

Chemtrade Estonia OU

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MO-LAB

Project:

Modern agriculture and
future-oriented vocational
training



Vocational secondary education on the basis of basic education (full-time learning)

- ▶ **AGRICULTURAL WORKER CURRICULUM MODULES IMPLEMENTATION PROGRAM (on the basis of “Olustvere School of Service and Rural Economics”)**
- ▶ **The specialty is for young people who enjoy life in the countryside, machines and animals; at the same time, boys and girls who have chosen agriculture must be ready to work in the future, regardless of the time, if necessary. The agricultural profession requires good health, a sharp mind and a positive outlook on life!**



The program consists of compulsory and elective theoretical modules, theoretical exam and practice.

Learning of:

- ▶ crop production (soil and fertilization training, farming, plant protection, cultivation of arable and grassland crops);
- ▶ animal husbandry (cattle and pig farming, animal nutrition, health, farm technologies);
- ▶ agricultural machinery (tractors, agricultural machinery, metalwork, stationary machinery)
- ▶ basics of economics and business (basics of accounting, business, basics of management, economics, principles of preparing a business plan)
- ▶ occupational safety, labor legislation, computer use, communication
- ▶ basics of horticulture, basics of forestry, construction and repair works



AGRICULTURAL MODULES

- 1 LEARNING PATH AND WORK IN A CHANGING ENVIRONMENT
- 2 GROWING OF ARABLE AND GRASSLAND CROPS
- 3 HARVESTING AND PRESERVATION OF CROPS
- 4 HARVESTING AND PRESERVATION OF GRASSLAND CROPS
- 5 MAINTENANCE OF AGRICULTURAL MACHINERY AND EQUIPMENT
- 6 CATTLE CARE
- 7 FEEDING OF CATTLE
- 8 CATTLE HEALTH
- 9 GRAZING OF CATTLE
- 10 MILKING
- 11 REPRODUCTION OF BOVINE ANIMALS
- 12 PRACTICE



GENERAL STUDIES MODULES

1 LANGUAGE AND LITERATURE

2 FOREIGN LANGUAGE

3 MATHEMATICS

4 NATURAL SCIENCES

5 SOCIAL SCIENCES

6 ARTS



ELECTIVE MODULES (SCHOOL CHOICE)

- 1 TRANSPORT AND LOGISTIC
- 2 BASICS OF SHEEP AND GOAT BREEDING
- 3 BASICS OF HORTICULTURE
- 4 BASICS OF FORESTRY
- 5 RUSSIAN
- 6 BASICS OF ORGANIC FARMING
- 7 BASICS OF BEEKEEPING
- 8 COMPUTER TRAINING
- 9 BASICS OF PIG FARMING
- 10 BASIS OF ACCOUNTING
- 11 ECONOMIC FUNDAMENTALS
- 12 COMMUNICATION AND TEAMWORK
- 13 FUNDAMENTALS OF LABOR LAW
- 14 OCCUPATIONAL SAFETY AND FIRST AID
- 15 CUSTOMER SERVICE



ELECTIVE MODULES (LEARNER'S CHOICE)

17.1 PHYSICAL ABILITIES AND MOBILITY SKILLS

17.2 MATHEMATICS (NARROW MATHEMATICS COURSE FOR GO TO UNIVERSITY)

17.3 MANUFACTURE OF MEAT PRODUCTS

17.4 PREPARATION OF A BUSINESS PLAN



THEORETICAL LEARNING

- ▶ As a result of theoretical studies, vocational secondary education and knowledge necessary for effective work on agricultural holdings are acquired.
- ▶ Practical training is carried out mainly in the school's study farm, where there are all possibilities (field, machines) for teaching the specialty at a modern level.
- ▶ Neighboring companies and firms are also involved in the teaching. In the second year, the students have 3 weeks of animal husbandry internship (farm work) and 3 weeks of farming internship (spring field work); after the third year, there is a 22-week internship.
- ▶ The curriculum also includes the subjects necessary for obtaining driving licenses for a car (category B) and a tractor (category T). Driving licenses can be obtained by the end of the second year. In the third year it is also possible to obtain a certificate of a plant protection worker.
- ▶ The final exam is combined with the professional qualification exam (level IV of an agricultural worker).
- ▶ The graduate of the program is an agricultural worker with diverse skills, who copes with work of different sizes and specializations in agricultural enterprises, agricultural service companies and companies engaged in the procurement and sale of agricultural products.



MODULE: BASICS OF ORGANIC FARMING

Purpose of the module

the aim of the teaching is that the learner is able to feel the processes taking place in nature, understand them and plan their activities taking into account the laws in force in nature

Teaching methods

Reading with thought, discussion, teamwork, engaging lecture, etc.

Assessment

Assessment of the activities indicated in the assessment criteria of learning outcomes through theoretical and independent work

Written work

- cultivation of arable and horticultural crops and herbs and spices
- organic livestock farming (cattle, pigs, sheep, goats, poultry)

Learning outcomes (the student learns the following knowledge and skills):

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- UNDERSTANDS THE NATURE OF ENVIRONMENTALLY FRIENDLY AND ORGANIC FARMING, UNDERSTANDS ITS ROLE IN NATURE
- EXPLAINS THE BASIC CONCEPTS OF ENVIRONMENTALLY FRIENDLY AND ORGANIC FARMING; ANALYZES ITS ROLE AS PART OF THE NATURAL ENVIRONMENT
- UNDERSTANDS THE PRINCIPLES OF ENVIRONMENTALLY FRIENDLY AND ORGANIC FARMING
- FILLS IN THE DOCUMENTS NECESSARY FOR APPLYING FOR ORGANIC SUPPORT
- USES THE PRINCIPLES OF ENVIRONMENTALLY FRIENDLY AND ORGANIC PLANT GROWING IN ITS ACTIVITIES, LINKING THEM WITH REAL PRODUCTION CONDITIONS
- CLARIFIES THE REQUIREMENTS FOR ENVIRONMENTALLY FRIENDLY AND ORGANIC PLANT PRODUCTION
- UNDERSTANDS THE PRINCIPLES OF ORGANIC PLANT GROWING, DESCRIBES THE SPECIFICS OF GROWING DIFFERENT AGRICULTURAL AND HORTICULTURAL CROPS
- WORKS IN AN ORGANIC PLANT
- USES THE PRINCIPLES OF ENVIRONMENTALLY FRIENDLY AND ORGANIC ANIMAL HUSBANDRY IN ITS ACTIVITIES, LINKING THEM TO REAL PRODUCTION CONDITIONS
- CLARIFIES THE REQUIREMENTS FOR ENVIRONMENTALLY FRIENDLY AND ORGANIC LIVESTOCK PRODUCTION
- UNDERSTANDS THE PRINCIPLES OF ORGANIC ANIMAL HUSBANDRY, DESCRIBES THE PECULIARITIES OF BREEDING OF DIFFERENT ANIMALS
- WORKS IN AN ORGANIC LIVESTOCK COMPANY

Topics, subtopics:



1. Basics of organic farming

- organic farming in Estonia and the EU; basic concepts, history; modern organic farming systems
- Organic Farming Act; Animal Protection Act, etc., support for organic farming

Topics, subtopics:



2. Environmentally friendly and organic plant growing

- soil as a living organism; crop rotations; tillage
- organic fertilizers, green fertilizers; composting, mulch
- cultivation of arable and horticultural crops, herbs and medicinal plants; alternative production; species and varieties suitable for organic farming
- plant protection, weeds and their control
- Requirements for environmentally friendly and organic plant production

Topics, subtopics:



3. Environmentally friendly and organic animal husbandry

- principles of organic animal husbandry (cattle, pig, sheep, goat, poultry), suitable animal breeds; local breeds; manure management
- animal welfare and health; principles of organic representation
- organic feed; cultivated and natural grasslands, use and maintenance of grasslands; hay and silage making, storage requirements
- requirements for environmentally friendly and organic livestock production

Themes and activities



- ▶ Essay / discussion on "Me and organic farming"
- ▶ explains the importance of soil, crop rotations and soil cultivation in organic crop production and the principles and possibilities of plant feeding
- ▶ gets acquainted with the cultivation of agricultural and horticultural crops and herbs and medicinal plants; selects species and varieties suitable for organic farming
- ▶ knows the possibilities of plant protection
- ▶ explains the principles of organic animal husbandry (cattle, pig, sheep, goat, poultry), selects suitable animal breeds
- ▶ organic feed; cultivated and natural grasslands, use and maintenance of grasslands; hay and silage making, storage requirements



THANK YOU FOR ATTENTION

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PÕLLUMAJANDUSUURINGUTE KESKUS
AGRICULTURAL RESEARCH CENTRE

Agricultural Research Centre (ARC)

Triin Sellis

Coordinator of DUS and Post-control trials

Viljandi variety testing centre

Tallinn

2021





Agricultural Research Centre (ARC)

Teaduse 4, Saku, 75501
www.pmk.agri.ee/en

- **administered by the Estonian Ministry of Rural Affairs**
- **A recognized partner** for national controlling system
- **A certified competence center** for agricultural analysis and field sample tests
- **Designing** agricultural and rural politics
- **Creating and disseminating** new knowledge
- **Supports** various partners from agricultural, environmental and rural sector for making decisions



Main services of ARC

- Laboratory analysis
- Field testing
- Agri-environmental monitoring
- Analysis of rural economy
- Farm Accountancy Data Network (FADN)
- Evaluation of Estonian Rural Development Plan (RDP)
- Rural networking
- Accrediting professional standard for advisors

Agricultural Research Centre (ARC) is situated in 7 different locations in Estonia



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AGRICULTURAL RESEARCH CENTRE

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MANAGEMENT

DEVELOPMENT AND ADMINISTRATION DEPARTMENT

- Technical Support Office
- Sample Reception Office

Director
Deputy Directors
Quality Manager
Communications and Marketing Manager
Advisor

FINANCE AND HUMAN RESOURCES DEPARTMENT

LABORATORIES

Laboratory of Agrochemistry

Laboratory of Seed Testing

Laboratory of Feed and
Residues

Laboratory of Plant Health and
Microbiology

TEST CENTERS

Kuusiku Variety Testing Centre

Viljandi Variety Testing Centre

Võru Variety Testing Centre

DEPARTMENTS

Rural Network Department

Rural Economy Analysis
Department

Agricultural Research and
Monitoring Department

- Agri-environmental Monitoring and
Research Bureau
- Soil Monitoring and Research Bureau

ARC structure from 01.01.2021

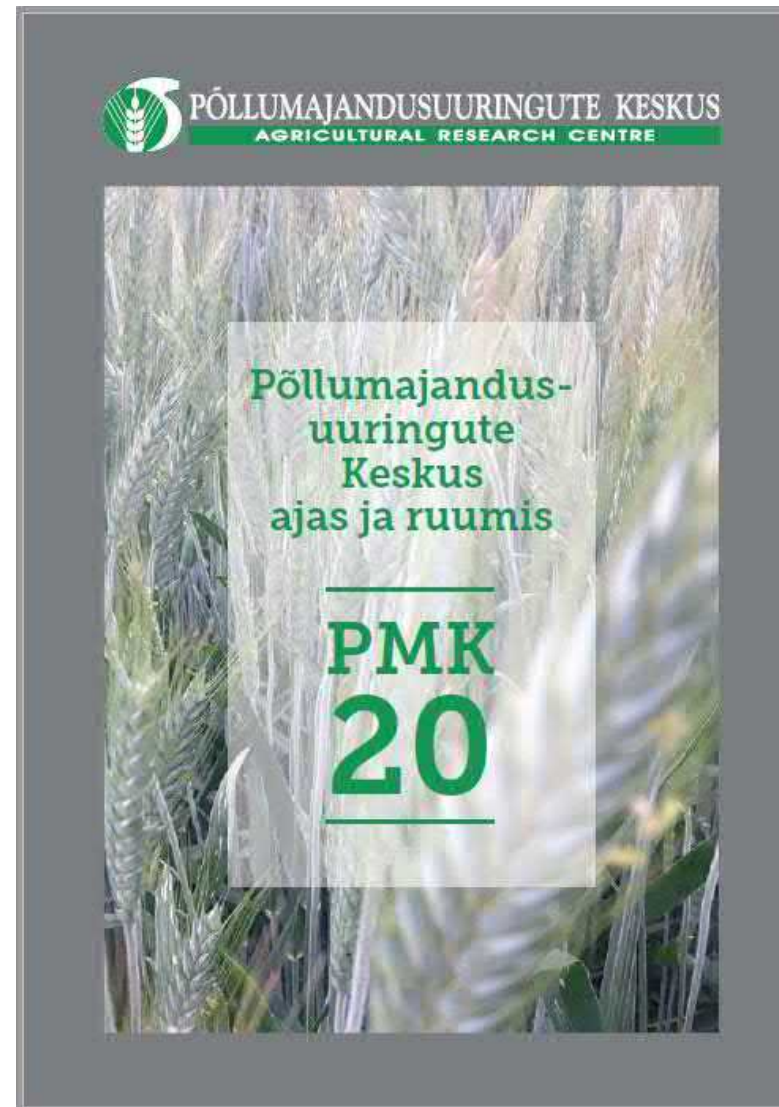
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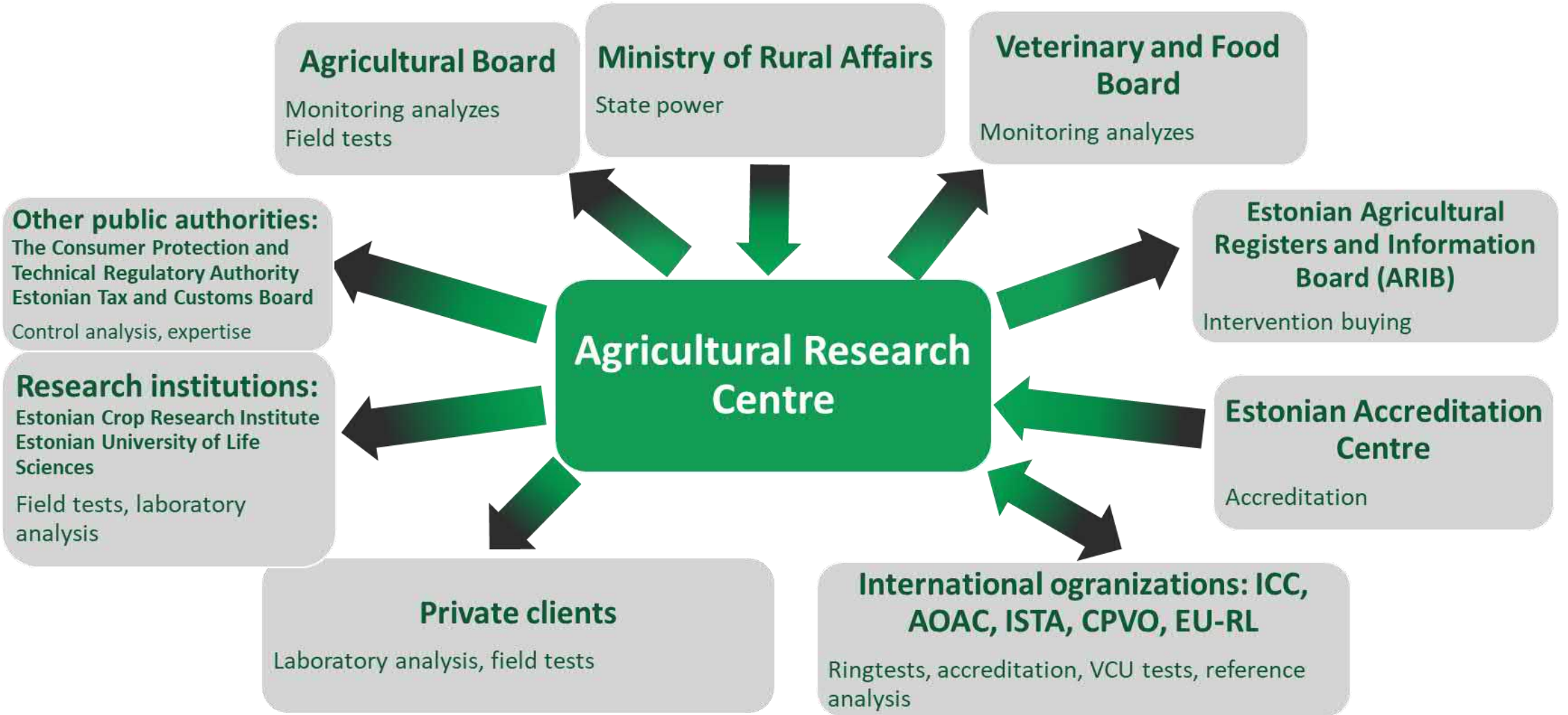




„Agricultural Research Centre in time and space. ARC 20“

- The history of ARC testing centres and seed testing laboratory dates back to the early days of the Republic of Estonia
- First testing stations at the end of 19th century
- First trials in Kuusiku in 1909
- In 1998 Control Center of Plant Production was established, which was renamed as Agricultural Research Centre in 2004







Quality System

- The laboratories are accredited according to the standard EVS EN ISO/IEC 17025:2017
 - ISTA (International Seed Testing Association)
 - GAFTA (Grain and Feed Trade Association)
- Test centres are certified according to standard ISO 9001 + CPVO





Field trials

- ARC has 3 field testing sites:
 - **Kuusiku Variety Testing Centre;**
 - **Viljandi Variety Testing Centre;**
 - **Võru Variety Testing Centre.**
- 381 ha of land in total and 10 000 testing plots annually.

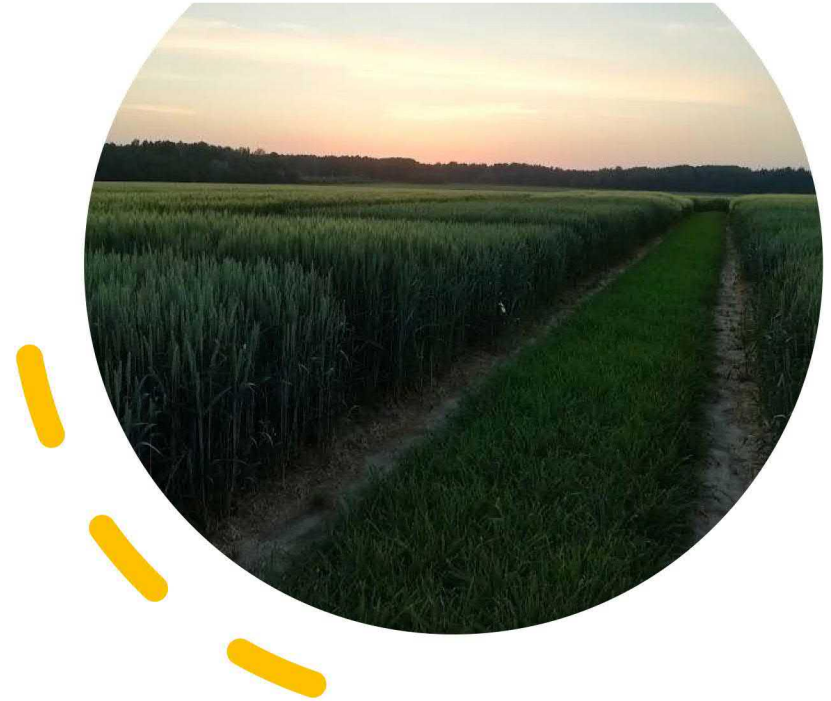
Viljandi Variety Testing Centre is accredited by CPVO (only one in Baltic)





Field trials

- DUS – Distinctness, Uniformity and Stability test
- VCU – Value for Cultivation and Use (3 testing centres)
- Post-control of certified seed
- Field testing for private sector (breeders, seed companies) and for scientific purpose
 - winterhardiness
 - fertilization
 - seed treatment
 - plant protection
 - suitability for growing in the area
 - ...



Database for VCU testing results



<https://pmk.agri.ee/viljandi2/katsed/otsing.php?lang=eng>

- Farmers can search and compare different varieties using multiple parameters (year, testing site, crop, variety name, etc)
- Data starts from year 2002

Otsingu parameetrid Leia nime järgi

Oder

Suvioder

Anni x

Kuusiku x Viljandi x Võru x

2019 x

? Abi Tühjenda Otsi

Täpsusta otsingut Tulemused Exceli failis ? Abi 30.07.2019

Sort	Katsekoht	Külviaasta	Saagiaasta	Saagikus, kg/ha, F1	LSD, F1	Kasvuage, päevades, F1	1000 tera mass, k.a. g., F1	Taimede kõrgus, cm, F1	Lamandumine, 1-9 palli, (1=ei lamandu), F1	Proteiin k.a., %, F1	Mahukaal, g/l, F1	Jääk söelal 2,8mm, %, F1	Ohete eemaldumine teradest, 1-3p. (1=kergesti, 3=raskesti), F1	Haigused, 1-9 palli (1=nakkus puudub), võrklaikus, F1	Haigused, 1-9 palli (1=nakkus puudub), äärislaikus, F1	Haigused, 1-9 palli (1=nakkus puudub), triiptöbi, F1	Haigused, 1-9 palli (1=nakkus puudub), kõrreliste pruunlaikus, F1	Haigused, 1-9 palli (1=nakkus puudub), kõrreliste jahukaste, F1
Anni	Viljandi	2019	2019	5323	638	96	49,1	62	1	12,6	700	87	3	2	1	1,3	1	1,3
Anni	Võru	2019	2019	8700	750	103	46,2	85	3,8	14,4	638	69,9	1	2,5	1	1	1,5	2
Anni	Kuusiku	2019	2019	5678	624	98	49,2	59	1	11	703	87,2	2	2	1	1	2	2





Kuusiku Agricultural Park



<https://pmk.agri.ee/et/katsekeskused/Kuusiku-pollumajanduspark>

Established in 2004. Area – 5 ha. The main objective is to present agriculture for education purposes.

The Park is presenting:

- Main Estonian field crops, fruits and vegetables
- Sample trials
- Collection of Estonian soils
- Ecological elements like hedge rows, field margins etc
- Stone walls and historical wood fences





Variety Testing Centres

- Species: wheat, barley, oat, rye, triticale, pea, bean, rapeseed, turnip rape, grasses, fodder beet, potatoes
- Climate data
- Annual soil sampling
- Diversity in soil properties
- Experienced staff
- Field days in the summer





- Agri-environmental monitoring, evaluation and studies
- Development and studies on Good Agricultural Practice
- Monitoring and studies on Estonian agricultural soils
- National soil monitoring programme (on request by Ministry of the Environment)
- Preparing fertilization and liming maps and practical recommendations
- Soil sampling and training soil samplers



Agri-environmental studies and activities are organised by Agricultural Research and Monitoring Department



Crop suitability mapping application based on soil data

www.pmk.agri.ee/et/pollumajanduskeskkonna-uuringud/muldade-kasutussobivuse-kaadirakendus



A mapping application for public use, which contains information on soil properties and provides recommendations for planning soil management on agricultural production.

The mapping application can be used for growing following crops:

Wheat, barley, oat, potatoes, rape, maize, peas, beans, buckwheat, sunflower, clover, melilotus, lupine, lucerne, silage, linen + grasses will be released

The screenshot shows the web interface of the crop suitability mapping application. At the top, there is a green header with the logo and name of the Agricultural Research Centre. Below the header is a search bar with the placeholder text "posti sihtnumber, nimi ja aadress". The main area is a satellite map of agricultural fields. On the right side, there is a sidebar with the following elements:

- Search criteria: "Otsi põllumassiivi numbri alusel:" with input field "12345678910" and "Otsi katastritunnuse alusel:" with input field "12345:123:1234".
- Data sources: "Põllumassiivide andmed: PRIA 26.02.2019", "Katastrandmed: Maa-amet 10.09.2019", and "Aluskaardid: Maa-amet".
- Legend: Three items with checkboxes: "Põllumassiivid", "Kataster", and "Herne sobivus".

Co-funded by the
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The online version of the mapping application is developed by the Soil Monitoring and Research Bureau





Thank You!
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SAIDAFARM OÜ Willkommen!

Die Farm Saidafarm OÜ ist eine Öko-Farm mit 8 Eigentümern ab dem Jahr 1992. In unserer Farm wurden von Anfang an bis zu dem heutigen Tag keine giftigen chemischen Wirkstoffe sowie keine chemischen Düngemittel benutzt. Wir sind überzeugt davon, dass wir durch Düngen der Felder nur mit Kompost aus Dung für die Gesundheit nützliche Milch und Milchprodukte erzeugen werden. Als wir als Öko-Farm anfangen, waren unsere Vorbilder die Farmer aus Schweden, Finnland und Deutschland. In der Saidafarm sind 26 Menschen beschäftigt und heute haben wir 150 Melkkühe und zusammen mit den Jungtieren (Färsen, Kälber und Bullen) ca. 300 Tiere.

Wir stellen unser Futter vollständig selbst her. Die Farm verfügt über 1.000 ha Land. Von diesem Land bekommen wir ausreichend Heu, Silofutter und Getreide. Da wir eine Öko-Farm sind, werden unsere Tiere freigelassen. Der Vorteil von der Freilandhaltung gegenüber üblicher Haltung besteht darin, dass die Tiere selbst ihr Leben organisieren können, d.h. sie können fressen und sich ausruhen da, wo für sie am bequemsten ist. Die Kühe melken wir auf einem Melkplatz für 10 Kühe. Zur gleichen Zeit ist mit dem Melken ein Melker beschäftigt.

die Produktion

Seit 1994 verarbeiten wir die ganze Milch in unserer Molkerei. Der Lieferwagen der Farm wird an den fünf Tagen in der Woche unsere leckeren Produkte zu den Kunden liefern. Wir produzieren verschiedene Quarks, Quarkcremes, Joghurts, Käsen. Insgesamt stellen wir 19 verschiedene Produkte her und ihre Lieblinge werden sowie Süßigkeiten liebende Menschen als auch Käsegourmands finden. Unsere Kunden lieben vor allem den Kakao-Quark und den Rosinen-Quark, Quarkcremes mit Mehl vom gerösteten Getreide und Sanddornmarmelade und Saida Käse mit Kümmeln und Knoblauch und Dill, ebenso weichen, fetaartigen weißen Käse mit Kräutern. Viele von unseren Produkten haben den Zeichen „Anerkannter Estnischer Geschmack“, auch „Schwalbenzeichen“ genannt, bekommen. Obwohl uns direkte Produktentwicklungsmannschaft fehlt, haben wir uns ständig mit der Produktentwicklung beschäftigt und versuchen jedes Jahr ein paar neue Produkte auf den Markt zu bringen. Die verschiedenen Schulungen mit anderen Milchproduzenten haben viel mitgeholfen, aber unsere tüchtigen Mitarbeiter, dank deren Ideen und Experimentieren alle unseren Produkte entstanden sind, spielen eine sehr große Rolle. Zuletzt kamen zu unserem Produktkatalog die



Quarkcreme mit Heidelbeermarmelade, natürlicher Vanillejoghurt und die Käsen im Öl mit Kräutern hinzu.

Wir exportieren die Produkte auch nach Finnland – unsere Produkte werden von der Marke Deliciest präsentiert. Produktion vom Silofutter, Heu und vom Getreide braucht auch gute Maschinen. Entsprechend den Möglichkeiten haben wir neben den alten sowjetischen Maschinen auch moderne Technik mit großer Leistung besorgt. Wir haben 2 Erntemaschinen von Claas, 4 Traktoren von Landini, 1 Traktor von New Holland und 1 Traktor mit Schaufel von Volvo. Ebenso haben wir für die Produktion vom Heu und Silofutter das nötige Zubehör angeschafft. Bei der Anschaffung der neuen Traktoren haben wir auch das Wohlbefinden unserer Mitarbeiter berücksichtigt. Die Arbeitsleistung kann erst dann erfordert werden, wenn der Mitarbeiter gute Arbeitsbedingungen und ein angemessenes Gehalt hat.

Maßnahmen

Jedes Jahr wird unsere Farm von mehreren Bussen voll von Touristen aus verschiedenen Orten der Welt besucht. Die Touristen interessieren sich für Öko-Molkerei, besichtigen die Tiere und degustieren die Produkte. In der Molkerei gibt's eine kleine Verkaufsstelle, in der sowohl Milch als auch alle anderen in unserer Molkerei erzeugten Produkte gekauft werden können.

Wir haben viele Veranstaltungen gesponsert wie z. B. im Bereich Sport, Kultur und Ausbildung, vor allem bezüglich der Schüler. Im Jahr 2013 hat die Saidafarm den Titel für umweltfreundliche Farm der Länder an der Ostsee verdient.

Tourismus und Kontakt

Willkommen Sind Touristengruppen von verschiedenen Größen. Alle Besucher werden mit einem Schnaps und kleinen Snacks begrüßt (auch warmes Essen kann bestellt werden), folgt die Besichtigung des Hofes und der Produktionsräume. Der Besuch auf dem Hof dauert ca 1,5 bis 2 Stunden.

Kontakt

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