.com)



Photo: DC.



Photo: DC.

Photos: Danish Crown



# A green future with biogas



turning waste into value



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**nature  
energy**

## Tour A4, 28 June

### 38,000 piglets annually and open to new incentives

Jakobsgaard is a modern farm with an annual production of 38,000 finishers annually, 750 hectares – of which 486 hectares are leased – with rape, wheat, barley, and rye, and a 70 per cent degree of self-sufficiency.

John Jakobsen (35) – married to Trine and father of three children – is the fifth generation on Jakobsgaard and has three employees. His father Jørgen is still engaged in the operation after a generational change in 2019. With a high focus on welfare, John has halved his weaner mortality from 3.5 per cent in 2012 to 1.8 per cent – well below the Danish average of 3.0 per cent. Since 2012, the weaners have been delivered to Jakobsgaard from one supplier.

Together with the elevation of an existing silo, the investment in a new silo in 2020 increased the capacity to 7,450 tonnes. John buys grain from neighbours and receives minerals and soy on contracts. All feed is mixed on one of Jakobsgaard's four estates.

"It is time-demanding but we know the content and can react swiftly if irregularities occur," says John, who – as a minimum – has one check annually.

He has installed camera surveillance in the pens, has feed and water control in the troughs, and delivers manure to a local biogas plant.

"We are open to new incentives and have a clear expectation that there will be pig production in Denmark in the future. However, it will require a very efficient operation," John says.



*The Jacobsen family*

## Hatting

### Boar semen for Denmark - and the rest of the world

Boar semen and artificial insemination are important parts of the pig industry.

We are going to see how Hatting A/S in Hatting near Horsens works with boar semen. During our visit at Jacobsgaard, a representative from Hatting will tell us about the station and answer questions.

Hatting A/S is Europe's largest producer of boar semen. More than 70 per cent of all Danish pigs come from Hatting's boar semen. 1,100 pig breeders are customers, representing around 80 per cent of Danish sows. Hatting also exports semen.

Hatting A/S is owned by Vilomix Holding A/S, which in turn is owned by Danish Agro and Vestjyllands Andel. Hatting A/S is thereby part of the Danish Agro Group which consists of a large number of agribusinesses in Denmark and internationally.

Hatting A/S' main area is the production and sale of boar semen for artificial insemination. In addition, the company sells farm supplies mainly to pig farmers in Denmark and Northern Europe. Hatting has 73 different articles for sale just for insemination!

Hatting A/S' head office is located in Hatting near Horsens in Denmark, but there are departments across the whole country. Around 230 people are employed, and the company has an annual turnover of approximately 35 million euros. Boar semen accounts for around 2/3 of the sales and farm supplies 1/3. The wide range of farm supplies covers agricultural equipment and disinfectants for animal housing units as well as computers and household articles.

#### Semen experts

Hatting has delivered boar semen in Denmark for over 50 years and semen products from Hatting are exported through the genetics company DanBred to several countries in Europe and the rest of the world, some of it frozen.

Hatting's own fleet of vehicles delivers a little over four million semen doses along with farm supplies directly to some 1,100 pig producers in Denmark. Hatting's advisers also teach farmers how to carry out artificial insemination.

Hatting's goal is to have some of



*Is it boring to be a boar?*

the world's best boars at its disposal and cooperates with DanBred to achieve that. DanBred is one of the world's leading genetics companies. They work to find boars whose gene material can produce pigs with the qualities demanded by pig farmers, abattoirs and consumers. Development is an ongoing process with genomic selection of all breeding candidates combined with technical expertise.

The semen is intensively used and AI is actually 35 times more efficient than the natural method. In addition, the semen is more hygienic because vets examine the boars before they enter the system, and thereafter examine their semen. It takes 1 minute and 52 seconds to produce a semen dose. Hatting has ten boar stations in Denmark where the semen is produced.

Hatting offers a selection of three pure breeds: DanBred Duroc, which accounts for 86 per cent of the semen, DanBred Yorkshire, accounting for 7.8 per cent, and DanBred Landrace with 6.2 per cent.

#### FACTS:

Key figures for Hatting A/S (2020/2021)  
Turnover 256 m DKK  
Earnings 30 m DKK  
No. of semen doses 4.16 m  
Farm supplies 103 m DKK  
Deliveries per year 150,000  
No. of delivery cars 35  
No. of boars 2,700  
No. of employees 230

#### Contact

CEO: Per Granly Hansen,  
e-mail: pgh@hatting-as.dk  
Telephone: +45 2142 1490  
Address: Oensvej 48,  
8700 Horsens

[www.Hattingagro.dk](http://www.Hattingagro.dk)



*Yorkshire boars*



## Healthy animals and a healthy business go hand in hand



**European Protein produces fermented plant proteins as part of a sustainable solution to the most important challenges in animal production – and for food for human consumption.**

European Protein, a Danish family-owned company founded in 2011, works to promote the health of animals worldwide. The company believes that natural, sustainable, and fermented plant proteins are the key to improving animal health. Healthy animals make better use of the feed and translate it into performance measured on, for example, pork, chicken, egg, or milk production. In this manner, healthy animals and a healthy and sustainable business go hand in hand.

### Increased gut health

A healthy gut consists of a diverse gut microflora preventing disease. Fermented proteins increase the diversity of the gut significantly – improving the overall health of the host. European Protein and the University of Copenhagen have created a database connecting gut bacterial composition to the health and performance of pigs.

Knowing that a healthy gut is even more important for human beings, European Protein has founded FermFood, a food production company that will offer affordable, clean-label legume protein – free from e-numbers – to B2B

producers. The first products will be ready this summer.

### Health starts with the mother

Scientific trials demonstrate that sow feed containing fermented rapeseed and seaweed significantly improves the health of her piglets– also known as the impact of maternal feeding. Piglets from mothers fed with rapeseed and seaweed have better immune systems that prevent pathogenic bacteria from migrating from the intestines into the blood.



### Sustainable production

The production method, called lactic acid fermentation, requires very little energy and water. Liquids that are naturally occurring in products, such as seaweed, are used as an active part of the process.

By drying several plants at the same time, a low number of drying cycles is maintained. Since drying is the heaviest process in relation to CO<sub>2</sub> emissions, European Protein's process requires only one third of what other fermentation methods typically use in energy.

### Using seaweed for animal feed

European Protein uses byproducts like rapeseed meal and soybean meal along with local plant ingredients such as seaweed to obtain a protein rich and healthy complementary protein. Today, the company is the largest European producer of seaweed for feed.

By using as little energy and water as possible, European Protein can produce a new protein sustainable for the environment and climate that at the same time is economically sustainable for the animal farmer. European Protein has protein factories in Denmark, Ukraine and the US.

### Effects of European Protein's fermented plant proteins:

- Reduces feed use by up to 15 percent
- Increases milk production in sows
- Promotes the animal's gut intestinal health
- Supports antibiotic-free and zinc-free production
- Promotes the general well-being of animals
- Supports sustainable and ethical animal production
- Increases the absorption of phosphorus and nitrogen, reducing excretion in the manure.

#### European Protein

Vorbassevej 12

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Tel.: +45 7538 8040

E-mail: [info@europeanprotein.com](mailto:info@europeanprotein.com)

[www.europeanprotein.com](http://www.europeanprotein.com)

#### FermFood

[www.ferm-food.com](http://www.ferm-food.com)



# HOW FERMENTED PROTEIN BENEFIT THE SUSTAINABILITY OF PIG PRODUCTION



Jens Legarth, CEO

## PRODUCING TOMORROW'S SOLUTIONS TODAY

European Protein is a protein producer dedicated to feeding the world's animals more efficiently and sustainably.

Despite its modest size, the company is a frontrunner in gut health research and feeding solutions that improve gut health for animals. Working with highly recognized Universities, European Protein has established the world's first database of DNA-sequenced gut bacteria health data from commercial pig farms.

## MORE LOCAL PROTEINS AND INGREDIENTS

The portfolio consists of fermented seaweeds, rapeseed meal and soybean meal designed to target specific challenges on farm while producing zinc- and antibiotic-free. The focus on new proteins and sustainable ingredients has made European Protein the leading European producer of seaweeds for animal feed.

## PRODUCING MORE WITH LESS

The fermentation process acts like a pre-digestion of the feedstock using a blend of lactic acid bacteria. When the bacteria feed on the raw material, breakdown products like vitamins and fatty acids are released. The process increases the digestibility and the animal's utilization of protein, energy and minerals while adding health-promoting bioactive compounds – naturally.

## LOWER CARBON FOOTPRINT

Compared to traditional processes like liquid fermentation and extraction, lacto fermentation demands less water and energy. In addition, the waste product from the process is lactic acid – a valuable tasty acid - used today as an additive for animal feed or as natural conservation of feed or food. Fermentation can be used for many types of byproducts and plant protein. In line with the company's sustainability focus, CEO, Jens Legarth, envisions a future where fermentation factories are built through local partnerships, using local crops and by-products to serve local markets.

## HEALTH BENEFITS FROM LACTO FERMENTED FEED

In scientific papers, the fermented protein solutions have been validated for their effect on health and productivity on sows, piglets, broilers, and the latest on cows. The papers demonstrate an increase in diversity of the gut microflora directly linked to a resilient immune defence.

The benefits involve better milk production, increased numbers of antibodies in milk, more weaned piglets per sow, and fewer animals in need of special care.

## NEXT STEP: FEEDING THE WORLD

The next step involves plant protein for food. This summer European Proteins sister company FermFood is launching their new clean label lacto-fermented protein. The plant proteins have already been tested for its applicability in bread, minced plant protein and breakfast crunch with success.

## ABOUT EUROPEAN PROTEIN

- Producer of lacto-fermented protein for animal feed made from by-products and plant protein.
- Run by CEO Jens Legarth, who founded the company in 2011 together with his wife Lone Legarth.
- Runs fermentation factories in Denmark and through local partnerships in Ukraine and the US.
- Recently founded the company FermFood aiming to transfer the benefits of fermented feed to produce sustainable, clean-label proteins for food.

For more information visit [www.europeanprotein.com](http://www.europeanprotein.com)

Sign up for Tour A4 or A5 to hear more about fermented feed and food.

# BETTER HEALTH FOR ANIMALS AND BUSINESSES

Listen to the practical cases from pig producers using fermented feed for their sows and piglets. More cases can be found at [www.europeanprotein.com/cases/](http://www.europeanprotein.com/cases/)



## SAVING 100 KILOS OF FEED PER SOW

SCAN QR-CODE TO WATCH THE FILM WITH FARM MANAGER JONAS JUHL



## THREE PIGLETS MORE PER SOW A YEAR

SCAN QR-CODE TO WATCH THE FILM WITH FARM OWNER SØREN KJÆR POULSEN



Tomorrow's solutions... today

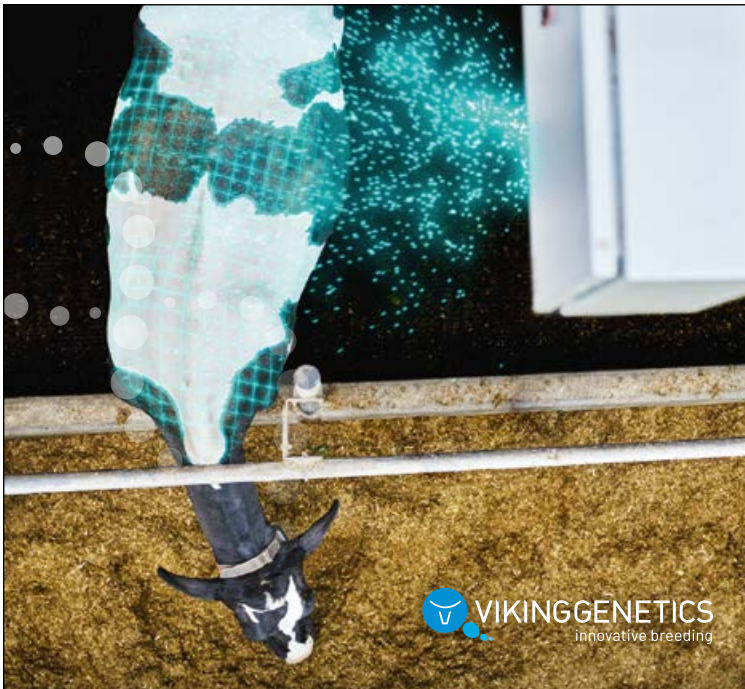


## Tour A5, 28 June



### TOUR A5, 28 JUNE – TIME AND PLACE

- 10.00:** Departure from Vingsted Skovvej 2, Bredsten
- 11.20:** Arrival BioRefine, Nybrovej 167, Janderup Vestjylland
- 12.45:** Departure, lunch in the bus
- 14.00:** Arrival KMC, Herningvej 60, Brande
- 16.00:** Departure
- 17.00:** Arrival European Protein, Vorbassevej 12, Bække  
Programme together with tour A4, EP will host a BBQ dinner
- 21-00:** Departure
- 21.30:** Arrival Vingsted



**Tour leaders:**  
**Stig Oddershede**, communications officer,  
DLF Seeds A/S

**Jacob Jensen**,  
journalist and communications officer,  
DLG



## New plant-based proteins

Food production is currently responsible for approximately 20 per cent of total global CO<sub>2</sub> emissions. Production, processing and consumer acceptance of plant protein with less impact on the climate will be an important element in future food production. This tour gives you the opportunity to study innovative plant-based protein production.

### Grass, clover and alfalfa replace soya in poultry and pig feed

BioRefine Denmark produces plant proteins based on forage grass, clover and alfalfa. The company aims to produce 7,000 tons of organic protein per year to replace soya in feed for monogastric animals such as poultry and pigs. The organic protein segment is currently the “sweet spot” for grass refinery as the commodity prices for organic soyameal are very high. With increasing demands for lower climate footprints, grass protein may offer a competitive alternative to conventional soyameal in the future.

### Potatoes - a growing industry for food and feed

KMC, which is one of the world's leading companies within potato-based ingredients for the food industry, has developed potato protein that is well suited for plant-based and ‘free-from’ food trends. KMC processes more than one million tons of starch potatoes. The proteins are refined food products with a desirable composition of essential amino acids.

KMC develops food ingredients with the aim of replacing as many animal ingredients as possible with potato-based ingredients. For example, modified potato starch can replace animal gelatin in wine gums, and potato-based ingredients can replace casein in cheese.

At the end of the day, we will join Tour A4 and visit European Protein, where we will have dinner. Read more on the previous page.



## Commercial production of grass-based protein for pigs, chickens and humans

BioRefine Denmark was officially inaugurated in 2021 and is jointly owned by the two wholesale companies DLG and Danish Agro, and the seed company DLF. It is strategically placed in an area with a high density of organic farmers. More than 6,000 ha of organic forage fields are placed close to the refinery, which secures a sufficient source for an annual production of 7,000 tons organic protein with more than 50 percent crude protein.

The organic protein segment is currently the “sweet spot” for grass refinery as the commodity prices of organic soymeal are very high. With increasing demands on lower climate footprints and a refinery process that is getting ever more efficient, grass protein may offer a competitive alternative even to conventional soymeal in the future and contribute to a more sustainable livestock production.

The process requires a firm harvesting schedule in which freshly cut forage needs to be processed within four-six hours. Both protein quantity and quality are highly dependent on conditions that do not heat or dehydrate the grass. At the same time, it is equally important to have a steady intake of material over the entire growth season. The solution is to utilise clover-grass mixtures containing varieties selected for high protein content, a broad heading window, and either white or red clover to fit with organic fertiliser management. Pure lucerne is included in the scheme to fill out any gaps that may arise between the regular four-five cuts.

### More products to create added value

Protein concentrate is not the only product coming out of the refinery. Grass pulp is one fraction that previously was shown to have even better forage quality than non-processed grass. However, because protein extraction effi-



Besides protein for fish, monogastric animals and humans, grass gives fibre and biogas.

ciency is now approaching 90 percent, there is almost nothing left but pure fibre in the pulp. With relatively few modifications, such material can be tailored for next generation textiles, cardboard, growth media, or climate-neutral insulation material. The last fraction, brown juice, is used for energy production in a nearby organic biogas plant.

### Feed tests look promising

DLG and animal nutrition scientists from Aarhus University have conducted a number of tests to investigate whether protein from organic grass and lucerne can replace some of the protein sources used in current feed products. The results show no significant differences in growth between pigs fed standard compound feeds and those fed compounds containing green proteins. The results confirm the potential for adding green proteins to tomorrow's feed products, and to offering a climate-efficient product that enables farmers to use feed with a greener profile.

### Vision to be self-sufficient with organic feed protein

“It is our priority to cover the need for organic protein in Denmark. Furthermore, we are focusing on developing green protein for human consumption. It is our ambition to refine one fourth of the protein for human nutrition. The Danish agricultural sector has tremendous potential for producing protein locally, both for animal feed and human food. The technology we use at BioRefine can be implemented in many other regions worldwide,” says Vagn Hundebøll, CEO of BioRefine Denmark A/S.

#### FACTS:

- BioRefine Denmark A/S, Nybrovej 167, 6851 Janderup Vestj.
- Telephone: +45 7525 8622, E-mail: nybro@biorefine.dk, Web: www.biorefine.dk
- Annual production: 7,000 t green protein from 3,000 ha clover-grass and lucerne
- 50 t fresh material is processed per hour



CEO Vagn Hundebøll



## Growing starch potatoes is a win-win situation for the economy and climate

KMC is a cooperative owned by Danish starch potato farmers. For more than 80 years, KMC has been growing, developing, and producing potato-based ingredients for the global food industry – serving more than 80 countries across the globe.

When growing and processing potatoes, all parts of the potato can be used. Potato starch is an important food and feed ingredient and potato protein has a high nutritional value. In addition, growing potatoes has a low carbon footprint.

### KMC was circular before the concept even existed

The KMC circular business model is, in fact, not just good business. Due to the long growing season and low climate footprint of the potato, it is one of the Danish crops that emits the least CO<sub>2</sub>. It is a win-win situation for both the economy and the environment.

As Jesper Burgaard, CEO at KMC says, “Our contribution to the climate agenda is mainly our product range. We offer many products that can replace animal ingredients with potato-based ingredients in our customers’ food products. Our innovation department is the main driver for the future. We have introduced potato protein – a plant-based product. That aspect of the company enables us to offer the right solutions for the future.”

Greater transparency in relation to ingredients and climate footprints are expected in the near future. KMC therefore aims to enable its customers to limit their CO<sub>2</sub> emissions.

At KMC, the potato is processed into potato protein and starch that can be used in various cheese applications, confectionery, and emulsions. The by-product potato pulp is used as a feed ingredient for ruminants. Potato protein is a complete protein that contains all the essential amino acids. This contributes to its high nutritional value and makes it a suitable ingredient in meat alternatives. As an ingredient, potato starch is unique due to its neutral taste properties and white colour. This makes it useful in a wide range of foods without causing off-taste and discoloration.



For the cheese sector, KMC produces modified potato starch that can be used as an ingredient in cheese alternatives, such as pizza topping, white cheese, spreadable cheese, and hard cheese – all with customised functionalities, meltability and structure.

In addition, KMC produces potato starch applicable in the candy industry, for use in the production of wine gum, liquorice, pastilles, and chewy candy. The aim is to develop products with a desirable texture and taste. By using potato as a raw material, KMC provides products for the cheese and candy industries that are plant-based, gluten-free and non-allergenic. This enables KMC to address a wide customer and consumer segment.

KMC aims to replace 39,000 tons of animal proteins with plant-based alternatives in selected food systems in 2024/25.

### Responsibility towards the climate promotes plant-based food production

KMC’s mission is to be the natural first choice as a supplier of value-adding potato-based ingredients – in both the domestic and foreign markets. The company’s vision is to integrate sustainability into everything it does. KMC is well on its way, but there is still room for improvement.

By utilising all the good properties of the potato, KMC creates an attractive business model that leaves a minimal carbon footprint and is protective of humans and the environment.

#### FACTS:

- KMC, Herningvej 60, DK-7330 Brande
- Telephone: +45 9642 5555, E-mail: [kmc@kmc.dk](mailto:kmc@kmc.dk), Web: [www.kmc.dk](http://www.kmc.dk)
- Established in 1933, 250 employees, owned by Danish potato growers
- Net revenue 2020/21: 2.1 bn DKK
- 94 per cent of the production is exported to more than 80 countries.



# Tour B1, 30 June



## Tour leaders:

**Jørgen Lund Christiansen**, journalist, organiser of 40 study tours to six continents, participant in 20 IFAJ congresses, columnist



## Mogens Nielsen,

former coach, project manager and managing director with communications responsibilities

## 600,000 t green ammonia from PtX

HØST PtX Esbjerg is a leading Danish Power-to-X project under development, deploying large-scale industrial use of electrolysis technology on a gigawatt-level to produce ammonia. Powered entirely by renewables, HØST PtX Esbjerg will produce green ammonia for use in fertilisers and fuels, contributing to the long-term sustainability of agriculture and shipping. Power-to-X (PtX) is a next generation renewable energy and storage technology which allows storage of electric energy by converting it into hydrogen and further into other energy forms.

Upon completion, HØST PtX Esbjerg will be among the first gigawatt-scale PtX facilities in Europe, producing approx. 600,000 t of green ammonia annually. Excess heat from the plant will be used for emission-free district heating of approx. 15,000 households. The project is managed by Copenhagen Infrastructure Partners (CIP). CIP specialises in energy infrastructure investments and is among the largest fund managers globally within renewables. Established in Denmark in 2012, the company has seen considerable growth, and today CIP manages eight funds totaling a value of 16 bn euros. HØST is Danish for 'harvest.'

## HOLMAGER - Run by famers for farmers

En route from Esbjerg to Herning we will visit a farm cooperating with Danish Agro, a farm supply coop established I 1901. The coop is owned by 9,000 Danish farmers who are served from 60 branches across the country. Today, Danish Agro is an international business with daughter companies in a number of countries, mainly in Northern Europe. The 2021 turnover reaches 5.3 billion euros. The core business areas are feed, premixes, fertilisers, plant protection, seeds, and energy – with a focus on the green agenda.

## National animal fair and ag leaders

Thursday 30 June is the opening day of the national animal fair Landsskuet in Herning. All five groups will arrive during the afternoon and have individual time. At the end of the day Martin Merrild, former president of the Danish Agriculture & Food Council and former mink farmer, will tell us about events and feelings when the government suddenly decided to kill not only 16 million mink but the whole industry.

Before a BBQ dinner, we will also meet Merrild's successor Søren Søndergaard, who will give a talk based on the congress theme, see page 31, and answer questions.

### TOUR B1, 30 JUNE – TIME AND PLACE

- 08.00:** Departure Vingsted Skovvej 2, Bredsten
- 09.15:** Arrival SAGRO, John Tranesvej 25, 6705 Esbjerg Ø
- 10.45:** Departure
- 12.00:** Arrival Holmager 6, 6900 Ringkøbing, lunch in the field
- 13.45:** Departure
- 14.45:** Arrival at the animal fair Landsskuet, Kaj Zartovsvej 19, 7400 Herning

### Programme for all five groups

- 16.30:** Time for a cup of coffee or tea
- 17.00:** Martin Merrild
- 17.30:** Søren Søndergaard
- 19.00:** BBQ dinner
- 20.30:** Departure
- 21.30:** Arrival Vingsted  
Late midsummer bonfire and a pint



Martin Merrild (left) and Søren Søndergaard



## Explore the Danish strongholds

The Danish agriculture and food cluster is well-known worldwide for its strongholds in areas like quality and safety, sustainability, organic production, gastronomy, health, ingredients, innovative technology and the unique Danish way of collaborating.

Reach out and let us share know-how and experiences so we together can create the solutions of tomorrow.

**Food Nation** is a public-private partnership established by the Danish government and leading private organisations and companies. We create awareness of Denmark as a frontrunner within innovative, sustainable and effective food production and work as your gateway when you seek information about Danish food products and solutions.



Solutions of tomorrow  
By Denmark

Contact us and find  
information, cases and news at  
[www.foodnationdenmark.com](http://www.foodnationdenmark.com)

## Tour B1, 30 June

### Independent advice is an integral part of agriculture's success

When IFAJ last held its congress in Denmark in 1999, the then chairman of the Danish Agriculture & Food Council Peter Gæmelke was asked to explain what lay behind the success of Danish agriculture. He gave three main reasons:

**Self-ownership.** Owning it yourself, benefitting from the gains, and having responsibility for the losses provides motivation for optimisation.

**Cooperative movement.** Farmer-owned companies are responsible for 90-100% of the turnover of farm supplies and sales of farm products, including crops, milk and meat. The profits are split between reinvestment in the companies and dividends paid to the farmers.

**Independent advice.** Farmers' unions across the country are behind the regional consultancy services and Seges Innovation. They dispense advice about investment and management and disseminate knowledge about the latest research in food and agriculture independent of commercial interests.

SAGRO is among the largest consulting services owned and led by farmers. The company has four divisions, employs almost 500 people, and has a turnover of more than 100,000,000 DKK. SAGRO is a dynamic and market-oriented consultancy service. Independent advice is its flagship.

SAGRO is owned by the farmers' unions Holstebro Struer Landboforening, Herning-Ikast Landboforening, Jysk Landbrug, Sydvestjysk Landboforening, Familielandbruget VEST-Jylland and Grindstedegnens Familielandbrug. Its profits are channeled via these unions to the members, typically in the form of a reduced member's fee.



From left: Director of Accounting Palle Høj, Chief Financial Officer and Strategy Bjarke Poulsen, and CEO Torben Jensen

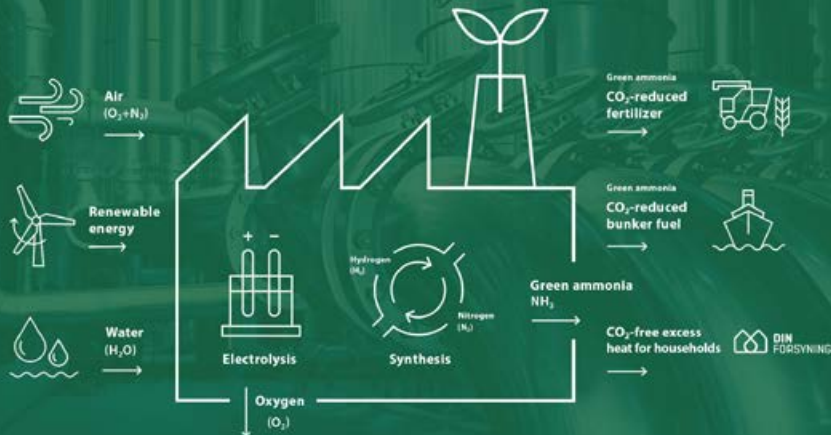
## Høst PtX Esbjerg – a bite of a 100 billion EUR CIP- investment in green energy before 2030

Copenhagen Infrastructure Partners (CIP) is the world's largest dedicated fund manager within greenfield renewable energy investments, and a leader in off-shore wind globally. At COP26, CIP announced the ambition and a roadmap for increasing and accelerating its role in delivering on the energy transition by deploying EUR 100 billion into green energy investments by 2030.

CIP manages nine funds and has approximately EUR 16 billion worth of assets under management focused on investments in energy infrastructure, including offshore wind, onshore wind, solar PV, biomass and energy-from-waste, transmission and distribution, reserve capacity and storage, and other energy assets like Power-to-X. Today, CIP's funds have approximately 100 international institutional investors from the Nordics, Continental Europe, the UK, Israel, Asia, Australia, and North America and multi-lateral organisations e.g. EIB. CIP has approximately 300 employees and offices in Copenhagen, London, Hamburg, Utrecht, New York, Tokyo, Singapore and Melbourne.

### HØST PtX Esbjerg

HØST PtX Esbjerg is a leading Danish Power-to-X project under development, deploying large-scale industrial use of electrolysis technology on a gigawatt level to produce ammonia. Powered entirely by renewables, HØST PtX Esbjerg will produce green ammonia for use in fertilisers and fuels, contributing to the long-term sustainability of agriculture and shipping.



The coming HØST PtX plant in Esbjerg

Power-to-X (PtX) is a next generation renewable energy and storage technology which allows storage of electric energy by converting it into hydrogen and further into other energy forms.

Upon completion, HØST PtX Esbjerg will be among the first gigawatt-scale PtX facilities in Europe, producing approximately 600,000 t of green ammonia annually. Excess heat from the plant will be used for emission-free district heating of approximately 15,000 households.

The project is managed by Copenhagen Infrastructure Partners (CIP). HØST is Danish for 'harvest.'

#### LOCATION

HØST PtX Esbjerg  
Nordre Dokkaj 1  
6700 Esbjerg

#### Contact information

Copenhagen Infrastructure Partners  
Karina Smedemark  
Communication officer (HØST PtX)  
ksm@cisc.dk



## Digital solutions for the modern farmer

The Danish Agro group is a Danish agribusiness coop owned by more than 8,000 Danish farmers. Its overall aim is to create value for farmers through a close partnership. Optimisation, efficiency and digital solutions are often key focus areas.

En route from Esbjerg to Herning we will visit Holmager Økologi Aps, a modern organic dairy farm that has strong collaboration with the Danish Agro group.

Holmager Økologi Aps has 2,000 hectares and 600 cows. It is run by Torben Dalsgaard and Lene Fløe Møller, who share a passion for animal welfare, sustainability and digital solutions. They are among the top performing organic farms in Denmark.

At the dairy farm you will be introduced to the production facilities and learn how the production is optimised using digital solutions in collaboration with Danish Agro. The focus is to ensure that animal welfare and sustainability go hand in hand. Digitalisation and data driven decisions are key.

You will be introduced to some of the digital solutions that Danish Agro offers farmers to create even more value in the fields.

There will be an introduction to the Fieldsense weather station system which was developed in collaboration with farmers and measures 8 param-



ters every 10 minutes. Today, more than 2,000 stations are based in fields in northern Europe and they are all wireless, solar powered and built to stay in the field year-round. Based on the data, a local weather forecast can be created for the farmer and help support decision making.

Danish Agro's SoilOptix solution is a one-of-a-kind premium topsoil analysis system that sets the standard for accuracy and precision in agriculture. Through gamma radiation-based sensor data that is combined with strategically located physical soil samples as calibration, the farmer is provided with soil mapping results in high resolution topsoil property layers. This also supports farmers in making everyday management decisions in their fields.

Based on SoilOptix soil analysis and weather data from FieldSense, detailed application maps can be made in Danish Agro's Cropline application system.

Holmager Økologi Aps.



Torben Bækdal Galsgaard og Lene Fløe Møller

### FACTS

**Established in 1901, merger of many coops**  
**8,000 members**

**Chairman:** Jørgen Mikkelsen

**CEO:** Henning Haahr

Active in 17 countries, mainly in northern Europe

**Core business areas:** feed, crops, seed, machinery, genetics, energy with a focus on the green agenda

**Expected turnover 2022:** 5.6 billion euros

**Equity:** 775 million euros

danishagro.com

## Biggest agricultural show in Northern Europe

Agricultural shows in Denmark have a long, historical tradition as gathering places, especially for cattle and horse breeders. In the past, agricultural shows were also important trading places, fairs where new breeding animals for the farm were purchased. Today, Danish agriculture only counts 63,000 directly employed, but as many as 125,000 jobs in Denmark are dependent on the food sector, and many cultivate rural life on smaller properties with horses, beef cattle, sheep and goats as parttime or hobby activities. Agricultural shows still serve as settings for the agricultural sector and for farmers' summer parties. The best animals and newest machinery are presented, and the joys of living and working in the countryside celebrated

### Northern Europe's largest agricultural exhibition

With more than 2,500 animals on display, Landsskuet (The National Show) in Herning in central Jutland is the largest animal show in Northern Europe. Every year around July 1st some 700 dairy cows from all over the country gather here for three days of ratings and competitions. The cattle exhibition has often served as a setting for world congresses for various breeds. The exhibition of breeding horses shows the variety of breeds popular in Denmark.

Landsskuet was founded in 1892 and circulated between different cities in Jutland for the first few years before it in 1966 got its permanent location in Herning. Due to the animal show and other large agricultural exhibitions such as the machine exhibition Agromek, Herning has grown to become Denmark's leading trade fair town with large exhibition halls next to the animal showground. Landsskuet has a large outdoor exhibition of agricultural machinery showing modern, high-tech machines and equipment used in Danish agriculture and constitutes a considerable part of agricultural exports.



### LANDSSKUET - THE AGRICULTURAL SHOW IN HERNING

- The animal show is organised by the association Landsskuet, which has many breeding associations as members, primarily cattle breeding associations.
- The joint cattle breeding association Viking is at the heart of organising the practical event.
- Special activities at The National Show: Denmark's Most Beautiful Dairy Cow Award, two large horse shows, 'maternity ward' with chickens, calves and piglets, a wildlife area - and pig racing!
- The showground area: 50,000 square meters
- Number of visitors: 50,000
- Contact: Mads Fjordside, mff@vikingdanmark.dk
- www.landsskuet.dk



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## The day an illegal order to cull was given

On 31 August 2020, Martin Merrild announced that he would not seek re-election at the Danish Agriculture & Food Council's annual meeting of delegates on the following 4 November. Two days prior to the meeting, Merrild tested positive for Covid-19 and had to stay at home on the day when he should have

presented his final chairman's report after eight years as chairman. He would have received thanks from the members for a deed well done during a period in which he was also chairman of COPA. As it turned out, 4 November was a day to be remembered in an even more dramatic way.

On his farm in West Jutland, Martin Merrild and his family grow broiler chickens – and also had a mink farm. On some mink farms, including Merrild's, animals infected with Covid-19 were found in early November 2020. At a meeting on 4 November with the prime minister at the head of the table, a decision was made to cull all of Denmark's approximately 12 million mink. And so they were – even though there was only legal authority to cull infected farms and farms in the vicinity. The question remaining is if the prime minister and the people around her were in good faith when the order was given. This has since been investigated by a commission that will deliver its report to the government and parliament in the weeks or even days leading up to the IFAJ 2022 congress.

Martin Merrild, who also has the title of mayor on his Curriculum Vitae, and who for 35 years has had a wide range of leadership positions in agricultural organisations, has promised to tell us about his career. He will also tell us about Wednesday, 4 November 2020 – about how it felt and still feels to have your life's work put down, literally speaking.

## BBQ dinner with the chairman of the

At the end of the day – before a BBQ dinner – we will all be together at the National Agricultural Show in Herning. Here we will meet Søren Søndergaard, chairman of the Danish Agriculture & Food Council. Søren Søndergaard will brief us on current issues and there will be time for Q & A.

The Danish Agriculture & Food Council represents the farming and food industries of Denmark including companies, and trade and farmer's associations.

The board is governed by two boards, representing the interests of two separate yet linked groups of members: a primary sector board, which handles the interests of primary producers, and a company board, which handles the interests of companies.

The two boards are closely connected through a joint board responsible for regulations, budgets, financial accounts and overall strategies.

The company board has three representatives on the primary sector board and vice versa. There is a common chairmanship that comprises three members from both sides. The chairmanship coordinates policies and activities in the organisation and ensures cohesion and balance in the work with agricultural issues.

Agriculture and food constitute Denmark's largest competence cluster, employing some 186,000 people and exporting agricultural products, food and equipment to an annual value of around 23 billion euros.

### The Council:

- Promotes the political influence of the agricultural and food sector
- Offers comprehensive and cost-effective services for its members

## Danish Agriculture & Food Council

- Implements research and development programmes regarding food safety and veterinary issues, animal health and productivity, animal welfare, and environment and energy

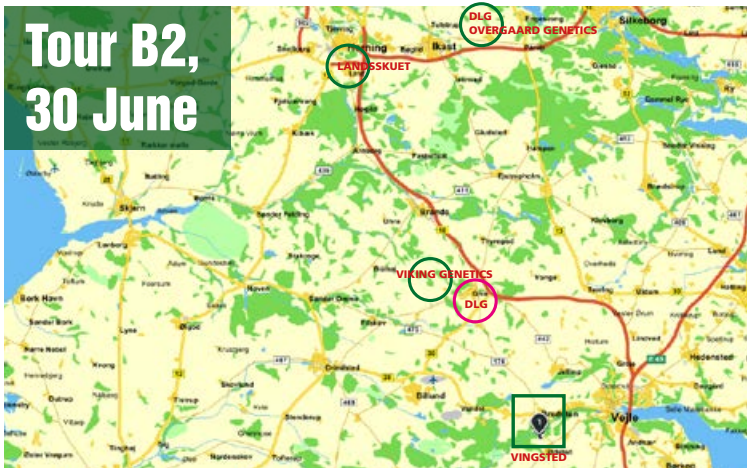
### The Council handles the professional interests of its members, including:

- Overall industrial policy and regulatory framework
- Research and innovation policy
- Trade and market policy and the EU Common Agricultural Policy (CAP)
- Animal welfare
- Food safety
- Environmental, energy and climate policies

Seges, the research and innovation centre for agriculture and the food industry in Denmark, is an important part of Danish agriculture and has its own independent board.



## Tour B2, 30 June



### TOUR B2, 30 JUNE - TIME AND PLACE

- 08.00:** Departure from Vingsted Skovvej 2, Bredsten
- 08.45:** Arrival at Øgelundvej 102, Give
- 10.45:** Departure
- 12.00:** Arrival at Hestlundvej 6, Bording. Field lunch
- 14.15:** Departure
- 14.45:** Arrival at the animal fair Landsskuet, Kaj Zartowsvej 19, Herning  
Same programme for all groups, see Tour B1.

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TO THE WORLDS  
BEST FARMERS

**29 November - 2 December 2022**  
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### Tour leaders:

**Erik Poulsen**, journalist and political adviser at the farmer's association Fjordland, twice awarded IFAJ's Star Prize for Broadcast as editor of LandTV

**Jacob Jensen**, communications consultant, DLG Group



## Friendly cows, more milk and cheaper meat

VikingGenetics was established in 2010. It is owned by 20,000 dairy farmers in Denmark, Sweden and Finland. VikingDenmark holds 50 per cent of the shares while Växa Sverige and Faba in Finland each own 25 per cent. R&D is a keystone of VikingGenetics. Sexed semen and genomic selection are applied. The newest project is CFIT, Cattle Feed Intake System. Data is collected throughout lactation without disturbing daily routines and the cows' natural behaviour.

CFIT uses 3D cameras and artificial intelligence to identify the cows, estimate their weight and quantify how much they eat. The cameras record the individual cow's distinct colour pattern and body shape. Feed consumption per animal is quantified 24/7-365. The goal is to have more environmentally friendly cows with higher milk and meat yields at a lower cost. We will see the system in action at Søren Rønbjerg's dairy farm near Give.

VikingGenetics sells 3.2 million doses of semen annually, including 2.1 million doses in the three home markets, and the rest through daughter companies in Australia, UK and Germany plus local distributors in 50 countries.



*CFIT monitors individual cow behaviour 24/7-365.*

## Danish coop, largest market in Germany

DLG Group is Denmark's largest agribusiness company with a revenue of 51 billion DKK. DLG was formed in 1969 by merging several regional coops, the first of which was founded in 1898. Today, DLG is present in 18 countries, primarily in Europe. Agribusiness, Premix & Nutrition, and Energy & Retail are the three core areas. With a revenue of 33 billion DKK, Germany is by far DLG's largest market. However, DLG is still owned by Danish farmers. En route to Give will be an interesting visit focusing on sustainability. From the Viking Genetics visit, we are going to Bording. Here DLG will present Plan Zero.



**After the above-mentioned visits we will continue to the annual farm fair Landsskuet in Herning. See page 130.**



## Three business areas: Food, energy and housing

### The plan called Zero will make DLG climate neutral by 2050

DLG was formed in 1969 by merging several regional coops, the first of which was founded in 1898. Today, DLG Group is one of Europe's largest agribusiness companies.

The group is owned by Danish farmers. DLG has headquarters at Aksen in Fredericia, Jutland.

With a turnover of almost eight billion euros, DLG is one of Denmark's largest companies measured by revenue. Approximately 70 per cent the revenue is generated in Germany. The group focuses on three business areas, namely food, energy and housing.

#### A sustainable future for generations to come

As one of Europe's leading agricultural and energy companies, DLG wants to contribute to creating a better and more sustainable future for generations to come. This requires action. The UN estimates that by 2050 the world's population will have passed 9.5 billion people. More food will have to be produced. This must be done in a sustainable way and with due care for the climate, environment, people, and Earth's natural resources.

In 2021, DLG Group presented its first sustainability plan called Zero. DLG wants to minimise its impact on the climate and environment so that by 2050 its operations are climate neutral. DLG also wants to help combat deforestation in South America by purchasing exclusively verified deforestation-free soya.

DLG wants to help create a better and more sustainable future for generations to come – also in agriculture. We must produce more from less, and develop and offer concrete solutions for lasting, positive change.



Ole and Per  
Overgaard



#### Climate neutral in 2050

Zero covers all business areas in the group. With regard to climate, the main goal is to reduce emissions from own activities by 50 per cent in 2030 and reach climate neutrality in 2050. DLG will allocate a great deal of focus on creating and offering products and solutions with a sustainable profile.

"If we are to achieve the goals of green transition in agriculture and becoming climate neutral by 2050, then it requires action. When I talk to my colleagues and partners in the industry, they demand concrete solutions that can help make a difference on the individual farm. That is why we have made a sustainability plan where, in addition to the group's climate goals, we focus sharply on how we can offer products and tools that make it easy for our customers to make climate or environmentally conscious choices," says Niels Dengsø Jensen, Chairman of the Board of DLG.

On this trip you will meet one of DLG's owners who works with sustainability every day. After that, Jakob Lave, director of Sustainable Business Development in DLG Group, will give a presentation about DLG Group and how the company acts in accordance with the sustainability agenda.



- DLG Group is one of the largest agribusiness companies in Europe
- In 2021 DLG Group had a turnover of EUR 7.93 billion
- Approximately 6600 employees – 1500 in Denmark
- Activities in 18 countries
- [www.dlg.dk](http://www.dlg.dk)

We will visit Overgaard Genetics, that has been owned by Ole Overgaard and Per Overgaard since 2006. Their company is a partner in Danish Genetics. Overgaard has a multiplier herd based on production of LY crosses (Landrace/Yorkshire). Overgaard's 250 hectares are leased to Egebjerg Agro, that cultivates 1,100 hectares. The herd comprises 1,100 Yorkshire sows on one farm. At weaning the animals are split between three farms. The annual production is 34,000 animals, of which 13,500 are LY gilts for sale, 2,000 YY gilts for own production, 3,000 for slaughter, and 13,500 castrates for sale for fattening.

## How to use feed more efficiently

Feed has an enormous impact not only on the farmer's bottom line but also on the environment and animal welfare.

Studies show that up to 88% of the variable costs on a dairy farm are related to feed. The Saved Feed Index in the Nordic Total Merit index (NTM) shows how efficiently a cow converts feed into milk.

Some cows have a good feed conversion rate while others less so because they use too much for maintenance instead of producing meat and milk.

Feed efficiency consists of two components in the Saved Feed Index.

Maintenance measures how much energy a cow uses due to her body size. Heavy cows use more energy than lighter ones at the same production level.

Metabolic efficiency measures how efficiently a cow converts feed energy to support milk production and other metabolic functions.

### Real-life data for individual cow feed intake

The Saved Feed Index is based on data from the Cattle Feed Intake System (CFIT), a state-of-the-art system where 3D cameras monitor and measure the feed intake in the cow's natural environment.

Throughout lactation the cameras collect data from cows in commercial herds without disturbing their daily routines and natural behaviour. VikingGenetics collects data for individual cow's lifetime feed intake that are comparable across breeds and herds.

### How does CFIT work?

CFIT uses the 3D cameras and artificial intelligence to identify the cows, estimate their weight, and quantify how much they eat.

Each cow is identified from pictures of its back using deep learning with artificial intelligence. The cameras record the cow's distinct colour pattern and body shape.

*What's going on? Read the article*



To quantify the amount of feed that each cow consumes during a day, the cameras take pictures of the surface of the feed – one picture before the cow goes to the feeding trough to eat, and one after she leaves.

By finding the difference between the two images, VikingGenetics can quantify the amount of feed that the cow consumes at every meal 24/7 year around.

### More environmentally friendly cows

On average, 6% of a cow's energy is spent on producing methane rather than milk. However, this varies from 2-12% depending on how efficient the cow converts feed to milk. So there is a lot to gain, including improvements in carbon footprint and sustainability.

The Saved Feed Index is an important tool for making day-to-day decision-making easier and more efficient for the farmer. To ensure resilient, productive and climate-friendly cows and bulls, it is necessary to have similar data on their feed intake.

### VIKINGGENETICS - BREEDING FOR HEALTH AND PERFORMANCE

VikingGenetics provides science-based bovine genetic products and solutions for progressive dairy and beef producers around the world by breeding healthy, efficient, and trouble-free cows.

In the Nordic countries, VikingGenetics has recorded the health and performance of VikingHolstein, VikingRed, VikingJersey, crossbreeds, and other breeds.

Farmers, veterinarians, hoof trimmers, and other industry experts have been committed to registering the performance of each cow. This effort has improved the health, reproduction, milk production, feed efficiency, and longevity for all breeds.

Today, VikingGenetics records over 800,000 cows annually in their Nordic data system, the most complete total merit index in the world. More than 90 per cent of the cows are part of the health and milk data recording.

#### Contact:

VikingGenetics  
Ebeltoftvej 16, Assentoft  
DK-8960 Randers SØ  
Tel +45 8795 9400  
Fax +45 8795 9401  
export@vikinggenetics.com  
vikinggenetics.com





**TOUR B3, 30 JUNE – TIME AND PLACE**

- 08.00:** Departure from Vingsted Skovvej 2, Bredsten
- 08.45:** Arrival Månsson, Grarupvej 15, Brande
- 10.45:** Lone Andersen, chairman of the COPA-COGECA working group for organic farming
- 11.15:** Lunch and discussion
- 11.45:** Departure
- 13.00:** Arrival Hestbjerg, Nr. Feldingvej 100, Holstebro
- 14.45:** Departure
- 15.30:** Arrival at the animal fair Landsskuet, Kaj Zartowsvej 19, Herning  
Same programme for all five groups, see tour B1.



DeSeed Denmark A/S  
Kirstinebjergvej 10, 5792 Årslev,  
Phone: +45 41 18 34 00  
E-mail: contact@DeSeed.dk

**DeSeed Denmark A/S is a Danish vegetable seed company. Our mission is to breed disease resistant spinach varieties with required agronomic/consumer traits for the global spinach seed market.**



**Tour leaders:**  
**Frederik Thalbitzer,**  
journalist at Landbrugsavisen, chairman of the Danish Association of Agricultural Journalists

**Isabelle Boyles Thalbitzer,**  
student, practical experience with organic farming

## Making a business out of organic farming

In Denmark, organic food production is built up around a state-controlled system, which covers the whole food chain. All organic farms, suppliers and organic food companies are subject to government inspections at least once a year as an add-on to other regulatory inspections. This ensures that organic food is produced in compliance with the EU’s organic regulations. In addition to living up to organic regulations, organic farmers and feed and food companies must comply with the legislation that applies to food production in general – in respect of the environment, nature, animal welfare, traceability, hygiene and food safety.

On this tour we will visit two organic farms with an extra focus on environment, animal welfare and marketing.

Månsson grows organic and conventional vegetables. The farm enterprise plants 45 million cash crops annually. Axel Månsson will relate how he gradually shifted the farm to becoming organic, which he believes is healthier for people and the environment.

In addition to vegetables, he also has a large production of organic eggs.

Axel Månsson has established a biogas plant that provides nutrients for the vegetable crops.



We will also meet Lone Andersen, a Danish organic farmer and chairwoman of the COPA-COGECA working group on organic agriculture in the EU. She will meet us and we will have a debate about organic legislation in the EU.

Another farmer we will visit is Bertel Hestbjerg who has one of Denmark’s largest organic pig farms. He is particularly keen on animal welfare and with his concept ‘poplar pigs’ improves animal welfare over and above the official minimum requirements.

He has also established his own marketing company in order to gain a position on the market for his brand.

The tour will end at the national farm animal fair Landsskuet with free time to see animals and machines followed by dinner and a debate with the chairman of the Danish Agriculture & Food Council.



**After the above-mentioned visits we will continue to the annual farm fair Landsskuet in Herning. See page 130.**

## A combination of eggs, vegetables and biogas ensures sustainability

Axel Månsson gradually shifted from conventional to organic farming because he believes it is healthier for people and the environment.

Axel Månsson was only 20 years old when he began farming with 16 cows, 40 finisher pigs and 300 layer hens on rented land. Today, 46 years later, he has almost 2,000 hectares, 231,000 layers and is Denmark's largest organic cash crop farmer. He sells 55 m vegetables annually in Denmark and abroad, including as far away as Italy and Greenland.

Today, the farm also includes a biogas plant, a farm shop with a café, a bakery, conference facilities and even a hotel!

The farm produces a wide range of vegetables. Lettuce, onions and cabbage are the most important of the crops that also include vegetables such as radish, celery, celeriac, and fennel.

The farm also produces cereals, faba beans and hemp seeds.

"Consumers are demanding more and more vegetable diversity. We want to meet that demand, although producing and handling such a wide range of niche products is demanding. We are also looking at the possibilities of increasing the supply of convenience products, where we already supply peeled, sliced and chopped onions," says Axel Månsson.

### Sustainable Development Goals

Today's ambitious farmer also aims to live up to the UN's Sustainable Development Goals in terms of water, climate, responsible production, energy, and rural life.

Soil fertility is of paramount importance for plant health. The hens occupy 100 hectares, which are planted with willow trees. The trees in the numerous hen forests are made into wood chips, which are composted, and the compost used to build up humus in the soil.

Catch crops bind nitrogen and carbon and contribute to helping the subsequent crop by surface composting in the spring.

### Gradual reorganisation

Of the 2,000 hectares, 1,400 are currently grown organically, and Axel Månsson is gradually converting more land to organic farming. Currently, 50 hectares are under conversion, but he will not convert more land than necessary to meet the demand for organic products. There must also be enough organic fertiliser available to nourish the crops. The goal is to become 100 percent organic.

One of the challenges in growing organic vegetables is insects. Large areas are therefore covered with spring fleece (agrotexile) to keep out insects.

### Biogas plant

One way to increase the proportion of organic land on the farm is to establish a biogas plant that can supply organic fertiliser to the fields. The plant produc-

es biogas for the natural gas network by converting poultry manure, clover grass, other animal manure, and other green biomasses into biogas. The various types of farming must be interconnected for it all to work.

In total, the biogas plant at Brande produces just over DKK 16 million cubic metres of green gas, with an input of 450,000 tons of biomass per year.

The poultry manure comes from his 231,000 organic White Italian hens that lay approximately 72 million eggs per year.

#### FACTS AXEL MÅNSSON A/S

- 2,000 hectares
- Vegetable production sold in Denmark and abroad
- 231,000 organic, laying hens - 72 million eggs per year
- [www.maanssons.dk](http://www.maanssons.dk)

Axel Månsson





## Lone Andersen – head of millions of European organic farmers

Lone Andersen is a Danish organic dairy farmer and chairwoman of the Organic Working Party at COPA-COGECA – in other words, head of European organic farmers. She is also chairwoman of the association of family farms in Denmark and vice-chairperson of the Danish Agriculture & Food Council.

Copa and Cogeca are the united voice of farmers and agri-cooperatives in the EU. They ensure that EU agriculture is sustainable, innovative, and competitive while guaranteeing food security for 500 million people throughout Europe.

Therefore, Lone Andersen is a very important voice with regards to organic politics in the EU since she represents millions of organic farmers and comments on EU legislation on organic issues.

“My vision is that farmers and green NGOs all over the world work together on finding solutions for our lovely Earth. I am sure that together we can increase biodiversity and sustainably produce enough food with net zero 2050 if we do it in a clever way and the politicians work efficiently for it,” Lone Andersen says.



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## Plant-based opportunities

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KMC delivers tailor made solutions to customers all over the world and we know that the potato can play an important role in the green transition plan.

[www.kmc.dk](http://www.kmc.dk)

 **KMC**  
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## Hestbjerg

### Wellness for organic pigs

Hestbjerg Økologi sells a large part of its finisher pigs under the label Poppelgris. The name is a guarantor of top-class animal welfare.

Bertel Hestbjerg and his wife Marianne run Denmark's largest organic pig farm, Hestbjerg Ecology. In 2017, they went solo with the brand Poppelgris.

The brand guarantees animal welfare over and above approved ecological requirements and is based on farrowing paddocks with poplar trees. Such paddocks provide a comfortable environment for sows and piglets regardless of the weather.

"The sows want shade, and especially in hot years we feel the benefits. The sows go from the waterhole into the shade to rest and seem less prone to get MMA (mastitis, metritis, agalactia), which, in the worst case, they can die of," says Bertel Hestbjerg.

"Since we wanted to market our pigs ourselves, it was obvious to choose poplars as an added value and market the animals as poplar pigs. In the long run, I think animal welfare can become a matter of 'license to produce'. It might even be our reason for being here in 10 years."

Meat from poplar pigs can be found in Coop's supermarkets and is also sold to Dansk Cater, which in turn sells to butchers and restaurants that want to brand themselves with ecology and animal welfare.

*Bertel Hestbjerg*



"Coop takes far from all our meat cuts. Since we wanted to market more pigs and more cuts from each pig, we needed to develop an additional brand. This became Bertel's Pig," he says.

The latest initiative to increase revenue is the online shop Måltidsboxen.

Måltidsboxen delivers ready-made dishes across the country to people who do not want to spend much time on cooking. You can also buy meat in a virtual butcher shop and have it delivered with these boxes.

"It gives us a platform for new cuts of fresh meat and partially processed meat products that we think we were missing," Bertel Hestbjerg says.

Today, customers focus on sustainability, animal welfare, carbon footprint, and biodiversity. These elements should therefore be integrated into the brands Hestbjerg delivers.

"For example, we have changed our breeding goals to reduce mortality. Piglet mortality has dropped from 28 to 20 percent, and sow mortality from 10 to 3.5 percent. That's a good story," he explains.

The pigs also receive roughage such as organic root vegetables.

"I get 30 tons of sorted root vegetables a week during the eight coldest months. When the crop farmer uses manure from our fields it contributes to recycling in a way that everyone can understand," he says.

During the four warmest months, the silage is supplemented with fresh grass or maize.

Deep litter is delivered to biogas plants and turned into energy. Heather chips and compost in the wellness sections in the finisher units almost make it sound as if the pigs are going to the gym. That is good, but knowledge of it must also be passed on to consumers before they will pay extra for the products. This is Marianne Hestbjerg's responsibility.

#### FACTS HESTBJERG ECOLOGY:

- 1,500 sows at three locations
- 1,000 hectares
- 3 brands, Poppelgris, Bertel's gris, Måltidsboxen
- Sells through Organic Pork, which they co-own
- 520 pigs per week, 27,000 pigs annually
- (+ 5,000 pigs weaned at 10 weeks)
- 2.5 m kg meat
- Bertel (54), Marianne and four children: Malte (19), Sibille (16), Ida (25), and Lauge (24)
- 30 employees
- [www.hestbjerg.dk](http://www.hestbjerg.dk)

#### Wellness concept

- Trees in the farrowing paddocks
- Weaning at 10 weeks (23-31 kg)
- Rooting basins in the finisher houses provide occupation
- Root vegetable roughage





## Tour B4, 30 June

### TOUR B4, 30 JUNE – TIME AND PLACE

- 08.00:** Departure Vingsted Skovvej 2, Bredsten
  - 09 45:** Arrival Halgårdsvej 4, Holstebro
  - 12.15:** Lunch in the field
  - 14.00:** Departure
  - 15.00:** Arrival at the animal fair Landsskuet, Kaj Zartovsvej 19, 7400 Herning
- Same programme for all five groups, see tour B1



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**Tour leaders:**  
**Niels Damsgaard Hansen,**  
 freelance journalist,  
 former editor-in-chief at FBG Medier

**Hanne Gregersen,**  
 freelance journalist



## Comparison between growing systems in an extensive project with large test plots

GRObund is the name of a unique project funded by Syngenta and led by Seges, the Danish Agriculture & Food Council's center of knowledge. The project studies and compares practical issues with regard to three growing systems: 1) conventional cropping (with ploughing), 2) reduced tillage, and 3) Conservation Agriculture (CA).

This is a project of unprecedented scope with a setup that has never before been used in Denmark.

Each of the three host farms has 36 five-hectare test plots, says project leader Annette V. Vestergaard, national adviser at Seges. The test plots have three different treatments in each of the three different growing systems, and four repeats in order to achieve the best statistic confidence. The time scale of the project must be sufficient to illustrate differences between the systems in the same test plots over the whole project's life.

The farmers and their advisers are in charge of managing the plots. They choose everything, including varieties, spraying and fertilisation. Everything is registered in addition to data regarding soil health, pests, beneficial insects, diseases, yields, machinery economics and, of course, overall economics.

The unique element is that systems and not individual factors will be compared to each other. Normally, individual factors, such as ploughing with harrowing and direct drilling are studied. In this project, so many factors are involved that it is the growing systems that are compared instead of the effects of individual factors, such as catch crops, tillage, or straw residue strategies.

*Annette V. Vestergaard (left) and Niels-Erik Halgaard (right) by the advanced camera with sensors that identify and register insects moving around within camera range in the test plots*



## Growing systems compared in large test plots

GRObund is the name of a unique project by Syngenta. The project studies and compares practical issues with regard to three growing systems:

- 1) conventional cropping (with ploughing)
- 2) reduced tillage
- 3) Conservation Agriculture (CA)

This is a project of unprecedented scope with a setup that has never before been used in Denmark.

Each of the three host farms has four replications of each treatment in big scale plots, with 3 harvest points in each, resulting in 36 subplots, in order to achieve the best statistic confidence. The time scale of the project must be sufficient to illustrate differences between the systems in the same test plots over the whole project's life.

The farmers and their advisers are in charge of managing the plots. They optimize every treatment, including varieties, spraying and fertilisation. Everything is registered in addition to data regarding soil health, pests, beneficial insects, diseases, yields, machinery economics and, of course, overall economics.

Normally, individual factors, such as ploughing with harrowing and direct drilling are studied. In this project, so many factors are involved that it is the growing systems that are compared instead of the effects of individual factors, such as catch crops, tillage, or straw residue strategies.

More info here: <https://www.syngentagroup.com/en/our-stories/new-project-explores-sustainable-farming-nordic-countries>

### Briefly about the host

Niels-Erik Halgaard farms 410 hectares. Since 2010 he has reduced his tillage. At first, he and his employee in the fields dropped ploughing and instead used harrowing. Gradually the harrow has been dropped for zero-till.

"Then I can spend more time on my couch," he says with a laugh.

Apart from this he is aware that the future of arable farming is not only high yields and low costs.



*Niels-Erik Halgaard holding the ground spear that he uses regularly to find out if there are any compacted layers in his soils.*



*Annette Vibeke Vestergaard in one of the many plots in which faba beans were planted in 2021*



*Part of one of the advanced cameras that photographs and registers all insects that move around in its zone of operation*

"I also strive for more biodiversity than I've already achieved by dropping the plough. And storing carbon in the soil that I may even be paid for is a goal," he stresses.

Until the Danish government in November 2020 ordered all Danish mink culled Niels-Erik Halgaard had around 8,000 mink on his farm. Today the facilities are still there exactly as they were. We will have time to photograph them and ask Niels-Erik a few questions on this topic. After this visit, at Landsskudet, we will meet Martin Merrild, former president of the Danish farmers and former mink farmer.

Niels-Erik Halgaard  
Halgaardvej 4, DK-7500 Holstebro  
E-mail nielserik@minkguf.dk. Mobile +45 40 62 54 10

### Briefly about Seges

Seges Innovation is a private, independent, non-profit research and development organisation and is the leading agricultural knowledge and innovation centre in Denmark. At Seges Innovation, we bridge the gap between research and practical farming. Our products and services are developed in partnership with farmers and customers. More at <https://en.seges.dk/About-us>

For more information on the project GRObund please contact:

Annette Vibeke Vestergaard, senior adviser  
E-mail avv@seges.dk  
Landline +45 87 40 53 60

### Briefly about Syngenta and GRObund

Unfortunately, you'll only find information in Danish at the website of Syngenta Nordic here:

<https://www.syngenta.dk/baeredygtighed/grobund>

For more information please contact

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Syngenta has started several projects in Europe to develop a more robust view of the value and opportunities of Soil Health. One of the projects is running in Denmark called GRObund.

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[www.syngenta.com](http://www.syngenta.com)

# Tour B5, 30 June



## TOUR B5, 30 JUNE – TIME AND PLACE

- 08.00:** Departure from Vingsted
  - 09.00:** Arrival Go-Gris, Sattrupvej 12, Østbirk
  - 10.30:** Departure
  - 12.00:** Arrival Fuglsang Malteri, Ribe Landevej 12, Haderslev
  - 12.45:** Lunch in the field, Q & A
  - 13.15:** Departure
  - 15.00:** Arrival at the animal fair Landsskuet, Kaj Zartovsvej 19, Herning
- Same programme for all five groups, see tour B1.

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**Tour leaders:**  
**Stig Oddershede**, communications manager, DLF Seeds A/S



**Aage Krogsdam**, journalist, globetrotter, participant in more than 25 IFAJ congresses, chairman of the IFAJ Congress organising committee in Denmark in 1999

## Community outreach, malt, beer and whisky

### Go-gris walks the extra mile

Danish farmers currently employ less than three per cent of the Danish workforce. More than 60 per cent of the Danish landscape is farmland. Agricultural employers must know how to communicate with the outside world. The three owners behind the farm Go-gris near Horsens are very aware of the necessity of community outreach. They walk the extra mile to create good relationships with their neighbors and others who are interested in modern agriculture. The owners have an informative website and post fun facts and useful news on Facebook, and open the doors to their farm for kindergartens, schools and other groups. The farm includes 980 ha arable land with grass seed, cereals and canola. 1,000 sows deliver 32,000 piglets for sale to other farms.

### Biggest malt producer in the world's biggest malt-exporting country

15 per cent of the Danish agricultural area is used for barley malt and Denmark is one of the world's biggest exporters of this essential ingredient for beer and whisky production. The exports equal 16 percent of the total European production. The Sophus Fuglsang Export-Maltfabrik A/S in Haderslev is the largest malting operation in Denmark. In 2017, the family-owned company became certified as a producer of organic malt and also produces whisky malt for distilleries. The Danish coastal climate provides ideal conditions for producing malt of the highest quality. The malt factory exports about 75% of its annual production of 150,000 tons.

This tour will also take us to the National Agricultural Show 2022 (Landsskuet) in Herning in the afternoon, where the other tours will join us for the rest of the day's programme. You can read more on page 130 of this pamphlet.

Making malt



Visitors at Open Farm Day





## B5 Go-Gris

### Multi-cultural staff at large pig farm

The pig farm Go-Gris I/S in Østbirk by Horsens is good at retaining their staff. So says Martin Mogensen, one of the three owners of the farm that comprises 1000 sows in a full-line production, feed production for own use and for the neighbouring farm, 975 cultivated hectares, and a machine pool – and nine employees from various countries.

“The management comprises three young farmers, my father and my uncle. The two latter are “senior strategists”, while I am responsible for the arable farming, our partner is responsible for the sows, and my brother is responsible for the feed production, early weaning sections, and finisher production,” explains Martin Mogensen.

On average, the staff remain with Go-Gris I/S for four years, but one has been employed for 25 years. They are quite international in that there are three Danes, three Rumanians, a Ukrainian, and two Poles.

#### Youth contact

“When we began in 2008, our goal was to have regular contact with the agricultural colleges and be visible on Facebook, in order to appear attractive.”

Go-Gris I/S hosts trainee visits from Bygholm Agricultural College, so there are regularly trainees in the pig houses for three days at a time.

“We can thus show what we can offer and size up the trainees and select some of them instead of placing an ad.”

#### Visibility

Besides being visible at the agricultural colleges and on Facebook, the company hosts an Open Farm Day, and participates in the Danish Agriculture & Food Council’s school service.

In addition to the public Facebook page, there is an internal page for the staff with information about what is happening on the farm.

“We have seven different farms. This means that employees do not necessarily meet each other. Everyone is informed about new hirings on the farm. The website is used for background knowledge. In addition, employees can log in and gain access to such things as productivity reports.”



From left Martin Mogensen, Mads Mogensen and Jonas Würtz Midtgaard

#### Everyone is equal

On a daily basis the employees are distributed between the three owners. They are often alone with one of the owners during the morning coffee break and thus regularly have conversations about how things are going.

“We have worked hard to ensure that nationality is less important than skills with regard to determining what job you will be doing,” says Martin Mogensen.

#### FACTS GO-GRIS I/S:

Owners: 41-year-old Martin Mogensen and Wanja Sørensen, who live on the farm Lillerup (administration) with their three children 37-year-old Mads and Sara Bie Mogensen who live on the farm Stenkjær (weaners) with their three children 35-year-old Jonas and Laila Würtz Midtgaard who live on the farm Evasminde (sows) with their three children  
The farms Rådvéd Nygaard (finisher), Ørskovgaard (weaners), and two more farms  
975 hectares are cultivated with grain, rape and seed grass  
The two brothers are educated in agricultural business at Bygholm Agricultural College.  
Turnover in 2020: approximately 30 m DKK

Number of sows: 996  
Slaughtered pigs annually: 29,000  
Weaned pigs per sow per year: 36  
Weaner mortality: 4%  
Heat control: 5 boars  
Weight gain per kg feed among finishers: 2.2  
Go-Gris mixes all its own feed  
Main feed ingredients: barley, wheat, rye, soybeans  
Crop rotation: wheat 280 ha, winter barley 72 ha, spring barley 350 ha, rye 60 ha, rape 45 ha, perennial ryegrass 56 ha, Italian ryegrass 80 ha  
All slurry is bio-treated before being spread in the field.



## From barley fields to tasty drinks

### Sophus Fuglsang Export-Maltfabrik A/S delivers high quality malt to breweries and distilleries all over the world.

Your favourite beer and whisky may have more in common than you would expect. There is a chance that they both get their smooth taste from Fuglsang malt made of selected Danish barley. The Fuglsang family has been living and working with malt and beer in Haderslev in South Jutland since Søren Christian Fuglsang established his brewery in 1865 and his malt house in 1879. He probably would not have imagined that it would become the largest malting facility in Denmark and one of Northern Europe's largest independent malting facilities – which it is today.

The Fuglsang Group management consists of three members of the 5th generation in the family business – the brothers Kim and Claes and their cousin Henning Fuglsang. They sold the family brewery in 2021, but the headquarter of Fuglsang's malting and a substantial part of its production is still situated in Haderslev, while the largest part of the malting takes place in Thisted in North Jutland.

### Time to grow

For the past many years, the international malt market has become dominated by fewer and fewer, and ever larger customers and suppliers. This made the Fuglsang management consider an expansion of the business, and in 2006 the perfect match came up: The owners of Dragsbaek Maltfabrik in Thisted agreed to sell their malting facility to Sophus Fuglsang Export-Maltfabrik. Just like Fuglsang, Dragsbaek Maltfabrik was a family business; this made it easier for the employees to find similarities in corporate cultures, even though they are located in different parts of Jutland.

With the acquisition of Dragsbaek Maltfabrik, the Sophus Fuglsang Export-Maltfabrik has become Denmark's largest malt producer and a stable, well-positioned, independent export malting facility. Annually, Fuglsang turns 180,000 tons of carefully selected Danish barley into about 150,000 tons of organic and conventional Pilsen, Vienna, Pale Ale, and Munich malt which is sold to breweries in Denmark and abroad. Furthermore, Fuglsang has a demonstrated history of providing high quality distilling malt, exactly adapted to the clients' requirements, to whisky distilleries in Europe and the Far East.

### Energy efficiency

Malt production is energy-intensive; Fuglsang therefore reuses excess heat in all parts of the production process. Fuglsang's cogeneration plant produces electricity for the national grid, and hot water is used in the kilns for drying the malt. Local electricity is typically produced in a push-pull, where wind power is supplemented in periods with little or no wind.

For both factories, Fuglsang has also invested in electric heat pumps – currently the largest industrial heat pumps in Denmark. In Haderslev a furnace



Henning, Claes and Kim Fuglsang  
Photo: Flemming Effersøe

burns wood pellets mixed with the rejected barley fraction, consisting of barley grains thinner than 2.2 mm that thus offer only a calorific value and very little nutritional value.

The factory in Thisted also works closely with the local waste incineration that supplies waste heat to the malting facility in the summer, when households do not use heat. On an annual basis, up to 50% of the heat for drying malt originates from this local source of heat. It is supplemented with geothermal heat from beneath the fjord in Thisted.

It is expected that in Thisted the district heating access and the use of biogas from the Danish biogas grid will be expanded this year, thus contributing to even more energy efficient and eco-friendly everyday life at Fuglsang.



Sophus Fuglsang Export-Maltfabrik in Haderslev and Thisted produce in total approximately 150,000 tons of malt a year. With this amount of malt about 3 billion bottles of beer can be brewed. The photo shows one of the malt kilns in Thisted.  
Photo: Fuglsang



# Climate-neutral 2050



The Danish food industry has a vision to be climate-neutral by 2050. In close partnership with our members, we will show, an economic sustainable way to a climate neutral food production.

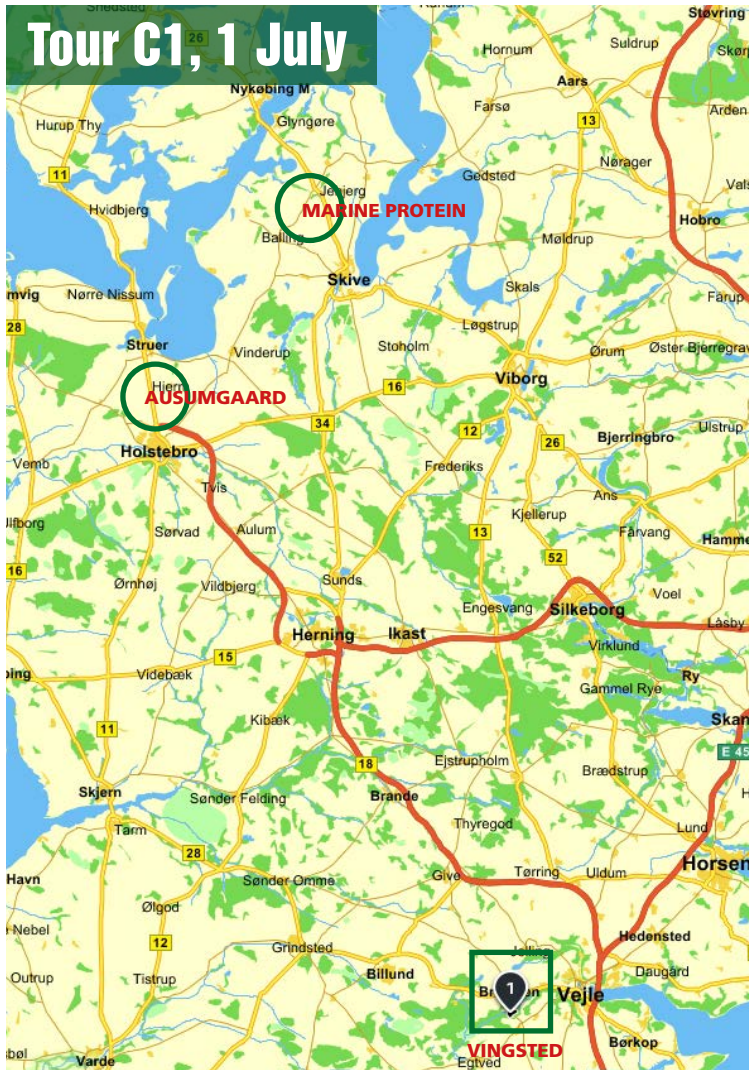
With 189.000 jobs created and an annual export amounting to 170 billion DKK, we represent a strong Danish food cluster committed to finding solutions to the world's climate challenges in collaboration with Denmark.

Danish Agriculture & Food Council





# Tour C1, 1 July



## Tour leaders:

**Jørgen Lund Christiansen**, journalist, organiser of 40 study tours to six continents, participant in 20 IFAJ congresses, columnist

**Anne-Marie Glistrup**, journalist, communications officer, biographer



## Protein for feed from starfish and grass

Vestjyllands Andel is a cooperative owned by more than 4,000 Danish farmers. The coop is a full-line supplier of quality products and counselling for the agricultural industry. One of the major focus points is to produce high quality feed for pigs, cattle, horses, etc.

Vestjyllands Andel constantly seeks to enhance its leading position when it comes to organic and sustainable solutions – in the industry as well as in society as a whole. The ambition is to play a major part in the current green transition of Danish agriculture by developing better solutions to improve quality while lowering environmental footprints.

### “Starfish plant”

Part of this green transition is taking place in GreenLab, where Vestjyllands Andel’s so-called “starfish plant” is located. By extracting high value protein from seawater sources, Vestjyllands Andel is playing an important role in minimising the import of protein from abroad.

### Grass protein

In cooperation with Seges, R&D and Ausumgaard, Vestjyllands Andel has developed a plant that can extract protein from grass and thus offer Danish pig and poultry producers a climate-friendly alternative to soya protein. The plant is the first of its kind in Denmark and secures a new production line of sustainable, locally produced, high-end protein feed.

### Biogas production

In addition to extraction of protein from grass, the plant at Ausumgaard contributes to the production of organic biogas by using by-products from its production to increase biogas production. At Vestjyllands Andel we consider biogas production a determining factor for the success of the green transition of Danish agriculture.

### TOUR C1, 1 JULY – TIME AND PLACE

- 11.30:** Departure from Vingsted Skovvej 2, Bredsten, lunch in the bus
- 13.30:** Arrival Marine Protein, Kåstrupvej, Spøttrup
- 15.15:** Departure
- 16.15:** Arrival at Ausumgaard, Holstebrovej 101, Hjerm
- 18.15:** Dinner at Ausumgaard
- 19.45:** Departure
- 21.30:** Arrival at Vingsted



Starfish meal





## Joint cooperation – practical innovation

Danish farmers established the first farm supply coop in 1883 with the aim of acquiring quality feed at a fair price. In the beginning of the 1900s there were over a thousand such associations that combined to create their own wholesale companies. Today, Vestjyllands Anandel (VA), which is a merger of many smaller coops, is Denmark's third largest farmer-owned farm supply company. Together with two large and some smaller coops, VA accounts for more than 90 percent of agriculture's turnover with regard to grains, feedstuffs, fertiliser, plant protection, and other farm supplies. VA purchases protein, fertiliser and more together with other coops through the mutual company DLA Agro.

Coop chairman Leif Hauberg and CEO Steen Bitsch say that VA not only has a focus on traditional farm supply, but also feels duty bound to assist its members with current and future tasks, such as those related to climate and the environment. You can read more about this on the following pages.

In addition to servicing farmers, VA sells pet and garden articles in its AgroLand specialty shops. VA is the main shareholder in Adival, which refines surplus and residual products from the food industry.



### FACTS ABOUT VESTJYLLANDS ANDEL

- Latest merger in 2002 and simultaneous takeover of parts of the Norsk Hydro-owned farm supplier KFK
- 4,000 members
- Chairman: Leif Hauberg – leha@vja.dk, telephone: +45 2320 6168
- Main office in Herning
- 26 branches, five of which have feed mills
- Approximately 250 employees
- CEO: Steen Bitsch – sbi@vja.dk, telephone: +45 2049 2175
- Turnover: 2.3 bn DKK
- Profit: 68 m DKK
- Distribution of proceeds to members: 40 m DKK
- Equity: 1 bn DKK
- www.vja.dk

## Starfish protein is also good for the environment

Vestjyllands Anandel's Danish Marine Protein opened in March 2019 in the industrial park Greenlab north of Skive. The task is to transform starfish into sustainable, high value products that can replace imported protein in agriculture. Since the beginning, the starfish have come from the Limfjord, which is connected to the sea and is salty.

Since then, new protein products, such as fish by-products, algae, shrimp shells, and grass, have seen the light of day. The wide range of raw materials creates a flexible product portfolio that contributes to the best possible utilisation of the factory's production capacity.

VA collaborates and exchanges knowledge about production of various Danish protein raw materials under the auspices of Danish Protein Innovation. The aim is to replace imported feed protein. The government gives financial support during the initial development and start phase. VA contributes to realisation of Danish Protein Innovation's goals with this investment.

Danish Marine Protein works exclusively with raw materials that are found in the local area. With the extraction of protein from starfish VA also helps alleviate the problem in mussel fishery that starfish eat substantial amounts of mussels. A good and healthy mussel population helps cleanse the water. Read more about this in the description of Tour C5.

### FACTS ABOUT DANISH MARINE PROTEIN

- Production: 1,300-1,500 tons protein annually. 55% protein
- Use: Pig and poultry feed
- Expansion: Currently being discussed
- Factory manager: Poul E. Vestergaard, pea@vja.dk, telephone: +45 2132 8424
- Located in GreenLab industrial park together with a number of other front runner companies, www.greenlab.dk, info@greenlab.dk



## Denmark's first grass protein plant

In September 2020 Denmark's first on-farm grass biorefinery was inaugurated at Ausumgaard, that is located between Holstebro and Struer and is owned by Maria and Kristian Lundgaard-Karlshøj.

Behind the project and the plant are 1) Vestjyllands Anandel, 2) Ausumgaard, 3) agriculture's R&D organisation Seges, and 4) R&D Engineering & Automation. The aim is to develop a product that is a local Danish alternative to imported soya protein and thus contribute to improving the carbon footprint and environmental impact of agriculture.

Production of grass protein on a large scale will provide more security of supply to the grain and feed sector and thereby livestock farms.

Early on in the Covid-19 crisis Vestjyllands Anandel experienced an abrupt closure of grain imports from China. VA could meet the challenge because, among other things, the coop had its own production at the starfish plant and a stock there. VA's CEO Steen Bitsch stresses the importance of not being wholly reliant on protein imports and says that VA strives to expand the portfolio of its grass protein plant.

The Danish climate is well suited for growing grass and clover, which have an amino acid composition that is favourable for pigs and complements other feed ingredients well. Work is being carried out on processing that can enable grass protein to be included in food and eaten directly by humans.

Expanding the area with grass has many benefits for sustainability because grass binds carbon in the soil and contributes to reducing nitrogen leaching. Up to twice as much protein can be harvested from a grass field as from a wheat field.

## Biogas: The climate effect should be credited the farmer

Vestjyllands Anandel's member and collaborative partner Ausumgaard has 700 hectares of organic farmland in addition to 150 hectares that it farms for others. Ausumgaard has its own biogas plant that processes slurry from a production of 500,000 broilers and a residue fraction from the grass protein plant. A straw furnace provides heating for the broiler house.

In collaboration with the Technical University of Denmark and Innovation Fund Denmark, Ausumgaard has established production of high value protein based on meal worms – and is on the whole interested in insect production. See the description of Tour D4. It takes 1.5 kg feed to produce one kg chicken meat and 1.3 kg "waste feed" to produce one kg high value meal worm protein.

Biogas production is climate-friendly and therefore gives carbon credits that can be bought and sold. VA's CEO Steen Bitsch says: "It is important for Vestjyllands Anandel to be part of the energy supply for Danish agriculture. We strive to ensure that the credits for green transition as far as possible go to whoever delivers them, i.e. the farmer. We have therefore founded Danish Bio Commodities. In addition to dealing in carbon credits, the company invests in biogas plants. So far, VA is co-owner of Grauballegaard Biogas, Sindal Biogas, Outrup Biogas and Sønderjysk Biogas.

Even though biogas plants contribute significantly to green energy production, there is still emission of CO<sub>2</sub>. Vestjyllands Anandel aims to establish an extraction facility that can store and refine surplus CO<sub>2</sub> to fuel, among other things.

### AUSUMGAARD BIOGAS PLANT

- Production is based on 75,000 tons of biomass.
- Production corresponds to heating of 2000 homes.
- [www.aausumgaard.dk](http://www.aausumgaard.dk)

### DANISH BIO COMMODITIES

- Contact: CEO Steen Bitsch, [sbi@vja.dk](mailto:sbi@vja.dk), telephone: + 45 2049 2175

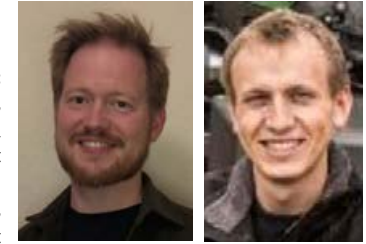
### FACTS ABOUT VESTJYLLANDS ANDEL

- Annual production: 1,500 tons final product with 52% protein based on 20,000 tons of grass
- Use: Pig and poultry feed
- Expansion: Ambition to build several grass protein plants in continuation of the biogas plant
- Daily management: Holger Thusholt Lauritsen, telephone: +45 6173 8061 [biogas@ausumgaard.dk](mailto:biogas@ausumgaard.dk)





## Tour C2, 1 July



**Tour leaders:**  
**Jacob Neergaard,**  
consultant at Danish Agriculture &  
Food Council, agronomist

**Morten Damsgaard,**  
freelance journalist

## Precision farming trip

### Visit to the research centre AU Foulum, Aarhus University

The programme will include a visit to the experimental fields at Aarhus University's research centre AU Foulum. Researchers from the university will present ongoing experiments with new technologies, such as use of satellites, drones and robots.

Furthermore, the researchers will explain the context of their research and the new technologies, including what farmers can expect to achieve in yield increase and other profits, and environmental benefits. It will be possible to visit experimental animal housing and learn about precision technologies in animal husbandry.

### Participating researchers

**Associate Professor René Gislum,**  
Department of Agroecology, Aarhus  
University

**Senior Adviser Michael Nørremark,**  
Department of Electrical and Computer  
Engineering, Aarhus University

**Professor Lene Juul Pedersen,**  
Department of Animal Science, Aarhus  
University



### Samson Agro – supplier of agricultural technology

Samson is an international company and supplier of agricultural machinery. It was originally founded in Denmark in 1943 but has since grown and today employs 225 people and sells a wide variety of slurry and manure technologies around the world.

The focus of this visit will be how environmental regulations in Europe, especially the stricter state regulations in Denmark, force suppliers like Samson to develop new and more sustainable technologies to cope with environmental requirements. This includes precision farming technologies for spreading of slurry and manure to comply with environmental regulations regarding ammonia evaporation, nitrate leaching and phosphorous limits.

This means Denmark is at the forefront of reducing environmental and climate impact from the livestock sector, and that we have several good cases of technology and know-how in this field. Our visit to Samson will provide insights into these technologies and show how the future of sustainable livestock farming might look like for countries with high densities of pig and dairy farming.

### TOUR C2, 1 JULY – TIME AND PLACE

- 11.30:** Departure from Vingsted Skovvej 2, Bredsten, lunch in the bus
- 13.30:** Arrival at Aarhus University, Blichers Allé 20, Foulum, Tjele
- 16.15:** Departure
- 16.50:** Arrival at Samson A/S, Vestermarksvej 25, Viborg  
Dinner hosted by Samson
- 19.40:** Departure
- 21.30:** Arrival Vingsted

DANISH  
GENETICS



### Balanced Breeding & Sustainability

The goal of the Danish Pig Genetics breeding programme is genetic progress through balanced breeding to increase the sustainability of pig production from an economic, environmental, and social perspective.

Danish Pig Genetics P/S · Lysholt Allé 10 · DK-7100 Vejle · www.danishgenetics.dk

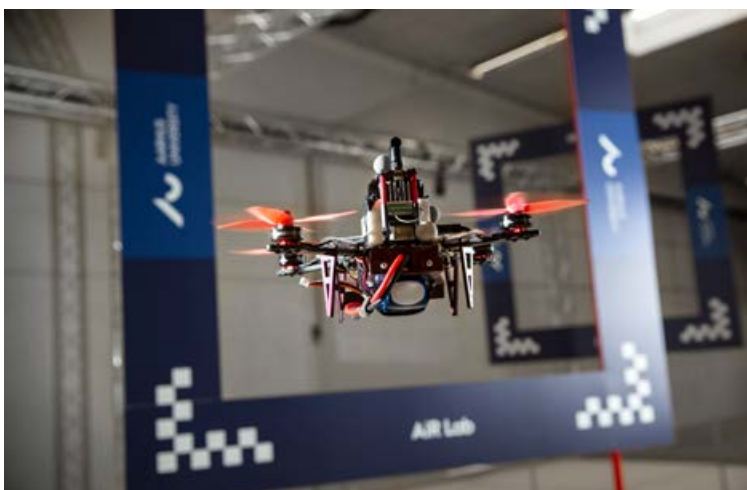


## Precision farming reduces the use of pesticides and fertiliser on 73 percent of Danish farmland

Precision farming is a hot topic in Denmark with several research projects and different companies involved. Precision farming is a broad term covering different aspects. In a Danish context it is generally associated with precision traffic – so called RTK GPS systems, section management of both fertiliser and pesticide applications, individually managed fertiliser application on field scale and the use of drones to spot weeds.

According to [Danish Statistics](#) (a government funded statistical service) many of the technologies listed above are increasingly becoming implemented in Danish farming. Last year, various precision technologies were used on a total of 73 per cent of Danish farmland, even though only 36 per cent of farms used precision technology. This clearly shows that precision technology has been widely adopted by large farms and less by small farms. It is also evident that implementation is widespread among younger farmers; 55 per cent of farmers under the age of 40 use precision technology whereas only 30-40 per cent of farmers older than 50 do so.

There is also a large variation as to what extent the various technologies are adopted. RTK-GPS system is the most widely adopted precision tool with 24 percent of farms using it, closely followed by section management of fertilisers and pesticide use.



*The drone enables the farmer to map the exact location of problematic weeds and transfer the information to the pesticide sprayer and order it only to use pesticides on spots with weeds.*



*Weeding machine robot developed to weed crops such as sugar beets and other row crops - with a great potential to reduce herbicide spraying*

The least widespread technologies are individually managed fertiliser application on field scale and drones to spot weeds.

The motivation to use precision technology in Denmark is the same as in other countries. Farmers can use pesticides and fertilisers more efficiently and improve general farm management. There is also another aspect.

Denmark has very strict environmental regulations regarding fertiliser, manure and use of pesticides. This means that there is an extra incentive to explore the possibilities of using new technologies to comply with environmental goals.

It is evident that precision application of fertilisers reduces the use of nitrogen. This has been [acknowledged by Danish authorities](#), so that farmers are permitted to use precision application of fertiliser as an alternative to cover crops. Danish farmers are currently obliged to grow cover crops on a certain percentage of their land, depending on geography. Precision technology can replace cover crops at a ratio of 11 hectares per 1 hectare cover crops.

The visit to Aarhus University will give insights into the newest research projects on precision farming in Denmark. Researchers from the university will present ongoing experiments with new technologies, such as the use of satellites and drones, and weeding robots.

It will also be possible to visit the experimental animal housing units and learn about precision technology in animal husbandry.

### Participating researchers

Associate Professor René Gislum, Department of Agroecology, Aarhus University

Senior Adviser Michael Nørremark, Department of Electrical and Computer Engineering, Aarhus University

Professor Lene Juul Pedersen, Department of Animal Science, Aarhus University



## Using the valuable nutrients in slurry

Denmark has over 20 years of experience in optimising valuable nutrients from slurry. Society's requirements are increasing and the 'license to produce' can depend on tomorrow's precision agriculture. Samson Agro is a leader in this area with regard to slurry management.

The Danish government passed a law in 2000 to limit evaporation of nutrients from slurry, forbidding application of livestock manure without ensuring proper absorption of the nutrients in the field.

From 1 January 2000 it was no longer allowed to use a slurry wagon without drip hose booms, trailing shoe booms or injectors. All manure and other materials such as compost and refuse-sludge compost must be managed in the field within seven hours after application with either a plough, harrow or similar agricultural equipment.

In addition to the Netherlands, Denmark was one of the first countries in the world to introduce such standards for controlling slurry or at least to discover the high nutrient value of slurry. This is one of the reasons that Denmark and the Netherlands make the most innovative agricultural equipment for handling slurry, and are very knowledgeable about the contents of slurry.

### The future slurry tanker

2019 was a very important year for Samson Agro. In the beginning of the year, the Danish company behind Samson Agro, Samson Group, bought the French slurry tanker manufacturer Pichon, including its factories in France and Poland. Samson Group is now one of the absolutely biggest manufacturers of slurry tankers and slurry tanker equipment. Samson now also has products that are targeted small farms all over Europe.

Later in 2019, at Agritechnica in Hannover, Germany, Samson received a medal for its new product - a nuclear magnetic resonance (NMR) sensor



system for precise real time measurements of nutrients in natural fertiliser. The sensor will be available through a mobile system integrated in the Samson PG II slurry tankers. In order to minimise environmental impact and optimise crop production, precise knowledge of the actual content of nitrogen, phosphorus, and potassium (NPK) in natural fertiliser is essential.

With the introduction of the Samson Agro NPK sensor it is now possible to plan and optimise the usage of natural fertiliser and take advantage of the full potential of smart farming applications in connection with slurry applications.

#### FACTS: SAMSON GROUP:

Samson Group is the mother company for Samson Agro's factory in Denmark and the disposition of slurry tankers in Denmark and Sweden: Samson Agrolize. The former company Pichon is integrated in Samson Agro Sasu and Samson Agro Sp.z.o.o with production in France and Poland.

The product line includes slurry tankers, muck and universal spreaders, booms, incorporators, injectors and slurry mixers.

#### FACTS: SAMSON GROUP IN NUMBERS:

- 520 employees in total
- Turnover 2020-2021: 100 million euros

#### FACTS: SAMSON AGRO IN VIBORG:

- 260 employees
- 25,000 m<sup>2</sup>
- 665 machines produced per year incl. implements
- Turnover: 49.6 million euros

[samson-agro.dk](http://samson-agro.dk)

## Tour C3, 1 July



### TOUR C3, 1 JULY – TIME AND PLACE

- 11.30:** Departure from Vingsted Skovvej 2, Bredsten
- 12.15:** Arrival at Organic Plant Protein, Årupvej 93, Hedensted, lunch
- 13.45:** Departure
- 14.50:** Ulvehøjgård, Ulvehøjvej 1, Brørup
- 16.30:** Departure
- 17.30:** Arrival at Kroghsminde, Tarpvej 15, Ølgod
- 18.45:** Dinner at Kroghsminde by Naturmælk, input from Paul Holmbeck
- 20.15:** Departure
- 21.30:** Arrival Vingsted

## Organic Plant Protein



## MEAT ANALOGUES

[www.OrganicPlantProtein.dk](http://www.OrganicPlantProtein.dk)

**Tour leaders:**  
**Frederik Thalbitzer**,  
journalist at Landbrugsavisen,  
chairman of the Danish Association  
of Agricultural Journalists

**Ulla Birk**,  
editor, Landbrugsmedierne



## Sustainability in organic crop and animal production

Our first stop will be at Organic Plant Protein, a relatively new company in Hedensted, where we will have a 100 per cent plant-based sustainable lunch. The founders are Fie Graugaard and Ulrich Kern-Hansen. It is their aim to reduce CO<sub>2</sub>-emissions and help enable production of enough food for the planet's growing population. We will see the facility and hear about their ideas for growing the company in the domestic Danish market as well as other markets.

Our next visit will be to Ingeborg and Brian Holm's farm in Lindknud. They have a focus on carbon storage. They have 250 hectares and 600 organic sows that wean 17,000 piglets outdoors to improve animal welfare and prevent diarrhoea. Poplars grow in the farrowing enclosures.

One of the ways to work with sustainability and climate change on a farm is to produce energy. Our third host will be dairy farmer Jens Krogh near Ølgod. He has wind turbines and a biogas plant on his farm. He is also chairman of the cooperative dairy Naturmælk and is knowledgeable with regard to marketing organic products.

Organic farmers strive to find holistic solutions to challenges such as global warming, declining biodiversity and animal welfare. Over three decades, the Danish government has created optimal conditions for nurturing organic innovation and growth. Strong and trusting collaboration across the public and private sectors has provided a solid foundation for the organic growth adventure. Stakeholders from across the value chain, from farmer to consumer, have all helped to develop a market-driven sector where nature, animal welfare and sustainability are prime considerations.

One person that has had great influence on Danish organics is Paul Holmbeck, retired from Organic Denmark. He is originally from the USA and will give a talk about 'Political and market mobilisation driving the organic breakthrough — The Danish Model'.

*Fie Graugaard and Ulrich Kern-Hansen*

*Jens Krogh*

*Brian Holm*





## Organic Plant Protein produces plant-based protein corresponding to 400,000 meals daily

Fie Graugaard and Ulrich Kern-Hansen dropped a large pig production and now produce organic plant proteins for a growing market.

Fie Graugaard and Ulrich Kern-Hansen produced organic pigs on a large scale, but now the pigs have been sold and the money spent on establishing the company Organic Plant Protein, which makes plant proteins that replace meat in food. Today, their view of free-range pigs is completely different.

“You can see how much they are destroying the earth. There must be far fewer domestic animals because then there would be enough food for everyone, because less space would be needed for feed. At the same time, there could be more space for nature. I also think it gives less risk of pandemics,” says Ulrich Kern-Hansen.

They aim to actively contribute to reducing meat consumption and give organic products a central role in the green transition. The factory they have built produces organic plant protein that can replace meat in the diet. Adding it to food makes it more similar to what people are accustomed to eating, including nutritionally.

The distinctive feature of Organic Plant Proteins is that the products are organic.

“The big companies work with conventional products. The investors and big players have not yet understood that the green transition is not just about CO<sub>2</sub> and climate. Climate is only one of the UN’s 17 Sustainable Development Goals (SDGs). We can contribute to five of the goals because we are organic, namely clean drinking water, high biodiversity, enough food, and fertile soil.”

This is at the expense of high yields, but Ulrich Kern Hansen believes that conventional use of fertilisers and pesticides is at the expense of the soil’s humus content.

“We risk impairing soil fertility in the long run. Pesticides are a problem in



*In the production hall*

relation to groundwater and biodiversity. The long-term solution is to reduce meat production so that there is no need for large areas dedicated to feed. Then there will be room for more sustainable production methods, such as organics, where the yields are a little smaller,” he says.

The protein product is made from peas and broad beans and can be used to make burgers, pizza, pasta Bolognese and many other well-known dishes.

“It is healthier, cheaper, gluten-free and without E-numbers, and has a low carbon footprint,” he says.

“In the product we call Plant Mate, which can replace meat 1 to 1, the carbon footprint is 0.93 kg CO<sub>2</sub> per kg prepared product. Pork is at least three times as high and beef 30-150 times as high.

This is according to Mindful Food Solutions, which also does consulting for the University of Copenhagen.

When Organic Plant Protein runs at full capacity, it needs 4,000 tons of protein meal from peas and 800 tons from broad beans. 25 percent of the crop is protein flour, so 6,700 hectares of peas and 1,300 hectares of broad beans are required.

Ulrich Kern Hansen has high expectations for growth.

“There is a very large and developing global market for plant-based organic foods. Its development is supported by the UN’s SDGs and by the EU’s policy on growth in organic farming. Finally, there is a trend among young people towards eating organic plant protein, and we are pretty much the only ones on the market today.”

### FACTS

- The current factory in Hedensted has three production lines and 3-team shifts producing 4,800 tons of Plant Mate meat substitute (dry) per year. This corresponds to:
- 14,400 tons of hydrated Plant Mate
- 320,000 slaughter pigs (w/45 kg meat per pig)
- 400,000 meals a day
- <https://organicplantprotein.dk>

*Ulrich Kern Hansen will give organic plant products a central role in the green transition.*



## Trees are good for pigs and the environment

Animal welfare and low antibiotic consumption have paved the way for sales to the United States.

When consumers buy organic free range pigs, it is because they think the animals are better off than other pigs. Therefore, it is also the alpha and omega for Ingeborg and Brian Holm to focus on animal welfare. The farmer couple does this when weaning, for example. They move the sow and leave the piglets in the field.

“We move the sows into a new field with new grass all the time, so that the they farrow in a clean field without infectious agents. It is better for both the environment and animal welfare,” says Brian Holm.

The manure is distributed better than if the animals spend a longer time in the same fields. With uneven fertilisation the grain is over-fertilised in some places while it suffers where it gets too little.

At the same time, the couple has planted 20 hectares worth of trees in 85 hectares of fields.

“We love those trees, and so do the animals,” he says.

The trees stand in long rows at the end of the pastures. The sows prefer to root between the trees and rub against them. The sows also promote biodiversity. They leave manure under the trees, whose roots extend four metres to each side of the trees and can absorb the manure so there is less leaching .

Brian Holm points out that the trees can harvest more of the sun’s rays than the flat fields can.

“The solar energy is stored in the trees together with CO<sub>2</sub>, which we harvest and make into wood chips after a number of years. Then we spread the wood chips in the fields together with the pigs’ manure, which helps increase the soil’s fertility,” he says.



### Pigs exported to the United States

Brian and Ingeborg Holm sell the pigs to the coop company Friland, which is one of the producers supplying pork to the USA. This has required adaptation and extra control measures, but is a stable business.

The concept that Friland sells to buyers in the US is obvious for organic farmers to understand, he believes. For example, the buyers crave antibiotic-free animals.

“The challenge has been to document which animals have been given antibiotics and which have not,” says Brian Holm, who has also had to replace animal proteins such as fishmeal in the feed, and fit some of the houses differently so that they comply with American demands.

Fortunately, sales to the USA provide a supplement that covers the additional costs of adjusting to the overseas customer.

### Hens have been dropped

Ingeborg and Brian Holm have previously had 9,000 free range laying hens wandering around in a rich variety of trees such as quinces, blackcurrants, elderberries and many other species, whose growth extends over a large part of the year.

However, in light of the bird flu situation, the Holms decided to get rid of the birds. Bird flu has affected quite a few herds in Europe over the past year.

“The problem was that if our birds were infected with bird flu, it would not only affect our egg production, but also limit the sales of our pigs, which would be a major financial intervention. That is why we decided to quit the hens,” says Brian Holm.

#### FACTS:

- 600 organic sows
- 12,000 slaughter pigs on an annual basis
- 250 hectares
- 12 employees
- Delivers to Friland, antibiotic free for the US market
- Ingeborg and Brian Holm, iogb@mail.dk Mobile: +45 6167 8041



Brian Holm





## Joint cooperation - practical innovation

**Vestjyllands Andel** is owned by Danish farmers.

In joint cooperation we process grain and several locally produced proteins into high quality feed for pigs, cattle, horses etc.

We constantly seek to enhance our leading position, when it comes to organic and sustainable solutions. Aswell in our industry as in the society as a whole.

The main aim is to carry out our ideas in reality. That´s what we call **practical innovation**.



### Vestjyllands Andel

## Tour C3, 1 July

### Mr. Organic: ‘Political and market mobilisation driving the organic breakthrough—The Danish Model’

One person who has had great influence on Danish organics is Paul Holmbeck. He is originally from the USA and will tell us about ‘Political and market mobilisation driving the organic breakthrough — The Danish Model’.

As director and political director in Organic Denmark for 25 years, Paul Holmbeck is co-author of much of the Danish government’s organic policy, and a leading force in organic communication and partnerships with retail leaders.

Since 2020 Paul Holmbeck, now director in Holmbeck EcoConsult, has been advising leaders in governments, NGOs and the food industry around the world in organic policy development and organic market growth.

More info here: [www.paulholmbeck.com](http://www.paulholmbeck.com)



The Weyde family at Orkla Sæmdrift, Norway

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## Kroghsminde is a climate-friendly dairy farm



Milk and meat farmers are under increasing pressure due to the ruminants' natural emissions of the greenhouse gas methane. At Kroghsminde, organic dairy farmer Jens Krogh and his wife Lisbeth Arnbjerg take the climate issue seriously and optimise where possible.

Dairy cows emit greenhouse gases. Jens Krogh

knows all about it, and can state quite precisely how much his own production of milk, meat and grain affects the climate.

He has chosen to do something about the farm's carbon footprint to such a degree that the farm is now climate neutral on an overall basis. Jens Krogh has prepared climate action plans three times since 2012, and the measures he has chosen to implement have reduced emissions from his dairy production by approximately 40 per cent. He compensates for the rest by producing renewable energy from wind turbines and his own biogas plant.

"Agriculture must to a greater extent take responsibility for the climate. There is a lot you can do, even on a farm with cows. Our vision is a multi-functional, organic family farm that is known for delivering sustainable food production," says Jens Krogh.

### Naturmælk – a cooperative dairy

Jens Krogh is also chairman of the organic cooperative dairy Naturmælk. It was founded by organic farmers in 1994 based on the philosophy "We have not inherited the land from our fathers, but borrowed it from our children".

"The current 44 farmers, their families and farms, and Naturmælk still act with respect to the land at all stages of the value chain," says Jens Krogh.

For many years, Naturmælk's suppliers have aimed for greater self-sufficiency. All Naturmælk's suppliers sow forbs in their clover-grass fields. The forbs increase biodiversity in the pasture.

"The forbs also give the feed more flavour and we also think they affect the taste of the milk," he says.

Naturmælk is also ambitious with regard to animal welfare. The products are approved by the organisation 'Animal Protection Denmark' and achieve the highest obtainable three hearts in the authorities' animal welfare label. In order to strengthen unity between the farmers and development of their farms, the farmers meet in 'farm schools' where they discuss relevant topics. Animal welfare is always a focus point.

All Naturmælk farmers work with nature plans aimed at recreating, expand-



ing and maintaining nature on their farms. This is done through the creation of small oases, water holes and plantations.

Specifically, Naturmælk's members have decided that from the end of this year, their cows will not be fed imported soya.

Naturmælk has also decided on a strategy to reduce energy consumption by 25 per cent in 2025, and all members have committed themselves to creating further climate improvements and improving biodiversity every year.

### KROGHSMINDE

- 185 cows of mixed breed, 9,100 energy-corrected milk per cow per year, deep litter
- 380 ha of sandy soil with clover-grass, grain and legumes for feed and sale
- 31 km windbreak, 10 ha forest, 122 ha perennial grass
- Three employees
- Lisbeth Arnbjerg and Jens Krogh, web: [www.kroghsminde.dk](http://www.kroghsminde.dk), mail: [kroghsminde@mail.dk](mailto:kroghsminde@mail.dk)

### Climate action

- Heat recovery (milk cooling)
- Carbon sequestration in fences, forests and grasslands
- Own biogas plant and wind turbine - renewable energy
- Increased self-sufficiency in feed and only Danish feed
- Less transport
- More electricity, less diesel
- 100 percent green fields (catch crops)

### Natural milk

- Organic cooperative dairy with 44 members
- A total of 4,200 cows, 48 m kg milk
- Revenue 2021: DKK 370 m





**Danish Crown**

**Through  
generations  
Danish agriculture  
has set global  
standards for  
food production  
- now we will  
do it again.**

Danish Crown is owned by 5,600 Danish farmers.

For generations, we have jointly raised the global standards for food production.

Now we will do it again. We want to be one of the world's leading producers of sustainable meat and ensure that consumers World around the world have the opportunity to eat meat with a clear conscience.

This will be done by Danish Crown's owners, employees and a large number of partners working closely together

**2030 Target**

Reducing the climate footprint per kilo of Danish pork by 50%.

**2050 Vision**

Climate-neutral production of pork - from farm to fork.



to halve the climate footprint per kilo of Danish pork by 2030, and in 2050 the vision is for our pork to be produced climate-neutral from farm to fork.

We are already well on our way. Our latest and very comprehensive life cycle analysis carried out and validated by independent experts shows that the climate impact of producing one kilo of Danish pork in the period from 2005 to 2021 has been reduced by 30 percent.

[www.danishcrown.com](http://www.danishcrown.com)

# Tour C4, 1 July



## TOUR C4, 1 JULY – TIME AND PLACE

- 11.30:** Meeting in Vingsted with Danish Crown’s Vice President and Head of Communications, CSR & Public Affairs, Astrid Gade. Danish Crown will host lunch.
- 13.00** Departure
- 14.00** Arrival Riisagervej 4, Årre
- 15.15** Departure
- 17.00** Arrival Horsbjergvej 1, Them
- 18.30** Departure
- 18.45** Arrival Gothenborg, Gothenborgvej 3, Them, dinner
- 20.15** Departure
- 21.30** Arrival Vingsted



We spend every day making farmers' lives easier with innovative solutions and tailored services. We offer solutions for almost all activities in the cowshed. Whether it is automatic milking or feeding, every dairy farmer who uses our systems must be able to trust the process completely. Every day, all year long.

Lely.com



### Tour leaders:

**Birgitte Pedersen**, 15 years of experience in business development and branding in the food and agriculture value chain in Denmark and internationally

**Peter W. Mogensen**, journalist and editor at LandbrugsMedierne. Agricultural technician with cattle as a specialty



## Best-in-class beef production with a focus on economy, animal welfare and carbon footprint

This tour takes you behind the scenes of beef and veal production. You will see and hear more about how partners in the value chain are dealing with climate changes and other aspects of sustainability, how high ambitions affect farmers, and what farmers can do to meet the goals when they supply meat to the slaughterhouse and consumers - now and in the future.

The day starts with an insight into Danish Crown and its goal to become climate neutral by 2050 – and with a 50% reduction of emissions by 2030. You will hear about the role of the slaughterhouse in Holsted, what Danish Crown requests from the farmers, and how it supports them as key stakeholders in achieving sustainability in the future.

You will meet Christian Sørensen, a young farmer who produces 3,600 calves per year and has a strong focus on animal welfare, economy and carbon footprint. The farm is involved in a project where calf feed intake and methane emissions are followed and registered.

The last visit is to Skovgaard Butcher and Farm Shop in Them. Skovgaard has beef and dairy cattle as well as pigs. In 1997, the farm started processing and selling its own meat, with animal welfare, high quality and a great taste as key values.





## Danish Crown wants to be the challenger of the meat industry

Throughout its 135-year history, the cooperative Danish Crown has been a prominent player in Denmark's high-standard agricultural sector. Danish Crown is now one of Europe's top five beef producers.

In the last decade, growing concerns over climate change have put the sector in the spotlight. Livestock farming and other food production cause 15 per cent of human-induced greenhouse gas (GHG) emissions – 25 per cent in Denmark due to a large agricultural sector. Consumers are turning away from meat for this reason, and for concerns about animal welfare and their own health as urged by national dietary guidelines.

In June 2021, Danish Crown presented its new "Feeding the Future" strategy. Instead of continuing to hunt for growth by slaughtering more animals, the focus is now on reducing the carbon footprint of meat and using this as a foundation for increasing earnings on the group's products.

Feeding the Future marks an important step on the way to feeding the global population in a sustainable manner. The sharp focus on sustainability is the company's opportunity to become even more relevant to customers and consumers. 5,620 Danish farmers own Danish Crown. This ownership form enables the company to drive developments throughout the value chain from farm to fork.

Danish Crown is investing heavily in sustainability under its Feeding the Future strategy, as it is convinced that only by exercising leadership in this area, can it keep its customers, add value to commodity parts of the business, and guarantee the right to keep feeding the planet's population.



### Leading on the path to a sustainable future

With its initiatives in the Feeding the Future strategy, the goal for Danish Crown is to become climate neutral by 2050. The first milestone is a 50 per cent reduction of emissions by 2030.

One example is that over the last couple of years, Danish farmers have implemented a climate track, where each farmer sets his or her individual goals for sustainability.

Farmers send animals to slaughter in Holsted. The slaughterhouse is a proactive part of the value chain in reaching the overall ambitions. At Holsted, 97 per cent of the animal is used for food production, feed and other purposes, such as biogas, medication, manure and biofuels. The amount of biogas produced from residues is enough to compensate for the slaughterhouse's own energy consumption for heating.

With this holistic view from farm to fork, the journey has just begun. We anticipate many more efforts towards providing sustainable food in the future.

### DANISH CROWN AT A GLANCE

- Danish Crown is a cooperative that was established in 1887, when 500 farmers began collaborating.
- Today, Danish Crown has 5,620 owners, 4,200 of whom are beef and dairy farmers.
- Fresh and processed meat products are exported to more than 130 countries.
- Approx. 26,600 employees deliver high quality food every day. 330 people are employed at the slaughterhouse in Holsted.
- Turnover in 2020/2021 was DKK 58,287,000.000 - approx. EUR 7,770 m, 8 per cent of which is from beef and calf products.
- Every week 4,500 animals are slaughtered at Denmark's largest beef slaughterhouse in Holsted. 110 animals are processed per hour, which is approx. 500 animals more than at other production sites.
- Website: Danish Crown



## 25 dairy farmers deliver 4,000 quality calves to special fattening concept



Kristian Sørensen, owner of the farm Tranbjerg Østergaard by the town of Årre, is one of the farmers who sends his animals to Danish Crown's beef abattoir in Holsted. In 2010, Kristian Sørensen bought half of the farm from his father and in 2019 took over the other half.

The farm began with a production of 1,000 calves per year for Danish Crown. Since then, the owners have built a new barn and now deliver 4,000 calves annually to Danish Crown according to its concept Danish Calf, that sets certain standards with regard to slaughter weight, body shape and fat, among other things. 92 per cent of the calves meet the concept requirements.

Kristian and his father have bought former dairy farms. Until now, they have used them as heifer hotels where they manage the animals for other dairy farmers. The heifer hotel will be phased out in the coming year with the aim of establishing a production of fattening heifers that are dairy-beef cross-breeds. They will be sold according to Danish Crown's new concept Premium Heifers, where the goal is to produce red beef with a good taste. Once the production is up and running, they expect to slaughter 600 of these crossbred heifers per year. The heifers must be fed with a large portion of roughage and be slaughtered at 18-20 months of age.

Kristian Sørensen buys calves from 25 dairy farmers and makes no bones about setting certain standards to the suppliers. The dairy farmers must use sex-sorted semen – either to achieve a purebred heifer calf for dairy production, or a crossbred calf suitable for beef production.

Today, 40 per cent of the calves are crossbreeds between dairy and beef cattle. The proportion will be doubled within the coming year.

"I currently pay a bonus of 750 DKK for the best male beef calves in addition to the basic price of 550 DKK, so there is a clear economic incentive to use more beef cattle," says Kristian Sørensen.

The suppliers most often use the beef breed Belgian Blue, but increasingly there are crossbred calves whose fathers are Angus.

"The crossbred calves have a better feed efficiency than purebred dairy bull calves, so having more crossbreds and fewer purebreds benefits my bottom line and the climate," says Kristian Sørensen.

He has participated in the project Future Beef Cross, facilitated by the knowledge centre Seges, in which calf feed uptake is registered in special feed troughs. The feed uptake can then be compared to the calves' weight gain, thereby providing the research participants with knowledge about which calves and breeding combinations are most climate-friendly.

Kristian Sørensen grows some of the calf feed himself on the 600 hectares that are farmed. He grows cereals, rapeseed, maize and grass. On the main farm he feeds the calves rolled grain and buys a calf mix. On the other farms the crossbred heifers are fed roughage.

The calf production occupies four people, while 1,5 people are occupied with taking care of the heifers and 1,5 people with maintenance and field work.



### Facts

Tranbjerg Østergaard is owned by Kristian Sørensen.

The farm produces 4,000 calves for Danish Crown's calf concept Danish Calf per year.

A new production of crossbred heifers (dairy x beef) is in the making.

The expectation is to deliver approximately 600 heifers per year for slaughter at Danish Crown according to the concept Premium Heifers.

Approximately 600 hectares are farmed with cereals, rapeseed, maize and grass.

There are seven employees.



## Skovgaard Butcher and Farm Shop

*-where animal welfare, high quality and a unique taste meet*



*A world full of delicacies – great and-unique local Danish taste*

fork with animal welfare and top-level quality as guidelines.

### It starts with animal welfare

At Skovgaard, you will meet the dedicated and passionate owners Joan and Hans. Since 1997, they have delivered on their vision to give their customers a great taste experience. Together, they run a combined pig, dairy and beef farm. Lively and happy pigs roll in the mud and run around in the pastures. Dairy cows roam freely in an open and modern dairy barn with a robotic milking system.

### Modern food production facilities

Quickly our attention moves to the meat production site – the butcher and farm shop. We will curiously move into a world of great taste. We will get a closer look at and an impression of the processing and production of their own products and delicacies.

Dedicated butchers are responsible for everything from hook maturation to processing and production of products from the farms' own pig, beef and veal farm. One of the strongholds is that you are ensured full food safety and hygiene. No additives or growth promoters are used, and high animal welfare is at the heart of the production.

Local production and farm shops are becoming more popular in Denmark. Consumers request high quality local products.



*Organic farming at its best with a focus on animal welfare.*



“We want to give our customers an interesting experience and unique taste. When our farm shop is open – our farm is open,” say Hans Skovgaard and Joan Fjord Tabensen, owners of Skovgaard.

Nestled in the beautiful Danish countryside in central Jutland you will find the butcher and farm shop Skovgaard.

At Skovgaard, you will get a unique experience and taste of local Danish delicacies. The uniqueness at Skovgaard is the concept of thinking from farm to



*Joan Fjord Tabensen and Hans Skovgaard*

The meat is exclusively processed by highly competent and well-trained butchers in Skovgaard's own cutting room, cold room for maturation and sausage production facilities.

All products are aligned with and approved by the Danish Veterinary and Food Administration. The products are in accordance with the highest level of declaration and registration.

### A shop full of charm and atmosphere

Moving from the production facilities to the farm shop, we will see why and how the passion and concept is taken from farm to fork.

The cosy farm shop, located in a former cow barn, provides the framework. The interior is like an old grocery store. There is atmosphere and an essence of uniqueness where you can almost smell the taste. We will come to understand why the farm shop is so popular and why Danes will drive to get not only meat – but to live the experience. The taste of the meat only becomes more delicate.

The farm shop also offers products from other local farmers, such as lamb and chicken – and always under the same high level of quality and food safety control.

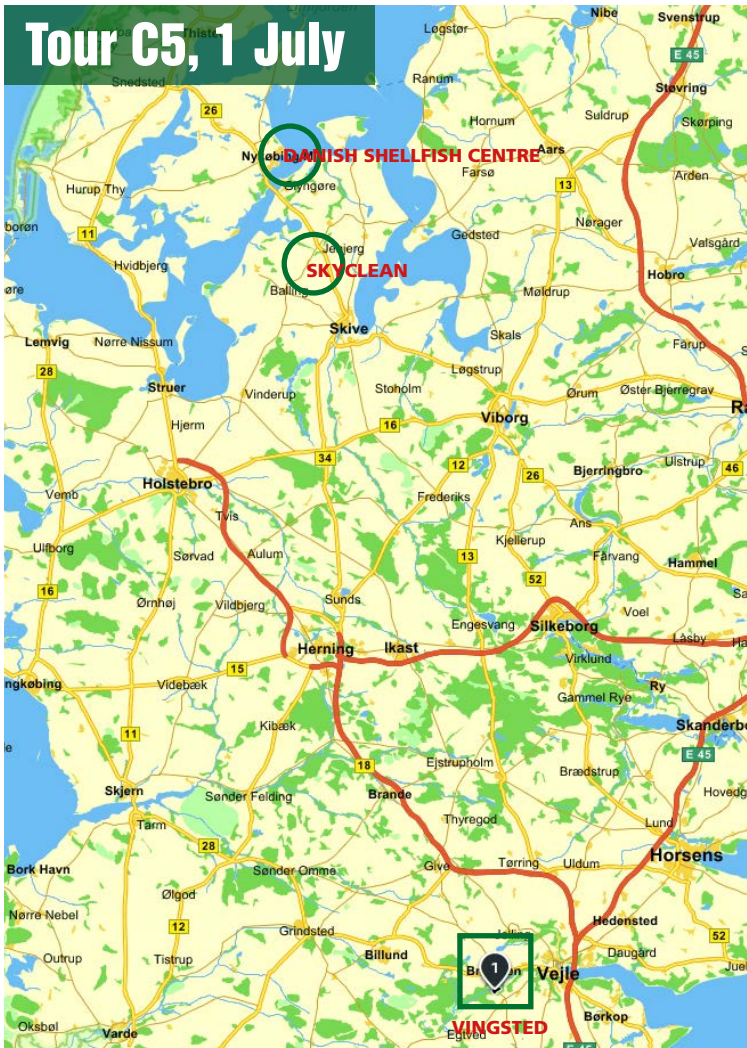
Skovgaard constantly evolves and new ideas come alive. The newest innovation is to combine the great taste with events.

### SKOVGAARD BUTCHER AND FARM SHOP

- Hans Skovgaard and Joan Fjord Tabensen sell meat from their own cattle and pig farm.
- The butcher has its own processing room for production of delicacies that are sold in the shop.
- 550 Danish Holstein dairy cows
- 700 free-range pigs
- The from-farm-to-fork concept and product sales from own farm began in 1997.
- Web: butik-skovgaard.dk



# Tour C5, 1 July



## Tour leaders

**Erik Poulsen**, journalist, political adviser at farmers association Fjordland, twice awarded IFAJ's star prize for broadcast journalism as editor at LandTV

**Henning Otte Hansen**, senior adviser, PhD, Department of Food and Resource Economics, University of Copenhagen



## From liability to climate asset

The Danish climate technology company Stiesdal is busy scaling up its SkyClean technology which, according to scientists, has the potential to cut emissions from Danish agriculture in half. SkyClean combines biofuel production with carbon capture and storage, using feedstocks from agricultural waste. The company will bring its latest SkyClean 2 MW test plant online in March 2022. The plant is located in the green business park GreenLab in Skive and will be ten times larger than the company's first generation SkyClean test facility inaugurated in August 2021.

The pyrolysis-based SkyClean technology was developed and tested by Stiesdal and researchers from the Technical University of Denmark and is now being fast-tracked by Stiesdal towards large scale commercialisation. Stiesdal is a new and fast-growing climate technology group. Apart from SkyClean, Stiesdal has activities in floating offshore wind, energy storage, and Power-to-X hydrogen production. Read more at [www.stiesdal.com](http://www.stiesdal.com).



*The new Stiesdal plant at GreenLab in Skive. Notice the biochar pellets, the leftover fraction from the production of carbon-neutral biofuel. The pellets have value as fertiliser. The coal will stay in the soil for hundreds of years.*

## Environment and delicacy

Denmark is surrounded by water. The strait Limfjorden, considered the world's best shellfish water, is being used to grow shellfish for water purification. Surplus nutrients from manure, industrial fertilisers and other sources reach the coastal waters and enable growth of algal blooms and oxygen deprivation.

We will visit Danish Shellfish Centre, part of DTU Aqua, National Institute of Aquatic Resources, which focuses on how shellfish can help improve water quality by acting as nature's own water filters. The more shellfish are grown, the cleaner the water becomes. We will get an introduction to aquacultural growth and harvesting methods of oysters, mussels and seaweed.



Oysters



Mussels

### TOUR C5, 1 JULY – TIME AND PLACE

- 11.30:** Departure from Vingsted Skovvej 2, Bredsten, lunch in the bus
- 14.15:** Arrival at Danish Shellfish Centre, Ørroddevej 80, Nykøbing Mors
- 15.30:** Departure
- 16.00:** Arrival at SkyClean, Næstildvej 10A, Spøttrup
- 18.00:** Sky Clean will host a dinner
- 19.30:** Departure
- 21.30:** Arrival in Vingsted



## Seafood in nutrient-rich fjord

Limfjord is Denmark's largest fjord with 1,492 square kilometres of water stretching from the North Sea to Kattegat, separating the northern part of Jutland from the rest of the European peninsula, which makes up a large part of Denmark's area.

The Limfjord is subdivided into smaller fjords with individual characteristics. The latest ice age shaped the local geology, leaving a catchment area to the Limfjord of approximately 7,600 square kilometres in a landscape with widely different soils: sand, clay, lime and humus.

Combined with varying water depths, currents and salt influx from the North Sea in particular, the fjord is unequally affected by the nutrients nitrogen and phosphorus from the catchment area's agriculture and wastewater from the cities.

For years Danish agriculture and authorities have strived to limit nutrient impact on the aquatic environment. Huge investments and much progress have been made, but not yet enough to comply with EU aquatic environment requirements. Especially the middle part of the Limfjord still suffers from oxygen depletion during the summer, affecting aquatic animal and plant life.

### Breeding oysters and seaweed for cows

DTU Aqua on the island Mors in the middle of the Limfjord plays an active role in the search for environmental solutions; it is a leading research centre specialised in oysters and mussels and often aims its projects at improving the aquatic environment and climate-friendly solutions.

Archaeological finds show that people in Jutland have eaten oysters from the fjord since the Stone Age. Today the Limfjord is home to a large population of the indigenous, flat European oyster, famed for its special taste. Throughout the continent the European oyster is threatened by overfishing, parasites and the invasive Pacific oyster, which has also come to Denmark.

At the Danish Shellfish Centre we will visit a newly opened hatchery, where attempts are made to breed oyster larvae from scratch. Research is also being carried out into the cultivation of the microalgae on which oysters feed. The centre also participates in experiments to find which seaweed species are best suited to be cultivated and harvested for cattle feed. Hopes are that by feeding cows seaweed from the fjord,



climate-damaging methane emissions from cows will be reduced by up to 80-90 per cent.

### Mussels in stockings and starfish in pig troughs

The Limfjord is also known for its mussels, which grow rapidly due to the many nutrients. The traditional mussel fishery, where mussels were scraped from the bottom of the fjord, proved damaging to the aquatic environment. At DTU Aqua mussels are bred on lines and in stockings to develop a gentler, more protective fishery.

Starfish are a threat to both oysters and mussels. For a double win starfish in the Limfjord are now being caught to be converted into protein-rich flour, an organic feed ingredient for pigs and chickens. They are caught with a gentle tool developed by DTU Aqua in collaboration with local mussel fishermen.

#### DTU AQUA

DTU Aqua is based in Nykøbing on Mors, the largest island in the middle of the Limfjord. DTU Aqua conducts research, advice and education at university level and contributes to innovation in sustainable utilisation and management of aquatic resources.

DTU Aqua also collaborates with private companies. The centre at Mors is also a dissemination and experience centre that focuses on the Limfjord's shellfish in an international context.

[skaldyrcenter.dk](http://skaldyrcenter.dk)  
[aqua.dtu.dk](http://aqua.dtu.dk)

# dlr·kredit



## DLR Kredit - a market leader in agricultural finance

DLR Kredit (DLR) is a Danish mortgage bank that is a market leader in agricultural finance in Denmark. Around one third of all farms in Denmark hold a mortgage loan from DLR.

For the past 60 years DLR has successfully financed structural transitions of the agricultural sector.

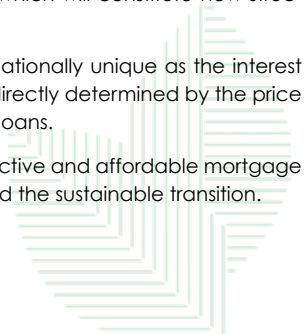
The structural transformations have turned the Danish agricultural sector into a highly competitive export sector, which is 'best in class' in terms of efficiency and environmental impact.

DLR will in the years to come be a key provider of necessary funds to facilitate the sustainable transition, which will constitute new structural changes for many farmers.

DLR's mortgage products are internationally unique as the interest rates on DLR's mortgage loans are directly determined by the price of specific bonds issued to fund the loans.

The direct connection results in attractive and affordable mortgage loans that benefit Danish farmers and the sustainable transition.

Please visit [dlr.dk](http://dlr.dk)



# True carbon negative farming in action

The Danish SkyClean technology offers true carbon negative farming for agriculture with its innovative pyrolysis treatment of straw and other residues.

Stiesdal, the company behind SkyClean, is fast ramping up with large scale plants to meet demand.



*In March 2022, Stiesdal inaugurated its first 2 MW SkyClean plant located in the Green business park GreenLab in Skive, Denmark. The inauguration was attended by Crown Prince Frederik of Denmark, to the right, and to the left, Danish climate minister Dan Jørgensen flanked by minister for food and agriculture, Rasmus Prehn.*

## IFAJ delegates invited to a closer look at SkyClean

**Vingsted Congress Center, June 29:** Stiesdal will be present with a stand, welcoming IFAJ delegates from 13:30 in the afternoon.

**Site visit, SkyClean plant, July 1:** IFAJ delegates are invited to join tour C5 for a visit to Stiesdal's newly inaugurated SkyClean plant in GreenLab, Skive.

SkyClean

Stiesdal®



## SkyClean technology will reduce greenhouse gas emissions from agriculture by up to 50 per cent

The Danish climate technology company Stiesdal is busy scaling and implementing its technology, promising to be a game changer in agriculture's efforts to reduce emissions. Experts from the Technical University of Denmark and Aarhus University have estimated that agriculture can reduce its greenhouse gas emissions by up to 50 per cent using the SkyClean technology.

### How SkyClean works

The core of SkyClean is a pyrolysis process in which organic waste from agriculture and forestry is converted into biochar, gas and oil by heating to a high temperature without the presence of oxygen.

Dry plant material typically contains approx. 50 per cent carbon that the plants have extracted from the atmosphere in the form of CO<sub>2</sub>. All the carbon in waste from agriculture and forestry thus also comes from the atmosphere. This applies regardless of whether the waste is purely plant-based or whether it is waste from livestock or the food industry.

In the pyrolysis process, half of the carbon in the waste is converted to biochar, while the other half becomes oil and gas.

Biochar is a stable material that decomposes only over centuries or even millennia. Half of the carbon that becomes biochar is thus effectively removed from the atmosphere.

The half of the carbon that does not turn into biochar comes out of the pyrolysis process as gas and oil. The gas can be used as fuel in the heat supply system and in industry, and the oil can be refined into fuel for the transport sector. Both the gas and the oil can also be further processed into P2X solutions, e.g., for aviation fuel.

In a Danish context, SkyClean has the potential to reduce Denmark's CO<sub>2</sub> emissions by seven million tons annually by 2030.

### Biochar – a boost to sustainable farming

The biochar from SkyClean's pyrolysis is a low-cost, high-impact CCS agent, offering a surprising array of advantages to agriculture:

- Biochar is effective for soil improvement, particularly sandy or depleted soils.
- All potassium and phosphorus nutrients in the feedstock are retained in the biochar, adsorbed in mineralised form. The nutrients gradually leach into the soil, acting as conventional fertilisers.
- Biochar also reduces leaching of nitrogen, and pesticide and antibiotic residues are eliminated.

According to IPCC, carbon sequestration with biochar can be counted in national emission inventories.



The GreenLab factory was inaugurated in March when Crown Prince Frederik (left) pressed the button. Here he speaks with Henrik Stiesdal, the man behind SkyClean technology and investor. Beside him is Dan Jørgensen, Minister for Climate, Energy and Utilities, and Rasmus Prehn, Minister for Food, Agriculture and Fisheries.

The 2 MW plant will be a show-room for the technology. Potentially, Denmark could have 100 20 MW plants that could transform crop residues and other products into jet fuel and other types of fuel, and into carbon pellets that bind CO<sub>2</sub> in the soil, thereby reducing annual emissions by five million tons.

### How much biochar can the soil take?

Researchers from the University of Copenhagen propose to make the sandy agricultural soil in Denmark more drought resistant by adding 100 tons of biochar per hectare. 24% of Denmark's agricultural area is of this type. It will require all the biochar from the available Danish biomass for 50 years to reach this goal. Moreover, from an agricultural point of view, there is nothing to prevent a further increase in the amount of biochar applied per hectare, as long as the nutrient content spread with the biochar is taken into account.



### The roadmap towards commercialisation

SkyClean is being developed and fast-tracked by the Stiesdal subsidiary Stiesdal Fuel Technologies. In August 2021 the company introduced a fully automated 200 kW SkyClean test facility, and in March 2022 the company inaugurated its ten times larger 2 MW SkyClean plant, situated at GreenLab in Skive.

On Stiesdal's roadmap is a fully commercialised 20 MW plant scheduled for late 2022.

**Investment** in the plant at GreenLab: 2.7 million euros, financed 100 per cent by Stiesdal.

**Capacity:** 5,000 tons of raw material per year and 5,000 tons reduction in greenhouse gas emissions. Straw from one hectare grain can supply biomass to sequester two tons of CO<sub>2</sub>.

**Contact:** Kristian Strøbech, communications manager, [kst@stiesdal.com](mailto:kst@stiesdal.com)  
**www.stiesdal.com**



**ESGreen  
TOOL**



Ad sponsored by:  
FÆLLESFONDEN  
ANDELSPONDEN  
KULTURFONDEN

## New digital climate tool for agricultural production

The climate tool will be essential in the effort to reduce greenhouse gas emissions from agriculture, and will play a significant role in contributing to the industry's own ambition for climate neutrality in 2050 – as well as supporting political agreements on reductions.

### SEGES Innovation is ...

a private, independent, non-profit research and development organisation and is the leading agricultural knowledge and innovation centre in Denmark. We offer sustainable solutions for the agriculture and food sector of tomorrow. We work with international customers and clients. At SEGES Innovation, we bridge the gap between research and practical farming. Our products and services are developed in partnership with farmers and customers.

Contact: [en.seges.dk](mailto:en.seges.dk) | [info@seges.dk](mailto:info@seges.dk)

**ESGreen Tool** is a groundbreaking new digital climate tool that helps calculate the carbon footprint of the farm and enables the farmer to reduce total climate impact. With ESGreen Tool it is possible to test and get exact figures on how changes in feeding, manure management or field management can affect the climate footprint of a single farm.

ESGreen Tool can be used by the vast majority of farms regardless of size and form of production. Later in 2022, it will also be possible to calculate the climate impact at product level.

ESGreen Tool is developed by SEGES Innovation and sponsored by Forenet Kredit in collaboration with Nykredit, a large Danish bank and mortgage provider.

Contact SEGES Innovation to learn more about ESGreen Tool.

SPONSORED BY

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INNOVATION**



## Tour D1, 2 July



### TOUR D1, 2 JULY – TIME AND PLACE

- 11.00:** Departure from Vingsted Skovvej 2, Bredsten. Lunch in the bus
- 12.15:** Arrival Ånumvej 150, 6900 Skjern
- 12.30:** Departure
- 12.45:** Arrival Borris Shooting Range, Borriskrogvej 4, 6900 Skjern
- 14.00:** Departure
- 14.30:** Arrival Pump Station North, Langkærvej 11, 6900 Skjern
- 15.30:** Departure
- 15.50:** Arrival Lundenæs Castle Hill
- 16.05:** Departure
- 17.30:** Arrival Vingsted



### The National Association of Danish Dairy Farmers - Landsforeningen af Danske Mælkeproducenter

We focus on the Danish dairy farmers' rights and represent them politically in Denmark and the EU.

Our members count more than half of Denmark's dairy farmers, supplying around 2/3 of the milk produced in Denmark.

We work to ensure that the dairy farmers' interests are met, and their conditions improve.

[www.maelkeproducenter.dk](http://www.maelkeproducenter.dk)

**Tour leaders:**  
**Egon Kjøller**, journalist,  
North Jutland newspapers 1971-2016

**Henrik Lomholt Rasmussen**,  
freelance journalist



## The interfaces between nature and agriculture, sustainability, biodiversity and food production

61 per cent of the Danish terrestrial area is cultivated farmland, which is a European record. 12 per cent is "nature" (excluding forests). But there are a lot of "in between", i.e. types of nature, which depend on some kind of agricultural usage, such as meadows, heathland and scrubs. Here, cattle play an important role in farming and culture as well as in nature protection and management.

This tour brings you to a part of Denmark where farmers have lived and worked for generations, sometimes in collaboration with nature, sometimes against it: Skjern River Valley and Borris Heath.

Now, farmers and their land might also play a crucial role in the Danish political strategies against global warming. Flooding of up to 100,000 hectares of river valleys and meadows are important tools in the plan.

Skjern River is the largest in Denmark in terms of volume. For decades, the river valley was drained farmland, but since the completion of a comprehensive restoration project in 2002, the river once again meanders through the flat West Jutland landscape, surrounded by natural meadows with rich birdlife, wild salmon and varied plant life – biodiversity, in other words.

Farmers are expected to adapt to new conditions with regard to climate politics, national park plans, etc.

We shall meet one of them. His 350 head of cattle graze publicly owned floodplains along the river, while 150 horses serve as "nature managers" in the largest remaining part of the old heath landscape of Jutland, the military training area Borris Firing Range.



*Skjern Enge, an important place for farmers, anglers, tourists, and nature lovers. Photo: Thomas Høyrup Christensen/Visit Vestkysten*

## Farming for biodiversity

Søren Christensen is a farmer, but also a nature conservationist. Due to his cattle and horses, large areas of unique Danish landscapes with great biodiversity are preserved in a state which would otherwise turn into impoverished shrubland.

From his farm there is a magnificent view across green meadows to the large Skjern River. An apparently timeless nature, but in fact a landscape abundant with history, culture, hard work and strong feelings.

Søren Christensen can tell the story. His family has lived here for seven generations, ever since 1788, and in 1993 he took over the farm from his father.

In his own lifetime he has witnessed big changes in people's views of nature. For his grandfather, hunting and fishing were an important part of life for a Skjern River Valley farmer. His father owned the farm from 1963, in a time of modernisation and optimisation, in years when the river valley was drained and the river itself changed into a canal.

During Søren Christensen's time things changed again. From the 1990s, the new aims of the Common Agricultural Policies of the EU were environment and reduced production (including an obligatory set-aside of land), and the long conflict about the Skjern River came to an end with the fulfilment of a large restoration project.

And now new changes: The Danish government's climate plan from October 2021 requires uptake and flooding of 100,000 hectares of low-lying farmland to prevent emission of CO<sub>2</sub>.

Søren Christensen expects he must give up 50 hectares - more than half of the land he owns.

"It's a huge challenge," he says.

And not only for himself. His son would like to follow him as the next generation on the farm, and around him 16 other low-land farmers face the challenges of climate adaptation.

*Horses as nature managers  
in Borris Heath.  
Photo: Søren Christensen*



*Skjern River and surroundings  
– nature, old cultured landscape,  
farmland. Photo: Søren Frederiksen*



*The farm of Ånumvej 150, Skjern. Photo: Søren Christensen*

Today, the total size of Søren Christensen's farm is about 350 hectares, of which 260 are leased land, mostly state-owned.

His livestock counts 350 heads of cattle and 150 Shetland and Exmoor ponies.

The livestock feed along the river near the farm and on the leased areas; some on the protected peninsula Tipperne in Ringkøbing Fjord; some in the open wood and grassland Tinnet Krat around the sources of the two main rivers of Denmark, Skjern Å and Gudenå.

We will meet his horses at the military training area Borris Shooting Range. They are excellent nature managers in what is described as "unique nature reserves of very great value to the biodiversity of Denmark." The small, sturdy horses can stay outdoors year-round but must be fed during the winter and spring.

We might also meet a recently arrived animal in Danish nature: canis lupus – the wolf! A couple was spotted in the area this winter.

As chairman of the local farmers' association, Vestjysk Landboforening, Søren Christensen has been involved in plans for a national park covering the Skjern River and surrounding area. He likes the idea, but on conditions: there must still be room for farmers and farming.

On the tour we will also meet Søren Frederiksen, development consultant and nature guide in Ringkøbing-Skjern Municipality.

### FACTS

Host: Søren Christensen, farmer, Ånumvej 150, Skjern

Phone: +45 97 35 22 44, mobile: +45 20 94 22 64

Mail: [sc@vestjysk.dk](mailto:sc@vestjysk.dk)

Planning expert: Søren Frederiksen, development consultant and nature guide, Ringkøbing-Skjern Municipality.

Phone: +45 99 74 19 57

Mail: [soren.frederiksen@rksk.dk](mailto:soren.frederiksen@rksk.dk)



## Tour D2, 2 July



### TOUR D2, 2 JULY – TIME AND PLACE

- 11.00:** Departure Vingsted Skovvej 2, Bredsten, lunch in the bus
- 11.45:** Arrival Refshøjvej 59, Hejnsvig
- 14.15:** Departure
- 15.35:** Arrival Gram Møllevvej 4, Ravnholt, Juelsminde
- 16.45:** Departure
- 17.45:** Arrival Vingsted

## Worlds most efficient application system

With the HARDI AEON CENTRALine and the air-assisted TWIN boom, farmers can double their capacity while reducing water and chemical consumption. The goal is sustainable food production without burdening the environment and climate.



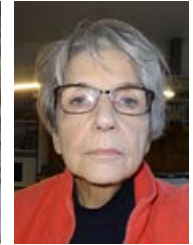
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[aeon.hardi.com](http://aeon.hardi.com)

**Tour leaders:**  
**Niels Damsgaard Hansen,**  
 freelance journalist,  
 former editor-in-chief at FBG Medier



**Hanne Gregersen,**  
 freelance journalist



## Conservation Agriculture improves crop production and is climate resilient

Conservation Agriculture (CA) is gaining ground as a farming system globally. It has many advantages for the farmer and society in the form of sustainability with regard to climate, biodiversity and nutrient retention in the agricultural soil. The system is recommended by FAO, among others, because it also improves crop yields and is climate resilient.

### Agriculture is part of the climate solution

Farmers, researchers, NGOs and politicians realise that agriculture is integral to solving the current climate problem.

For centuries, farming has emitted enormous amounts of CO<sub>2</sub> by clearing forests followed by intensive soil tillage. Approximately half of the increase in the amount of CO<sub>2</sub> in the atmosphere comes from agricultural activity; the rest is from the use of fossil fuels. CO<sub>2</sub> emitted to the atmosphere can be returned to the soil. CA is the most efficient method. Additionally, retaining organic material in the soil can help prevent desertification.

Awareness of CA in Denmark is strongly increasing among farmers and coops such as Arla Foods and Danish Crown. Nestlé has also initiated a process to encourage farmers and processors to become climate efficient with the aid of regenerative farming – the foundation of which is CA – at the latest by 2030.

We will visit two farmers, where there will be talks given by the chairman of Arla Foods and a biologist from Aarhus University.

### Three principles of Conservation Agriculture:

- 1**  **Minimum mechanical soil disturbance**  
 (i.e. no tillage) through direct seed and/or fertilizer placement.
- 2**  **Permanent soil organic cover**  
 (at least 30 percent) with crop residues and/or cover crops.
- 3**  **Species diversification**  
 through varied crop sequences and associations involving at least three different crops.

Conservation Agriculture comprises three basic principles: A) minimum mechanical soil disturbance (e.g. no tillage), B) permanent soil organic cover, and C) species diversification (never the same crop following in a crop rotation).

## Conservation Agriculture at two farms

- **About Arla Foods becoming climate neutral by 2050**
- **Scientist from Aarhus University will speak about biodiversity in and above ground in relation to the farming system**

Conservation Agriculture (CA) is gaining ground throughout the world. In the years 2016, 2018 and 2020, Statistics Denmark asked all Danish farmers about their land cultivated without ploughing and land with minimal soil disturbance.

### The statistics are shown below:

Year	2016	2018	2020
Total non-ploughed area, ha	284,521	357,590	497,789
Area min. tillage (harrow and similar), ha	252,662	319,006	442,193
Area no tillage, ha	31,860	38,585	55,597
% crop rotation area with no ploughing	12.1	15.4	21.7
Area with regular crop rotation, ha	2,344,628	2,319,725	2,293,536

CA has a number of benefits for farmers and delivers sustainability with regard to climate, biodiversity, nutrient retention in the cultivation zone and minimal use of pesticides.

Conservation Agriculture consists of three basic principles: A. minimal disturbance of the soil (no tillage), B. permanent soil organic cover with cover crops and/or crop residues, and C. diverse crop rotation (never the same crop twice in a row).

Dairy farmer Tommy Nielsen has 114 hectares, 75 Holstein cows plus heifers and calves, and cultivates his land according to Conservation Agriculture principles. For example, he plants cereals directly in a cover crop. In January 2022 he was elected Danish Champion in Soil Fertility – see the video here:



*Planting corn for silage in a green cover crop by Tommy Nielsen. Photo from Landbrugsavisen*

[https://www.landbrugsinfo.dk/public/c/5/f/jord\\_jordbearbejdning\\_dm\\_jordfrugtbarhed](https://www.landbrugsinfo.dk/public/c/5/f/jord_jordbearbejdning_dm_jordfrugtbarhed)

Tommy Nielsen. Refshøjvej 59, 7250 Hejnsvig. E-mail [refshoej@bbsyd.dk](mailto:refshoej@bbsyd.dk). Mobile phone +45 20 45 84 78

### Arla Foods on becoming climate neutral by 2050

Intro to Arla's goal of becoming climate neutral in 2050 by Kristian Østerling Eriknauer, vice-president, Corporate Sustainability, at the multinational dairy and farmer-owned cooperative Arla Foods, including a Conservation Agriculture angle.

- Kristian Østerling Eriknauer. E-mail [kristian.eriknauer@arlafoods.com](mailto:kristian.eriknauer@arlafoods.com). Land line +45 89 38 10 05



*Tommy Nielsen was appointed Danish Champion in Soil Fertility by a panel of experts in January 2022.*

### Biodiversity in relation to farming practice

More and more scientific results prove that soil disturbance is the key factor with regard to soil biodiversity. The more disturbance, the less diversity. PhD and Senior Researcher Paul Henning Krogh from Aarhus University will speak about biodiversity after ploughing, harrowing and Conservation Agriculture based on recent research.

Paul Henning Krogh. E-mail [phk@ecos.au.dk](mailto:phk@ecos.au.dk). Mobile +45 30 18 31 54

### Conservation Agriculture, historical cereals and farm mill

Farmer Jens Erik Pust will show and tell us about his farm and his marketing of traditional cereal varieties from his own mill and online shop. His crop farming is focused on optimising the carbon footprint and biodiversity by, among other things, farming in accordance with the principles of Conservation Agriculture.

The flour is sold in the farm's own farm shop and via its online shop to industrial kitchens and a supermarket.

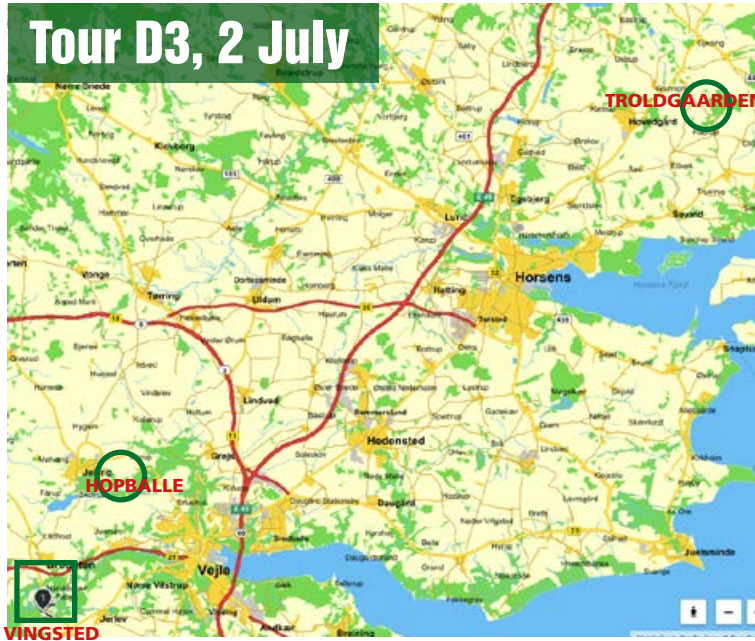
Jens Erik Pust, Gram Møllevej 4, Ravnholt, DK-7130 Juelsminde  
 Website <https://www.gyldenlund.info/>  
 E-mail: [pust@hedebo.info](mailto:pust@hedebo.info)  
 Mobile +45 2224 7776



*Heads of the historical grain called Ølandshvede*



## Tour D3, 2 July



### Tour leaders:

**Ulla Birk,**  
editor, Landbrugsmedierne

**Anette Eckholdt,**  
M.Sc. in Agricultural Science,  
freelance journalist



## New marketing channels

Danish agriculture exports approximately two-thirds of its production to countries all over the world. The exports comprise mainly pork, poultry and dairy products. Most of the products go through the coops Danish Crown and Arla, that also supply a large portion of the Danish domestic market.

Parallel to the big coops, many farmers have developed their own marketing, often using other channels. We will visit two of these farmers, who have refined their products and deliver them directly to the consumers' doorsteps.

The first visit will be to Trolsgaarden, where the Dam Hansen family runs an organic pig production, produces charcuterie for restaurants and sells products such as tapas in their farm shop.

The production is small but profitable, because some consumers are willing to pay extra for free range animal welfare and organic production.

We will meet the son Philip and eat a tapas lunch at the farm. Philip works as an all-round helper approximately half of the time on the farm and the rest of the time in the sausage factory.

We will thereafter visit Hopballe Mølle - an old heritage farm that is presently run by the sixth generation. The mill has specialised in broilers that grow slowly. Combined with extra room, eight hours of darkness and the farm's own feed mix, this gives the meat a good taste and structure. The broilers are caught by hand, slaughtered in the farm's own abattoir only 200 metres away, and delivered freshly slaughtered to the consumer.

Hopballe Mølle also works with experience economy in that the associated restaurant and farm shop are owned and run by the mill.

### TOUR D3, 2 JULY – TIME AND PLACE

- 11.00:** Departure Vingsted Skovvej 2, Bredsten
- 12.15:** Arrival Trolsgaarden, Trolskirkevej 4, 8732 Hovedgård  
Tapas, Q & A
- 14.15:** Departure
- 15.30:** Arrival Hopballe, Hopballevej 56, 7300 Jelling  
Coffee, Q & A
- 17.00:** Departure
- 17.30:** Arrival Vingsted

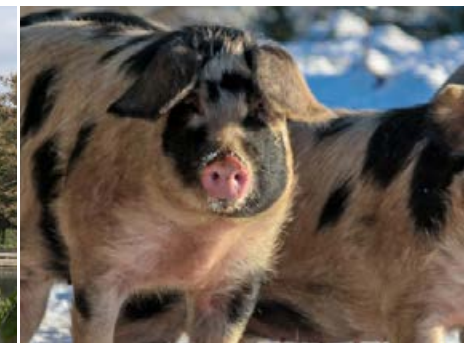
## Prevention, rather than treatment – and it must pay off

We are specialized in products for newborn animals and we product develop together with selected skilled Danish farmers.

Visit our website: [feed.scagro.dk](http://feed.scagro.dk)



Hopballe Mølle





## Organics, animal welfare, and storytelling increase product value

Birgitte and Leon Dam Hansen bought the farm Troldgaarden in 2006. Today they run it with their four sons, two of whom and a daughter-in-law work on the farm full-time. The farm is organic and based on a holistic approach, taking animal welfare and natural meat production into the greatest possible consideration. They say their farm is uncompromising.

The family has chosen to work with the heritage breed Danish Black and White Landrace, the meat of which is reminiscent of Spanish Ibérico pigs. The breed fares well in the Danish climate and is therefore ideal for free range organic production. With the mottos 'eat and conserve' and 'why buy Spanish when you can buy Danish', it has been possible to develop Denmark's largest farm of this kind with 40 Black and White sows and to add value to the niche product through processing, storytelling and farm tours.

The pigs live their entire lives outdoors with no nose rings and with plenty of time with their mothers, so they have as good a start as possible. Their slow growth ensures that the animals have time to develop a natural proportion of fat and muscle – which is reflected in the taste of the meat.

The farm also has organic sheep and cattle. All the animals are slaughtered on-farm and the meat sold directly to restaurants and cafeterias. The Dam Hansen family also produces charcuterie. Approximately 50% of its turnover comes from processed products.

*The breed Danish Black and White Landrace*



*Phil, Helle with six-month-old daughter Phine, sons Oliver and Lucas, Ricki, Birgitte and Leon*

We will meet the son Philip and eat a tapas lunch at the farm. Philip was trained as a conventional farmer and works as an all-round helper approximately half of the time on the farm and the rest of the time in the sausage factory.

### **Troldgaarden**

Host: Farmer Philip Dam Hansen, Troldkirkevej 4, 8732 Hovedgård Ved-slet

Telephone: Philip: +45 22 40 93 96/Birgitte: +45 28 69 35 16

info@troldgaarden.dk

www.troldgaarden.dk



## 200,000 broilers as a niche

Forty years ago, farmer and owner of Hopballe Mølle Brent Christensen took over after his mother and thus became the sixth generation owner of the property, which is located in a place of natural beauty in the valley Grejsdalen. Until that time 40 years ago, the place was mostly known as a holiday guest house, but the son wanted to establish a broiler farm and thus the Hopballe Chicken was born.

The idea developed from a beginning with 12,000 broilers to the present production of 200,000, and has become a good business with its own abattoir. They sell tasty meat to selected supermarkets, on their online farm shop, and as meal boxes – sales that have taken off since the Covid-19 restrictions were introduced two years ago.

Welfare broilers grow more slowly, are older when slaughtered, and are fed a special feed mix that helps promote a better taste experience than you get from cheaper, fast-growing chickens.



Brent Christensen, owner of Hopballe Mølle



Welfare broilers for selected supermarkets, restaurant and online farm shop

Hopballe Mølle has an extended farm shop. There is also a restaurant, which is leased out, but with good quality raw materials that live up to a gourmet food standard.

We will be shown around the whole enterprise by the owner Brent Christensen. We will thereafter drink coffee and eat cake outdoors by the restaurant, which has a lovely view of the lake and forest.

### Hopballe Mølle

Host: Farmer and owner of Hopballe Mølle, Brent Christensen, Hopballevej 56, 7300 Jelling.

Telephone: Office: +45 7585 3754. Brent: +45 4052 3754

info@hopballe.dk

www.hopballe.dk

## Tour D4, 2 July



### TOUR D4, 2 JULY – TIME AND PLACE

- 11.00:** Departure from Vingsted Skovvej 2, Bredsten
- 11.50:** Arrival at Enorm, Hedelundsvej 15, Flemming  
Lunch in the field
- 14.00:** Departure
- 15.00:** Arrival at Nørupgaard, Fynslundvej 59, Jordrup
- 16.45:** Departure
- 17.30:** Arrival Vingsted

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Biogas.dk

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Meet us at  
IFAJ 2022 and  
learn more

**Tour leaders:**  
**Aage Krogsdam**, journalist, globetrotter, participant in more than 25 IFAJ congresses, chairman of the 1999 IFAJ organising committee Denmark

**Anne-Marie Glistrup**, journalist, communications officer, biographer



## Black soldier flies turn waste into feed and food

Skov A/S, producer of ventilation, management systems, and digital services for animal production, has entered a partnership with Enorm Biofactory A/S in Flemming near Horsens to develop future climate control and production systems for insect farms.

Since 2018, Enorm, owned and run by Carsten Lind Pedersen, has set up and operated a pilot plant to produce black soldier fly larvae. The installation is proof of concept, where Enorm develops biological management and automated operation.

The projected full-scale production facilities, expected to be completed in 2023, will have a production area of 24,000 m<sup>2</sup>. One fly can produce up to 1200 eggs. The larvae are fed waste from the dairy and potato industries. Annual production will be 6,500 tons protein and 3,000 tons oil, pig and poultry feed, and later on, food for humans.

Insect production is an intensive production form. The insects have a high heat production, just as CO<sub>2</sub> and NH<sub>3</sub> levels can be high in proportion to the room area. An efficient ventilation system with high and uniform air exchange is necessary to ensure good production conditions throughout the house.

## Visit MEP Asger Christensen

Our second visit will be to Nørupgaard near Kolding, a 400 hectare farm with 650 dairy cows. Owner Asger Christensen, 64, and especially his family run the farm. As a member of the European Parliament for the group Renew Europe, Asger is often away from home. In the European Parliament he serves on the committee Agricultural and Rural Development and is part of the Parliament's delegation for relations with China. On his agenda is also protection of animals during transport, membership of the Parliament's intergroup on LGBT rights and – not least – the green agenda. According to the MEP, agriculture is not the problem, but a major part of the solution.



Asger Christensen, MEP



Black soldier fly larvae



Black soldier fly



# CREATING THE FUTURE

When it comes to commercialising sustainable solutions and supporting farmers in the sustainable transition we lead the way.

We look forward to seeing you at the IFAJ Congress, where you can learn more about how we are creating a sustainable future for farming and the food industry.



## Tour D4, 2 July

### Feed and food made with sustainable insect protein

Sustainable insect protein can accommodate the growing demand for protein feed ingredients for fish, poultry, pigs, and humans. We will see an insect farm at Enorm Biofactory A/S in Flemming by Horsens.

Enorm in Danish has two meanings: 'A worm' and 'enormous'. The Enorm factory is both.

Enorm Biofactory A/S produces 10-15 tons of live larvae per week for protein feed. The goal is full-scale production in 2023 with a capacity of at least 100 metric tons of live larvae per day.

Father and daughter, Carsten Lind Pedersen and Jane Lind Sam, are part of the founding and management team of Enorm. Carsten is a partner and CEO. He is responsible for day-to-day management, construction, purchasing, and feed formulation, and participates to a great extent in all development processes.

#### Developed in cooperation with Skov A/S

The pilot scale production started 1st January 2018, after two years of research.

Over the past three years, Enorm Biofactory has developed a pilot plant, demonstration technologies, and management to enable the breeding and growth of insects. The pilot plant has been developed in close cooperation with Skov A/S, that has provided ventilation solutions and production equipment. Skov A/S now has the necessary knowledge and expertise to implement these solutions in a new large-scale plant.

The production is about to be upscaled – thanks to investments from DLG, the Danish Green Investment Fund and Nykredit Bank.

A new factory is scheduled to be completed by the middle of 2023. The daily production capacity will be 100 tons of larvae by the end of 2023. The building area will be approximately 24,000 m<sup>2</sup>, of which 18,000 m<sup>2</sup> are newly constructed.



*With its production of 10-15 tons of larvae per week, Enorm Biofactory A/S can help Denmark become less reliant on soya imports to satisfy domestic protein demands.*



*The black soldier fly is an efficient animal with high reproductive and feed conversion rates, low demands for water and space, and a small carbon footprint.*

*The larvae of the black soldier fly are chock full of protein and can be used in livestock feed and food for humans.*

Today, there are 12 full-time employees and 4 part-time employees in Enorm. It is expected that there will be 55-60 employees by 2023.

### **Protein from the black soldier fly for fish, animals and humans**

The demand for protein is growing on a global scale. This includes demands for livestock and fish feed that fulfill particular requirements with regard to origin and sustainability.

In September 2017, it became legal to include insects in fish feed and in 2021 in pig and poultry feed. This means that insect protein for feed – and later on for human food – has become interesting.

Enorm produces larvae of the black soldier fly because the fly has a life cycle of only 45-60 days. The fly reproduces quite effectively, as every female fly lays 700-1200 eggs.

The larvae have a high feed conversion rate; in order to produce 1 kg larvae, they need only 1-2 kg feed (DM = dry matter).

The larvae can survive on almost all organic substrates, including substrates with a high moisture content in contrast to many other species of insects. The larvae production therefore requires only small amounts of water. The larvae live on residual biomass, also known as feedstock, from the food and agriculture industry. The feedstocks can be by-products from beer production, potato starch, cheese, etc. This makes the production circular.

### **Protein production with a low environmental impact**

Climate is also important. The production has a small carbon footprint compared to other livestock production. In addition, the larvae can be produced vertically. This means the production does not take up much space in relation to the amount of protein it produces.

Protein produced in this way is very close to being totally sustainable.

### **Further information:**

[www.enormbiofactory.com](http://www.enormbiofactory.com), [info@enormbiofactory.com](mailto:info@enormbiofactory.com), +45 7370 9195  
[www.skov.com](http://www.skov.com) marketing manager Stig Veis Jørgensen, [svj@skov.dk](mailto:svj@skov.dk), +45 2268 2289



Climate for Growth



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Sustainable global food production  
- In respect to animal welfare



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## European farmers must be both green and competitive

Visit to Nørupgaard with time for Q&A with Asger Christensen, dairy farmer and member of the European Parliament

Asger Christensen is an experienced farmer with his feet firmly planted in the Danish soil. Together with his wife Inge, and his son and daughter-in-law he runs Nørupgaard near Jordrup in Jutland. The farm has 650 dairy cows and 400 hectares. Inge is the 9th generation on the farm.

In 2019, Asger Christensen became a member of the European Parliament. He was elected for the Danish liberal party, Venstre, which is part of the European liberal group, Renew Europe. In his parliamentary work Asger Christensen is dedicated to ensuring an ambitious and sensible green transition of the agricultural sector based on investments in green technology.

He is a member of the Committee on Agriculture and Rural Development (AGRI) and a substitute in the Committee on the Environment, Public Health and Food Safety (ENVI) and the Committee on Regional Development (REGI). Additionally, Asger was the coordinator of a temporary Committee of Inquiry on the Protection of Animals during Transport (ANIT).

“As a farmer and member of the European Parliament, I work to make a Danish, liberal imprint on EU legislation. European cooperation is incredibly



*Inge Schelde and Asger Christensen with their son Peter, his wife Nanna and son Aksel, the 10th generation at Nørupgaard, The dog's name is Smiles.*

important to Denmark. As a self-employed for more than 35 years, I know how much the EU means to our everyday lives. This is why it is crucial that Denmark engages in this cooperation and has an impact on EU rules. I am particularly concerned with agricultural and environmental politics, including a sustainable future, better conditions for farmers, and more reasonable EU rules,” says Asger Christensen.

### A sustainable future

“Our children and grandchildren deserve a sustainable planet where they can have a happy future. This is why we must work to ensure an ambitious green transition across the entire EU to reach our common climate goal. I work for greater climate and environmental ambitions in the European Union.”

### Better conditions for farmers

“Danish farmers are front-runners in the green transition of the agricultural sector. We are proud of that. Thus, we must share our Danish solutions with our European neighbours. To reach our common climate goal and become climate neutral by 2050 we need the EU to support the transition. I fight for the agricultural policy to be both green and competitive for European farmers.”

### Reasonable EU rules

“Too many companies and organisations bother with unnecessary bureaucracy, which limits growth and the desire to run a business. Small and medium-sized enterprises in particular suffer from unnecessary EU administration. Instead of stifling initiative and the will to work with bureaucracy, the EU must help businesses to flourish so that we create prosperity, growth and more welfare that can benefit all of us. I work for less administrative difficulties in the European Parliament,” says Asger Christensen.



*During the campaign for election Asger Christensen promised to wear rubber boots entering the parliament. He kept his word – and placed down-to-earth tools in the window of his office to be constantly reminded of where he comes from.*

## Tour D5, 2 July



### TOUR D5, 2 JULY – TIME AND PLACE

- 11.00:** Departure Vingsted Skovvej 2, Bredsten
- 11.45:** Arrival Aller Aqua, Allervej 13, Christiansfeld  
Lunch based on fresh fish
- 14.00:** Departure
- 14.45:** Arrival Galsklintevej 4, Middelfart
- 16.45:** Departure
- 17.30:** Arrival Vingsted



**Tour leaders:**  
**Jørgen Lund Christiansen**, journalist, organiser of 40 study tours to six continents, participant in 20 IFAJ congresses, columnist



**Frederik Thalbitzer**, journalist at LandbrugsMedierne, and chairman of the Danish Association of Agricultural Journalists

## Danish grass for fish in 60 countries

The first visit will be to the fish feed factory Aller Aqua. With factories on three continents and exports to more than 60 countries, the old family-owned company has a solid international foundation. With the aid of research, the company can now supply feed for saltwater and freshwater aquaculture – cold as well as warm.

In addition, Aller Aqua is the first fish feed producer in the world that, with the aid of CO<sub>2</sub>-declared feed, can help fish producers mitigate climate change. The company's latest initiative, figuratively speaking, is putting fish on grass. An organic protein concentrate obtained from grass harvested in Danish fields will be added to the feed. The nutritional value is close to that of soya, which is being phased out.

*CEO Hans Erik Bylling is the third generation of the family-owned company.*



## Up in the sky before you fly home

The last stop before the congress farewell dinner Saturday night is a unique experience, namely bridgewalking. You can find it in only four places in the world, in Brisbane and Sydney, Australia, in Auckland, New Zealand, and between the island of Funen, where Hans Christian Andersen was born, and the Jutland peninsula.

At 60 metres above sea level your guide will provide information on the bridge and the surroundings, while you feel the wind in your hair – and maybe a rush in your stomach, while the trains cross the bridge far below. You will have incredible views of the Little Belt, Funen, and Jutland. You must be able to complete a walk of just over two kilometres and not suffer from vertigo to participate.



## Aller Aqua converts CO<sub>2</sub>-friendly grass and insects to fish feed for 60 countries

Who would think that the fish on your plate has been fed grass from a field and insects made from waste? These are some of the ways the carbon footprint in fish farming has been reduced – and they are CO<sub>2</sub>-declared.

One of the important questions the consumer asks when buying food is: Is the carbon footprint high or low? With initiatives from the company Aller Aqua, which produces fish feed, fish producers can more easily compute the carbon footprint of the fish, because Aller Aqua now declares the CO<sub>2</sub>-equivalents of their feeds, according to Group Vice President, Henrik Halten, Aller Aqua Group.

“It has been important for us to get this right, and to have a declaration that customers can relate to. We want to be transparent. We want to enable our customers to compare CO<sub>2</sub> emissions between competing products. Therefore, we work with aquaculture stakeholders to create a standard across the sector,” he says.

Aller Aqua has an almost 60-year history of producing fish feed, and exports to 60 countries all over the world. Moreover, the company is at the forefront when it comes to finding new raw materials for the feed.

In the search for new aquafeed ingredients, Aller Aqua is testing green protein from BioRefine. See tour A5. The green protein is a concentrate made from grass harvested from 3,000 hectares of land in Denmark. Out of this, BioRefine produces 7,000 tons of green protein concentrate applicable for animal nutrition per year.

The green protein will be tested in nutrient digestibility and growth trials in feed for rainbow trout, the main fish species in Danish aquaculture. Due to its regional origin, grass protein could be a valuable raw material for reducing the carbon footprint of aquafeed.

“New raw materials are rare. Here we have an entirely new and locally produced raw material. We are looking forward to being the first company testing and, possibly later on, including this raw material in our feed,” says Dr. Hanno Slawski, Group Research & Development director for Aller Aqua.



Aller Aqua is also testing if insects could be valuable for feeding trout, salmon and tilapia.

“Insect meal has the potential to be a valuable raw material in fish feed not only due to its high protein content. Several trials have been carried out with the inclusion of insect meal to replace or partially replace fish meal in fish feed with promising results,” Dr. Hanno Slawski says.

The insects are produced on feedstocks from the agricultural and food industries. The feedstocks can be by-products from beer production, potato starch production, cheesemaking, etc. The larvae transform the feedstock in the factory and are then harvested and processed into valuable ingredients.

Sustainability in the aquaculture value chain begins with the raw materials used in the feed.

Using grass and insect meal is a way to reduce the use of soya from South America.

“In recent years there has been a focus on soya produced in South America and the derived effects thereof, such as deforestation. In our efforts to increase sustainability, and by purchasing raw materials close to our European factories, we have phased out soya from South America since 2020,” explains Henrik Halten.

### FACTS ALLER AQUA

- Produces fish feed for freshwater and saltwater aquaculture
- Established in 1963
- Family-owned company
- CEO Hans Henrik Bylling
- Factories in Denmark, Poland, Germany, Egypt, China, Zambia and Serbia
- Exports to more than 60 countries
- Press contact: Kenneth P. G. Madsen, [kpm@aller-aqua.com](mailto:kpm@aller-aqua.com), +45 20 88 74 75

## Bridgewalk

### Getting high in the sky

Bridgewalking is an experience that combines stunning nature, history and exhilarating heights. Since the opening on 10 May 2015, more than 320,000 guests have tried the Danish bridgewalk on the top of the 87-year-old Little Belt Bridge that connects Funen and Jutland.

The idea came from a local man from Middelfart, who had been in Sydney and crossed the bridge there. He thought it was a completely amazing experience.

Of course, it then took years to get the relevant permissions and figure out how to put it all together. But from the very beginning, it has been a super exciting project with exceptional cooperation between the two municipalities on each side of the belt, namely Fredericia and Middelfart. Everyone collaborated to make it happen.

The bridgewalk, which sets out from Middelfart, takes you 60 metres above sea level and 20 metres above the bridge's railway. Perched above it all, visitors can enjoy unimpeded views of Little Belt (Lillebælt), feel the gentle rocking from the trains running below, and admire the elaborate construction work of the bridge up close.

While there might be more famous bridges to cross, few take walkers across a maritime nature park, as the Little Belt Bridge does. As such, the walk over Little Belt is not just an exhilarating experience in that visitors get to climb to the very top of the bridge, but also in that it gives them access to an exclusive way of experiencing the beautiful natural landscape. One noteworthy aspect is the population of harbour porpoises; Little Belt is the belt in the world with the highest concentration of these charming sea creatures. You walk right in the middle of a maritime nature park and, of course, the guides share their knowledge about this distinctive area.

You can often see the harbour porpoises quite clearly swimming along underneath you, sometimes with their pups.

The trip takes two hours from when you meet up until you return. The two hours include getting dressed in characteristic Bridgewalking coveralls, getting



safety instructions, and walking to the bridge. On the bridge, walkers are secured with a safety line and the walk is accessible to everyone who can manage a normal walk and steep stairs. Age is not an obstacle, as long as you're not afraid of heights!

Bridgewalking employs approximately 50 local guides, who take turns to bring guests up on the bridge. Guests are sure to be met by a dedicated guide, who will give their personal touch to the experience.

#### Rules

You are not permitted to bring loose objects, including cell phones and cameras. The guides will take pictures that the bridgewalkers can download free from the website afterwards.

Special opportunity: Since we are a press group, one or two accredited photographers will be allowed to bring their cameras – in exchange for sharing their photos with everyone afterwards. This must be arranged a couple of days beforehand since it will require an extra guide for each of our two groups.

#### FACTS

A bridgewalk can be booked individually (as part of a pre-arranged tour) or as a group. The experience takes two hours. You have to be at least 140 cm tall to take part in the walk.

For more information, please visit: [bridgewalking.dk](http://bridgewalking.dk)





## 115 projects supported, examples



**Foreningen PlanDanmark** is a foundation formed in 1993 from sale of the insurance company Plansikring GS with an equity of 125 million DKK, which by 2021 had grown to 240 million DKK. Donations over the years: 180 million DKK.



We support education, R&D, history and culture projects related to agriculture, fruit production and handicraft.

We have an open eye for a free and fact-based debate between food producers, consumers and decision makers.

PlanDanmark is happy to be a major partner for the IFAJ 2022 congress in Denmark. We welcome food and ag journalists from six continents.



Secretary Lone Gissel Dam and boards members, from left: Steen B. Kristensen, Ernst Fiil Jensen, Jan Jager, Kjeld Larsen, Pia Holm Jensen, Mogens Christensen (chairman) and Birger Schütte.



**Major project:** Renovation of the obelisk raised in memory of the Danish land reforms in 1788

**1996:** Danish Agronomist Association: Exhibition

**1997:** Major donation over five years: Coordination of research and development of fruit and vegetable production

**2001:** World Ploughing Championship in Denmark

**2006:** Programme for school visits to farms

**2008:** 6 a day! Campaign for eating 600 grams of fruit and vegetables per person per

**2010:** Agro Food Park



**2010:** Møntmestergaarden, a major "new" building in the living museum "Den Gamle By" in Aarhus

**2013:** University of Copenhagen: DNA study of 300 Danish apple varieties

**2015:** RadiMax - a DLF Seeds and Danish universities collaborative project to study plants' ability to cope with water stress and nutrient uptake



**2010-2018:** A number of donations to the historical and cultural centre Vestermølle in Skanderborg

**2020:** The think tank Frej formed and run by young people eager to bring idealism as well as realism into the debate about environment, food and climate







**Pre congress tour**

**Post congress tour  
to the Faroe Islands**

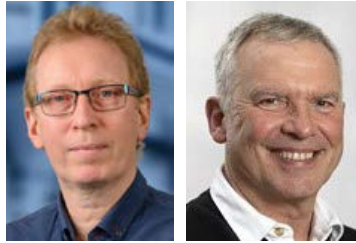


## Pre-congress tour 24-27 June

### Guides

**Frederik Thalbitzer**, journalist at LandbrugsMedierne, and chairman of the Danish Association of Agricultural Journalists

**Stig Oddershede**, press officer at DLF, and member of the Danish Association of Agricultural Journalists IFAJ 2022 organising committee



3-7 July:

Tour organiser and leader:

**Niels Damsgaard Hansen**,  
freelance journalist,  
former editor-in-chief at FBG Medier



## Faroe Islands post-congress tour

Experience food production on the Faroe Islands. The post-congress tour to the Faroe Islands in the North Atlantic will include visits to farms, the fishing industry, and processing plants as well as cultural elements.

In the middle of the North Atlantic Ocean, just north of Scotland, and approximately halfway between Norway and Iceland, lie the Faroe Islands, a modern society that in recent years has experienced marked economic progress. This is in large part due to its fishing industry and to a lesser degree because of an increase in the number of tourists who come to enjoy the islands' unique nature, culture and people with their own proud traditions.

It might not seem probable that the Faroese are self-sufficient with regard to most dairy products except cheese, but they are. In recent years, several modern dairy barns have been built, from which milk is delivered to the islands' own dairy in the capital city Torshavn.

There are also many sheep on the islands – some people think too many in relation to grazing potential – and there are even Faroese horses.

In other words, there is a lot to see, experience and learn about.

The ferry trip from Denmark to the Faroe Islands takes about 36 hours. From the airport in Billund you can fly with the Faroese airline Atlantic Airways. It takes two hours to Vagar, the only location with room for a sufficiently long runway. The bus drive from the airport to Torshavn takes about an hour.

*A view of Búnaðarstovan, which is the research station and office for the agricultural activities on the Faroe Islands.*



The pre-congress tour will be based in the capital city Copenhagen. During the day, we will leave town to visit farms and companies, while we will spend our evenings relaxing together, perhaps over a glass of beer and watching a football match.

Early arrivals can go for a city walk together to see The Little Mermaid, the royal castle Amalienborg, and other sights before all participants meet for dinner in the evening in the famous park Tivoli.

The world championships in football are played on grass with Danish origins. We will visit one of the largest grass seed companies in the world, DLF, including its fields and laboratories.

The company is located close to Stevns Klint a UNESCO World Heritage Site. It is the best place in the world to witness traces of the asteroid that hit Earth 66 million years ago. The asteroid wiped out more than half of all life on the planet, including the dinosaurs. We will go for a short walk there.

Bregentved Manor, that we will also visit, has the clear strategy to manage the business in a sustainable way with a special focus on climate. The manor has therefore in recent years developed wind, biomass and solar energy. The overarching goal is to become energy-neutral. The manor farms 3,465 hectares with a wide range of crops, and produces pigs and energy.

Sustainability is also on the agenda at Nordic Harvest, the first vertical farm in Denmark. They cultivate vegetables and herbs on 14 floors in an indoor, closed environment with LED lights and optimally controlled lighting, moisture and fertilisation. Using less water and pesticides and having a closed system of plant nutrients is a part of a sustainable idea.

There will be an opportunity to see mushroom growing with a focus on low energy consumption. We will also visit Food Nation, that helps increase knowledge of Danish food products and solutions in markets around the world.

Finally, we will visit LandbrugsMedierne, an agricultural media house.







**IFAJ Congress  
Song Book 2022**



**We wish you a merry congress  
and knowledge as well**

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**Thise**  
DAIRY WITH PASSION



**01) We'll meet again**

*Ross Parker & Hughie Charles, 1939*

We'll meet again  
I know where, I know when  
In week twenty-six in Denmark...twenty-two  
We'll welcome you  
just like we always do  
And together we will save our green, green world  
So will you please say goodbye to your folks when you part  
Tell them, you will be great  
and sustainable, smart  
We'll teach you a lot  
It will be fun and hot  
We'll meet again  
I know where, I know when  
In week twenty-six in Denmark...twenty-two

We'll meet again  
I know where, I know when  
In week twenty-six in Denmark...twenty-two  
Come feed your brain  
Have a steak on your plane  
Fueled with Danish energy from wind and shit  
So come and try our grass  
A surprise you'll find  
For pigs also first class  
See the knowhow behind  
We'll teach you a lot  
Soya ain't longer hot  
We'll meet again  
I know where, I know when:  
In week twenty-six in Denmark...twenty-two

We'll meet again  
I know where, I know when  
In week twenty-six in Denmark...twenty-two  
We must admit  
Our wine can't compete  
With the Oka-na-gan Valley white and red  
But bring no wine in your bags  
We'll brew you a beer  
And find time to relax  
You better come here!  
We'll teach you a lot  
It will be fun and hot  
We meet again  
We are here, we know when:  
In week twenty-six in Denmark...twenty-two

*Jørgen Lund Christiansen*

## 02) This Land is Your Land

*Woody Guthrie*

This land is your land and this land is my land  
From California to the New York island  
From the redwood forest to the Gulf Stream waters  
This land was made for you and me

As I went walking that ribbon of highway  
I saw above me that endless skyway  
Saw below me that golden valley  
This land was made for you and me

I roamed and rambled and I've followed my footsteps  
To the sparkling sands of her diamond deserts  
All around me a voice was sounding  
This land was made for you and me

When the sun come shining, then I was strolling  
And the wheat fields waving and the dust clouds rolling  
The voice was chanting as the fog was lifting  
This land was made for you and me

This land is your land and this land is my land  
From California to the New York island  
From the redwood forest to the Gulf Stream waters  
This land was made for you and me

When the sun come shining, then I was strolling  
And the wheat fields waving and the dust clouds rolling  
The voice come a-chanting and the fog was lifting  
This land was made for you and me

*Woody Guthrie, 1940*

## 03) Waltzing Matilda

*Australian Bush Ballad*

Once a jolly swagman camped by a billabong  
Under the shade of a coolibah tree  
And he sang as he watched and waited 'til his billy boiled  
"You'll come a-Waltzing Matilda, with me"

Waltzing Matilda, Waltzing Matilda  
"You'll come a-Waltzing Matilda, with me"  
He sang as he watched and waited 'til his billy boiled  
"You'll come a-Waltzing Matilda, with me"

Down came a jumbuck to drink at the billabong  
Up jumped the swagman and grabbed him with glee  
And he sang as he stowed that jumbuck in his tucker bag  
"You'll come a-Waltzing Matilda, with me"

Waltzing Matilda, Waltzing Matilda  
"You'll come a-Waltzing Matilda, with me"  
And he sang as he stowed that jumbuck in his tucker bag  
"You'll come a-Waltzing Matilda, with me"

Up rode the squatter, mounted on his thoroughbred  
Up rode the troopers, one, two, three  
"With that jolly jumbuck you've got in your tucker bag?"  
"You'll come a-Waltzing Matilda, with me"

Waltzing Matilda, Waltzing Matilda  
"You'll come a-Waltzing Matilda, with me"  
"With that jolly jumbuck you've got in your tucker bag?"  
"You'll come a-Waltzing Matilda, with me"

Up jumped the swagman and sprang into the billabong  
"You'll never take me alive," said he  
And his ghost may be heard as you pass by that billabong  
"You'll come a-Waltzing Matilda, with me"

Waltzing Matilda, Waltzing Matilda  
"You'll come a-Waltzing Matilda, with me"  
And his ghost may be heard as you pass by that billabong  
"You'll come a-Waltzing Matilda, with me"

"Waltzing Matilda, Waltzing Matilda,  
You'll come a-Waltzing Matilda, with me  
And his ghost may be heard as you pass by that billabong  
You'll come a Waltzing Matilda with me

*Banjo Paterson, 1895*



#### 04) It's a Long Way to Tipperary

*Jack Judge, 1912*

Up to mighty London came  
An Irish man one day  
All the streets were paved with gold  
So everyone was gay!  
Singing songs of Piccadilly  
Strand, and Leicester Square  
'Til Paddy got excited and  
He shouted to them there:

It's a long way to Tipperary  
It's a long way to go.  
It's a long way to Tipperary  
To the sweetest girl I know!  
Goodbye Piccadilly  
Farewell Leicester Square!  
It's a long long way to Tipperary  
But my heart's right there.

Paddy wrote a letter  
To his Irish Molly O'  
Saying, "Should you not receive it  
Write and let me know!  
If I make mistakes in "spelling"  
Molly dear," said he  
"Remember it's the pen that's bad  
Don't lay the blame on me."

It's a long way to Tipperary  
It's a long way to go.  
It's a long way to Tipperary  
To the sweetest girl I know!  
Goodbye Piccadilly  
Farewell Leicester Square  
It's a long long way to Tipperary  
But my heart's right there.

*J. Judge & H. Williams*

#### 05) Home on the Range

*Classic cowboy song*

Oh give me a home where the buffalo roam,  
Where the deer and the antelope play,  
Where seldom is heard a discouraging word,  
And the skies are not cloudy all day.

Chorus: Home, home on the range,  
Where the deer and the antelope play,  
Where seldom is heard a discouraging word,  
And the skies are not cloudy all day.

Where the air is so pure, and the zephyrs so free,  
The breezes so balmy and light,  
That I would not exchange my home on the range,  
For all of the cities so bright.

The Red man was pressed from this part of the west,  
He's likely no more to return,  
To the banks of the Red River where seldom if ever  
Their flickering campfires burn.

How often at night when the heavens are bright,  
With the light from the glittering stars,  
Have I stood there amazed and asked as I gazed,  
If their glory exceeds that of ours.

Oh, I love these wild flowers in this dear land of ours,  
The curlew I love to hear cry,  
And I love the white rocks and the antelope flocks,  
That graze on the mountain slopes high.

Oh give me a land where the bright diamond sand,  
Flows leisurely down in the stream;  
Where the graceful white swan goes gliding along,  
Like a maid in a heavenly dream.

Then I would not exchange my home on the range,  
Where the deer and the antelope play;  
Where seldom is heard a discouraging word,  
And the skies are not cloudy all day.

*Brewster M. Higley, 1872*

**06) Molly Malone**

*James Yorkston, 1883*

In Dublin's fair city  
Where the girls are so pretty  
I first set my eyes on sweet Molly Malone  
As she wheeled her wheelbarrow  
Through streets broad and narrow  
Crying, "Cockles and mussels, alive, alive, oh!"

Alive, alive, oh  
Alive, alive, oh  
Crying, "Cockles and mussels, alive, alive, oh"

She was a fishmonger  
And sure 'twas no wonder  
For so were her father and mother before  
And they both wheeled their barrows  
Through streets broad and narrow  
Crying, "Cockles and mussels, alive, alive, oh"

Alive, alive, oh  
Alive, alive, oh  
Crying, "Cockles and mussels, alive, alive, oh"

She died of a fever  
And no one could save her  
And that was the end of sweet Molly Malone  
But her ghost wheels her barrow  
Through streets broad and narrow  
Crying, "Cockles and mussels, alive, alive, oh"

Alive, alive, oh  
Alive, alive, oh  
Crying, "Cockles and mussels, alive, alive, oh"  
Alive, alive, oh  
Alive, alive, oh  
Crying, "Cockles and mussels, alive, alive, oh"

*Ticker Freeman*

**07) We'll Meet Again**

*Ross Parker & Hughie Charles*

We'll meet again  
Don't know where  
Don't know when  
But I know we'll meet again some sunny day.  
Keep smiling through  
Just like you always do  
'Till the blue skies drive the dark clouds far away

So will you please say hello  
To the folks that I know.  
Tell them I won't be long.  
They'll be happy to know  
That as you saw me go  
I was singing this song

We'll meet again  
Don't know where  
Don't know when  
But I know we'll meet again some sunny day  
We'll meet again  
Don't know where  
Don't know when  
But I know we'll meet again some sunny day  
Keep smiling through  
Just like you always do  
'Till the blue skies  
Drive the dark clouds far away.  
So will you please say hello  
To the folks that I know  
Tell them it won't be long.  
They'll be happy to know  
That as you saw me go  
I was singin' this song.

We'll meet again  
Don't know where  
Don't know when  
But I know we'll meet again some sunny day.

*Rose Parker & Hughie Charles, 1939*



### 08) Galway Girl

*Johnny Mcdaid / Foy Vance / Sean Graham / Damian Mckee /  
Eamon Murray / Liam Bradley / Niamh Dune, ca. 2000*

She played the fiddle in an Irish band  
But she fell in love with an English man  
Kissed her on the neck and then I took her by the hand  
Said, "Baby, I just want to dance"

I met her on Grafton street right outside of the bar  
She shared a cigarette with me while her brother played the guitar  
She asked me what does it mean, the Gaelic ink on your arm?  
Said it was one of my friend's songs, do you want to drink on?  
She took Jamie as a chaser, Jack for the fun  
She got Arthur on the table with Johnny riding a shotgun  
Chatted some more, one more drink at the bar  
Then put Van on the jukebox, got up to dance

You know, she played the fiddle in an Irish band  
But she fell in love with an English man  
Kissed her on the neck and then I took her by the hand  
Said, "Baby, I just want to dance"  
With my pretty little Galway Girl  
You're my pretty little Galway Girl

You know she beat me at darts and then she beat me at pool  
And then she kissed me like there was nobody else in the room  
As last orders were called was when she stood on the stool  
After dancing to Cèilidh singing to trad tunes  
I never heard Carrickfergus ever sang so sweet  
A capella in the bar using her feet for a beat  
Oh, I could have that voice playing on repeat for a week  
And in this packed out room swear she was singing to me

You know, she played the fiddle in an Irish band  
But she fell in love with an English man  
Kissed her on the neck and then I took her by the hand  
Said, "Baby, I just want to dance"  
My pretty little Galway Girl  
My, my, my, my, my, my, my Galway Girl  
My, my, my, my, my, my, my Galway Girl  
My, my, my, my, my, my, my Galway Girl

And now we've overstayed our welcome and it's closing time  
I was holding her hand, her hand was holding mine  
Our coats both smell of smoke, whisky and wine  
As we fill up our lungs with the cold air of the night  
I walked her home then she took me inside  
To finish some Doritos and another bottle of wine  
I swear I'm gonna put you in a song that I write  
About a Galway Girl and a perfect night

She played the fiddle in an Irish band  
But she fell in love with an English man  
Kissed her on the neck and then I took her by the hand  
Said, "Baby, I just want to dance"  
My pretty little Galway Girl  
My, my, my, my, my, my, my Galway Girl  
My, my, my, my, my, my, my Galway Girl  
My, my, my, my, my, my, my Galway Girl

*Steve Earle, 2000*

**09) Yellow Submarine***John Lennon & Paul McCartney, 1969*

In the town where I was born  
 Lived a man who sailed to sea  
 And he told us of his life  
 In the land of submarines  
 So we sailed on to the sun  
 'Til we found a sea of green  
 And we lived beneath the waves  
 In our yellow submarine

We all live in a yellow submarine  
 Yellow submarine, yellow submarine  
 We all live in a yellow submarine  
 Yellow submarine, yellow submarine

And our friends are all aboard  
 Many more of them live next door  
 And the band begins to play

We all live in a yellow submarine  
 Yellow submarine, yellow submarine  
 We all live in a yellow submarine  
 Yellow submarine, yellow submarine

Full steam ahead, Mister Boatswain, full steam ahead  
 Full steam ahead it is, Sergeant  
 (Cut the cable, drop the cable)  
 Aye-aye, sir, aye-aye  
 Captain, captain

As we live a life of ease (a life of ease)  
 Every one of us (every one of us)  
 Has all we need (has all we need)  
 Sky of blue (sky of blue)  
 And sea of green (sea of green)  
 In our yellow (in our yellow)  
 Submarine (submarine, aha)

We all live in a yellow submarine  
 A yellow submarine, yellow submarine  
 We all live in a yellow submarine  
 A yellow submarine, yellow submarine  
 We all live in a yellow submarine  
 Yellow submarine, yellow submarine  
 We all live in a yellow submarine  
 Yellow submarine, yellow submarine

**10) Lili Marlene***Norbert Schultze, 1938*

Underneath the lantern  
 By the barrack gate  
 Darling I remember  
 The way you used to wait  
 'Twas there that you whispered tenderly  
 That you loved me  
 You'd always be  
 My Lili of the lamplight  
 My own Lili Marlene

Time would come for roll call  
 Time for us to part  
 Darling I'd caress you  
 And press you to my heart  
 And there neath that far off lantern light  
 I'd hold you tight  
 We'd kiss good night  
 My Lili of the lamplight  
 My own Lili Marlene

Orders came for sailing  
 Somewhere over there  
 All confined to barracks  
 'Twas more than I could bear  
 I knew you were waiting in the street  
 I heard your feet  
 But could not meet  
 My Lili of the lamplight  
 My own Lili Marlene

Resting in our billet  
 Just behind the line  
 Even though we're parted  
 Your lips are close to mine  
 You wait where that lantern softl gleamed  
 Your sweet face seems  
 To haunt my dreams  
 My Lili of the lamplight  
 My own Lili Marlene  
 My Lili of the lamplight  
 My own Lili Marlene

**11) Lili Marlen***Norbert Schultze*

Vor der Kaserne  
 vor dem großen Tor  
 stand eine Laterne und steht sie  
 nach davor.  
 So wollen wir da  
 uns wieder sehen  
 bei der Laterne wollen wir stehen  
 wie einst Lili Marlen

Unsere beiden Schatten  
 sah'n wir einer aus  
 dass wir so lieb uns hatten  
 das sah man gleich daraus.  
 Und alle Leute soll'n es sehen  
 wenn wir bei der Laterne stehen  
 wie einst Lili Marlen

Schon rief der Posten  
 sie blasen Zapfenstreich  
 es kann drei Tage kosten.  
 Kam'rad, ich komm so gleich.  
 Da sagten wir auf Wiedersehen  
 wie gerne wollt ich mit dir gehen  
 mit dir Lili Marlen

Deine Schritte kennt sie,  
 deine schöne Gang  
 aller Abend brennt sie,  
 doch mich vergaß sie lang.  
 und sollten mir eines Leids geschehen  
 wer wird bei der Laterne stehen  
 mit dir Lili Marlen?

Aus dem stillen Raume,  
 aus der Erde Grund  
 hebt mich wie im Traüme  
 dein verliebter Mund.  
 Wenn sich die späten Nebel drehen  
 werd' ich bei der Laterne stehen  
 wie einst Lili Marlen

*Hans Leip, 1915*



## 12) Velkommen I den grønne lund

*J.C. Gebauer, 1840*

Velkommen i den grønne lund,  
hvor fuglene de sjunge!  
Det høres skal: Den danske mund  
til sang har og en tunge.  
Vi har det godt i grunden her,  
såvel som vore fædre.  
Vil Gud, den dag tør være nær,  
vi får det end lidt bedre.

Kan munden vi få ret på gang  
til andet end at spise.  
Hvert andet barn i Dannevang  
forstår halvkvæden vise.  
For, hvad vi fattes først og sidst  
til lykke ej så ganske.  
Men lidt dog både her og hist,  
det er det ægte danske.

Vi fører løver i vort skjold  
af hjerter tæt omsatte.  
Dem førte vi fra hedenold  
og ingen abekatte.  
Hver fugl må synge med sit næb,  
og livet, kan vi skønne,  
var uden sang kun slid og slæb.  
Velkommen i det grønne!

*N.F.S. Grundtvig, 1843 /  
Erik Grip, 1983*

## 14) Blowin' in the wind

*Bob Dylan*

How many roads must a man walk down  
Before you call him a man?  
How many seas must a white dove sail  
Before she sleeps in the sand?  
Yes, and how many times must the cannonballs fly  
Before they're forever banned?

The answer, my friend, is blowin' in the wind  
The answer is blowin' in the wind

Yes, and how many years must a mountain exist  
Before it is washed to the sea?  
And how many years can some people exist  
Before they're allowed to be free?  
Yes, and how many times can a man turn his head  
And pretend that he just doesn't see?

The answer, my friend, is blowin' in the wind  
The answer is blowin' in the wind

Yes, and how many times must a man look up  
Before he can see the sky?  
And how many ears must one man have  
Before he can hear people cry?  
Yes, and how many deaths will it take 'til he knows  
That too many people have died?

The answer, my friend, is blowin' in the wind  
The answer is blowin' in the wind

*Bob Dylan, 1963*

## 13) Thrice welcome to the leafy grove

*J.C. Gebauer, 1840*

Thrice welcome to the leafy grove,  
Where birds are sweetly singing!  
Let too the Danish tongue now prove  
Its song can set things ringing.  
For all in all we're well off here,  
Like those of old who bore us  
God willing, may the day be near  
When more still lies before us.

If we could all our mouths command  
To more besides just eating,  
Each second child in Denmark's land  
Would grasp what won't need speaking.  
Not much is needed joy to share  
And present lacks to banish,  
A little though, both here and there,  
That's what is truly Danish.

Proud lions adorn the Danish shield  
Bestrewn with hearts unshrinking,  
Since days of old they hold the field,  
Not miming apes unthinking.  
Each bird its special song must find,  
For life would without singing  
Be merely drudgery and grind.  
So welcome, hear it ringing!

*John Irons, ca. 1983*

**15) Tula Tula**

Tula Tu Tula baba Tula sana  
Tul'umam 'uzobuya ekuseni  
Tula Tu Tula baba Tula sana  
Tul'umam 'uzobuya ekuseni  
(Be silent baby keep silent)  
(Mama will be back in the morning)  
Hush my baby close your eyes  
Time to fly to paradise  
Till the sunlight brings you home  
You must dream your dreams alone  
Tula Tu Tula baba Tula sana  
Tul'umam 'uzobuya ekuseni  
Tula Tu Tula baba Tula sana  
Tul'umam 'uzobuya ekuseni  
(Be silent baby keep silent)  
Mama will be back in the morning)  
Hush my baby go to sleep  
I'll be with you counting sheep  
Dreams will take you far away  
Sleep until the break of day  
Tula Tu Tula baba Tula sana  
Tul'umam 'uzobuya ekuseni  
Tula Tu Tula baba Tula sana  
Tul'umam 'uzobuya ekuseni  
(Be silent baby keep silent)  
Mama will be back in the morning)  
dudududududu  
dudududududu  
dudududududu  
dudududududu

**16) In my life**

*John Lennon & Paul McCartney*

There are places I'll remember  
All my life though some have changed  
Some forever, not for better.  
Some have gone and some remain

All these places have their moments  
With lovers and friends, I still can recall.  
Some are dead and some are living  
In my life I've loved them all

But of all these friends and lovers  
There is no one compares with you.  
And these memories lose their meaning  
When I think of love as something new

Though I know I'll never lose affection  
For people and things that went before.  
I know I'll often stop and think about them  
In my life I love you more

Though I know I'll never lose affection  
For people and things that went before  
I know I'll often stop and think about them  
In my life I love you more

In my life I love you more

*John Lennon & Paul McCartney, 1965*



**17) Amazing Grace**

*William Walker, 1835*

Amazing Grace, how sweet the sound  
That saved a wretch like me.  
I once was lost, but now am found  
Was blind but now I see

Was Grace that taught my heart to fear  
And Grace, my fears relieved.  
How precious did that Grace appear  
The hour I first believed

Through many dangers, toils and snares  
I have already come.  
T'was Grace that brought us safe thus far  
And Grace will lead us home.

The Lord has promised good to me,  
His word my hope secures.  
He will my shield and portion be  
As long as life endures.

Yes, when the flesh and heart shall fail  
And mortal life shall cease.  
I shall possess, within the veil  
A life of joy and peace.

The earth shall soon dissolve like snow  
The sun forbear to shine.  
But God, who call'd me here below  
Will be forever mine.

*John Newton, 1773*

**18) You've Got a Friend**

*Carole King*

When you're down and troubled  
And you need some lovin' care  
And nothin', nothin' is goin' right.  
Close your eyes and think of me  
And soon I will be there  
To brighten up even your darkest night

You just call out my name.  
And you know, wherever I am  
I'll come runnin'  
To see you again.  
Winter, spring, summer or fall:  
All you have to do, is call  
And I'll be there.  
You've got a friend

If the sky above you  
Grows dark and full of clouds  
And that old north wind begins to blow.  
Keep your head together  
And call my name out loud.  
Soon you'll hear me knockin' at your door

You just call out my name  
And you know, wherever I am  
I'll come runnin', runnin', yeah, yeah  
To see you again.  
Winter, spring, summer or fall:  
All you have to do, is call  
And I'll be there, yes, I will

Now, ain't it good to know that you've got a friend  
when people can be so cold?  
They'll hurt you, yes, and desert you  
And take your soul if you let them.  
Oh, but don't you let them

You just call out my name	Ain't it good to know you've got a friend
And you know, wherever I am	Ain't it good to know, ain't it good to know
I'll come runnin', runnin', yeah, yeah	Ain't it good to know
To see you again	You've got a friend
Winter, spring, summer or fall:	Oh, yeah, now, you've got a friend
All you have to do, is call	Yeah baby, you've got a friend
And I'll be there, yes, I will	Oh, yeah, you've got a friend
You've got a friend	
You've got a friend	

*Carole King, 1971*

**19) Raindrops keep falling on my head***Burt Bacharach & Hal David*

Raindrops are falling on my head  
 And just like the guy whose feet are too big for his bed  
 Nothing seems to fit  
 Those raindrops are falling on my head, they keep falling

So, I just did me some talking to the sun  
 And I said I didn't like the way he got things done  
 Sleeping on the job  
 Those raindrops are falling on my head, they keep falling

But there's one thing I know  
 The blues they send to meet me  
 Won't defeat me, it won't be long  
 Till happiness steps up to greet me

Raindrops keep falling on my head  
 But that doesn't mean my eyes will soon be turning red  
 Crying's not for me  
 'Cause I'm never gonna stop the rain by complaining  
 Because I'm free  
 Nothing's worrying me

It won't be long till happiness steps up to greet me

Raindrops keep falling on my head  
 But that doesn't mean my eyes will soon be turning red  
 Crying's not for me  
 'Cause I'm never gonna stop the rain by complaining  
 Because I'm free  
 Nothing's worrying me

*Burt Bacharach & Hal David, 1969***20) Svantes lykkelige dag***Benny Andersen*

Se, hvilken morgenstund!  
 Solen er rød og rund.  
 Nina er gået i bad.  
 Jeg spiser ostemad.  
 Livet er ikke det værste man har  
 og om lidt er kaffen klar.

Blomsterne blomstrer op.  
 Der går en edderkop.  
 Fuglene flyver i flok  
 når de er mange nok.  
 Lykken er ikke det værste man har  
 og om lidt er kaffen klar.

Græsset er grønt og vådt,  
 Bierne har det godt.  
 Lungerne frådser i luft.  
 Åh, hvilken snerleduft!  
 Glæden er ikke det værste man har  
 og om lidt er kaffen klar.

Sang under brusebad.  
 Hun må vist være glad.  
 Himlen er temmelig blå.  
 Det ka' jeg godt forstå.  
 Lykken er ikke det værste man har  
 og om lidt er kaffen klar.

Nu kommer Nina ud,  
 nøgen, med fugtig hud,  
 kysser mig kærligt og går  
 ind for at re' sit hår.  
 Livet er ikke det værste man har  
 og om lidt er kaffen klar.

*Benny Andersen, 1972***21) Svante's Happy Day**

Look, real daylight soon  
 Red sun and waning moon  
 She takes a shower for me  
 Me, whom it's good to be  
 Life's not so bad, for it's all we have got  
 and the coffee's almost hot

Buds now come budding up  
 There is a buttercup  
 Birds fly in squadrons for fun  
 if they are more than one  
 Happiness well, it's all we have got  
 And the coffee's almost hot

All grass is wet and green  
 Bees are as bees have been  
 Since they first tasted the air  
 Ah, and with me they share  
 Pleasure's not bad, for it's all we have got  
 And the coffee's almost hot

Singing her shower song  
 She's happy all day long  
 So pretty blue is the sky  
 It's just as bright as I  
 Happiness - well, it's all we have got  
 And the coffee's almost hot

Nina comes smiling in  
 Naked in blushing skin  
 Gives me a kiss then and there  
 Then goes to comb her hair  
 Life's not so bad, for it's all we have got  
 And the coffee's almost hot

*Benny Andersen*



**22) I was a lover and his lass**

*Thomas Morley, 1599*

It was a lover and his lass  
With a hey, and a ho, and a hey nonino,  
And a hey, noni, nonino.  
That o'er the green cornfield did pass.  
In springtime, in springtime,  
In springtime, the only pretty ring time,  
When birds do sing, hey ding-a-ding-a-ding.  
Hey ding-a-ding-a-ding, hey ding-a-ding-a-ding,  
Sweet lovers love the spring.

Between the acres of the rye,  
With a hey...  
These pretty country folks would lie  
In springtime...

This carol they began that hour,  
With a hey...  
How that life was but a flower.  
In springtime...

And therefore take the present time,  
With a hey...  
For love is crowned with the prime.  
In springtime...

*William Shakespeare, 1596-1600*  
*(From As You Like It.)*

**23) Let it be**

*John Lennon & Paul McCartney*

When I find myself in times of trouble  
Mother Mary comes to me  
Speaking words of wisdom.  
Let it be

And in my hour of darkness  
She is standing right in front of me  
Speaking words of wisdom.  
Let it be

Let it be, let it be  
Let it be, let it be  
Whisper words of wisdom  
Let it be

And when the brokenhearted people  
Living in the world agree  
Twill be an answer  
Let it be

For though they may be parted  
There is still a chance that they will see  
There will be an answer  
Let it be

Let it be, let it be  
Let it be, let it be  
Yeah, there will be an answer  
Let it be

Let it be, let it be  
Let it be, let it be  
Whisper words of wisdom  
Let it be

Let it be, let it be  
Let it be, yeah, let it be  
Whisper words of wisdom  
Let it be

And when the night is cloudy  
There is still a light that shines on me  
Shine on 'til tomorrow  
Let it be

I wake up to the sound of music  
Mother Mary comes to me  
Speaking words of wisdom  
Let it be, yeah

Let it be, let it be  
Let it be, yeah, let it be  
Oh, there will be an answer  
Let it be

Let it be, let it be  
Let it be, yeah, let it be  
Whisper words of wisdom  
Let it be.

*John Lennon & Paul McCartney,*  
*1970*

## 24) Penny Lane

*John Lennon & Paul McCartney*

Penny Lane, there is a barber showing photographs  
Of every head he's had the pleasure to know.  
And all the people that come and go  
Stop and say, "Hello"

On the corner is a banker with a motorcar  
And little children laugh at him behind his back.  
And the banker never wears a Mac in the pouring rain.  
Very strange

Penny Lane is in my ears and in my eyes.  
Wet beneath the blue suburban skies  
I sit and meanwhile back in

Penny Lane, there is a fireman with an hourglass  
And in his pocket is a portrait of the Queen.  
He likes to keep his fire engine clean.  
It's a clean machine

Penny Lane, is in my ears and in my eyes  
A four of fish and finger pies  
In summer, meanwhile back

Behind the shelter in the middle of a roundabout  
A pretty nurse is selling poppies from a tray.  
And though she feels as if she's in a play  
She is anyway

Penny Lane, the barber shaves another customer.  
We see the banker sitting waiting for a trim.  
And then, the fireman rushes in from the pouring rain.  
Very strange

Penny Lane is in my ears and in my eyes  
There beneath the blue suburban skies  
I sit and meanwhile back

Penny Lane is in my ears and in my eyes  
There beneath the blue suburban skies  
Penny Lane

*John Lennon & Paul McCartney, 1967*

## 25) What a Wonderful World

*George David Weiss & George Douglas*

I see trees so green, red roses too  
I see them bloom for me and you.  
And I think to myself what a wonderful world.

I see skies so blue and clouds so white.  
The bright blessed day, the dark sacred night.  
And I think to myself what a wonderful world.

The colors of the rainbow so pretty in the sky  
Are also on the faces of people going by.  
I see friends shaking hands saying how do you do.  
They're really saying I love you.  
I hear babies crying, I watch them grow.  
They'll learn much more than I'll ever know.

And I think to myself what a wonderful world.  
Yes, I think to myself what a wonderful world  
Yes, I think to myself what a wonderful world.

*George David Weiss & George Douglas, 1967*

## 26) Auld Lang Syne

*Scottish tune, 1687*

Should auld acquaintance be forgot  
And never brought to mind?  
Should auld acquaintance be forgot  
And days of auld lang syne?

And surely ye'll be your pint-stowp  
And surely I'll be mine.  
And we'll tak a cup o' kindness yet  
For auld lang syne

For auld lang syne, my dear.  
For auld lang syne.  
We'll tak a cup o' kindness yet  
For days of auld lang syne.

And there's a hand, my trusty fiere  
And gie's a hand o' thine.  
And we'll tak a right gude-willy  
waught  
For auld lang syne

We twa hae run about the braes  
And pu'd the gowans fine.  
But we've wander'd mony a weary fit  
Sin days of auld lang syne

For auld lang syne, my dear  
For auld lang syne  
We'll tak a cup o' kindness yet  
For auld lang syne

And we twa hae paidl'd I' the burn  
Frae morning sun 'til dine.  
But seas between us braid hae roar'd  
Sin days of auld lang syne

For auld lang syne, my dear  
For auld lang syne  
We'll tak a cup o' kindness yet  
For auld lang syne

For auld lang syne, my dear  
For auld lang syne  
We'll tak a cup o' kindness yet  
For days of auld lang syne

*Robert Burns, 1788*



## 27) Journalism is for very gifted people

*Lasse Dahlquist, ca. 1939*

It came to me when I was very little  
My destiny is writing words a lot  
I know that many rather play the fiddle  
They call it art – but my job it is hot  
I know about the pigs and cows and horses  
And single market's many paragraphs  
Whisky is produced from malt  
In the kitchen we use salt  
Journalism is for very gifted people

I know that slurry smells, but it is needed  
Canola, wheat and soya take it in  
With N and P and humus soil is feeded  
Organic apples get from shit their skin  
A journalist must never be a faker  
In case he is, we dump him from our guild  
Now it's time to shout it loud  
If you lie, we'll throw you out  
Journalism is for very honest people

A colleague took a photo of a cowboy  
A farmer kicked a tire with his boot  
The new combine is the farmer's fun toy -  
Delivering the cereals for food  
In modern labs the scientists can tell us  
About the latest news from R & D  
That's the way to feed the globe  
Use the facts, not only hope  
Journalism is for very gifted people.

And now we see and talk about the no till  
To spare the diesel, save the CO<sub>2</sub>!  
But realise that glyphosate we need still  
If we shall save the Earth for me and you  
Our farmers will adopt the science  
When it's told the way as we can do  
We must use the pen and block  
In a fair way, without shock  
Journalism is for very clever people

Just think about the snow in our childhood  
Compare it with the winters nowadays  
The jungle is cut down, we lost some wild wood  
The climate change we have in many ways  
We humans still produce a lot of children  
While all the grannies they refuse to die  
Soon ten billion we will be  
With less space for you and me  
Our farmers must produce much more per hectare

Sustainability means optimising  
Environment and nature around us  
So, you as journalist, you must be thinking  
And write a story about harvest plus  
Now, if the sow delivers fewer piglets  
And cows refuse to give some extra milk  
We must cut the jungle's roots  
Use more land to give us food  
The alternative is sad: we must go vegan

Well, I know about investigations  
Rating journalists so badly low  
Trusted even worse than politicians  
Boosting in a dumb election show  
That is why we need the IFAJ  
Formulating all of our rights.  
Let's be known to everyone  
Our job, it will be done!  
And in Denmark it includes the cartoonism

Soon it's time to skåle, glass be lifted!  
And we deserve it, because we are good  
But don't forget we also all are gifted  
Thank to partners, you who paid the food  
Journalists are nothing without sources  
Partners will have problems without us  
But we all remember must  
Freedom, it can also cost  
That is why a good reporter can be stubborn

We all admire bio-engineering  
Cow-shit takes the airbus in the sky  
We will take the cockpit and the steering  
Without shame we will go on and fly  
See you next year west out in Alberta  
Where the Rockies and the prairies meet  
Our network is so strong  
We are – almost – never wrong  
Journalism is for very gifted people

*Jørgen Lund Christiansen*





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