

SOOKADHANYA VARGA



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- Introduction
- Historical background
- Classification
- Dhanyabheda-Description
- cereals-Modern view
- Conclusion

INTRODUCTION

- शूक-शो तनूकरणे

That which makes thin on separation

धान्य-तत्र साधुरिति यत् धान्यम् तु त्रिहौ धान्याके

A division of ANNA VARGA



- In this era we group sooka dhanya under cereals
- Cereals are the edible seeds or grains of the grass family. cereals and cereal products are an important source of energy,



- **ceres**, is the name of the pre-Roman goddess of harvest and agriculture. The word cereal derives from Ceres.
- IMPORTANT CEREALS:
- Maize, Rice, Wheat, Barley, Sorghum, Millets, Oats, & Rye

HISTORICAL BACKGROUND IN AYURVEDA

- In Yajurveda and Atharvaveda -mentions about dhanyas.
- The term Thandula used for threshed out paddy grain .
- Unhusked& pounded rice mixed known as AKSHATA used in religious ceremonies& homam.
- In Paneneeya ashtadyayi there is mentioning of shashtika rice.
- 12000 yrs ago human used rice as food
- U.N.General assembly has celebrated 2004 as the International Year of rice(IYR)



- CLASSIFICATION

Divisions of Dhanya

- In Charaka samhitha-
 - 1.sooka
 - 2.simbi
- In Ashtanga hrudaya-
 - 1.sooka
 - 2.simbi
 - 3.truna
- In Bavaprakasa -
 - 1.Sali
 - 2.vrihi
 - 3.sooka
 - 4.simbi
 - 5.kshudra

DIVISIONS OF SOOKA

- In Ashtanga hrudaya-

Sali

Vrihi





SALI

- SYNONYMS



Dhanyottama, Nripapriya, Ruchya, Madhura,

- Kaidarya Sukumaraka etc.

- TYPES

- Rakta Sali, mahasali, kalama, sakunahruta,
turnaka etc

- Another type

- Anu, dirghalata, dirga nala, dirga
sooka, kalama, kardama etc

- Best one -RAKTASALI
-
- then -Mahasali
- -Kalama
- succession.



etc in the order of

Pharmacological properties

- Rasa :madhura
- Anurasa :kashaya
- Guna :laghu,snigdha
- Virya :seetha
- Vipaka :katu(madhura)
- Dosha karma :vatha kaphahara



Pharmacological properties of

Raktha sali

- Rasa :madura
- Guna :lagu snigda
- Virya :not mentioned
- Vipaka :not mentioned
- Dosha karma:tridosha samana

MAIN KARMAS-SALI

- Baddavarcha
- Balya
- Brimhana
- Chakshushya
- Hridya
- Mootrla
- Ruchya
- Svarya
- Vrushya





ROLE IN RITHUCHARYA

- In Charaka samhita
- Sali+cold mantha,sugar etc advised in Summer
- Sali+meat of arid animals &vegetable soup
advised in Varsha



Significance in treatment

- Sukra vega dharanaja rogas will cured by taking Sali
- In charaka Upakalpaneeya adyaya Sali,shashtika,yava are said to collect before undergoing emesis& purgation .
- In kaphaja diseases-due to anabishyandi
- In karsya chikitsa
- In raktapitta& raktapradara



Various food preparations

- Peya
- Vilepi
- Manda
- Roasted flour of fried paddy
- Diff. rice preparations
- Pressed paddy preparations-prthuka
- Fermented preparations-sukta



VRIHI

- Synonyms

-
- krshnavrihi, salahmukam, jatumukha, nandimuka,
- lavaksha, paravatah, patalah

- TYPES -13

-
- jatumuka, krishnavrihi, patla, kukudantaka, salamuk
a, shalayu, nandi, nandimuka, rajvaksha, turitaka, lav
akshaka, paravataka, borava.



PROPERTIES & ACTIONS

- Rasa : madhura
- Guna : guru
- Virya : seetha
- Vipaka : madhura
- Doshakarma : tridosha vardhaka

MAIN KARMAS

- Alpabhishtya
- Baddavarcha
- Sthambana
- Svedavardhaka
- Brimhana
- Balya
- Sukrala
- Varnya



SHASTIKA

(njavara)

- Matures in sixty days
- Best among vrihis
- Synonyms



masadvayotbava,shashtisali,shashtija,shastivas
araja,vrihisreshta,garbapaki,shastihayana

TYPES

- Almost 15 types

- shatapushpa

- Pramoda

- mukundaka

- mahashastika

- goura

- nila

- etc.....





PROPERTIES&ACTIONS

- Rasa :madhura
- Guna :lagu,snigda,mridu
- Virya :seetha
- Vipaka :madhura(?)
- Dosha karma :tridoshasamana

MAIN KARMAS

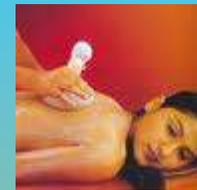
- Grahi
- Balya
- Sukrajanaka
- Brimhana
- Pathya
- moothrala

THERAPEUTIC INDICATIONS

BOOKS	INDICATIONS
BPN	JVARA
SGN	SRAMAM, KRICHRAM, SVASAM, KSATAKSHAYAM, KASAM
AVC	JVARAM

shastika pinda sweda

- Kerala speciality treatment
- It is a modified form of pinda sweda
- INDICATIONS:
 - In various degenerative conditions&rejuvenative purposes like paraplegia,hemiplegia ,muscle dystrophy etc.
- ADVANTAGE;
 - Improve muscle strength&bulk of muscles
 - Produce snehana&swedana effect at a time.





VARIETIES

- Mainly 2 varieties

goura

&

krishna

- Goura is the best one
- In BP FIVE varieties
- In Susrutha several varieties
- In KN THREE varieties
- Based on glume 2 types

black & golden yellow

Njavara theppu

- Process by which direct application of rice on body of an individual.
- Massage generally for 1 hr either whole body or affected part only.



RICE

- BOTANICAL NAME : *Oryza sativa*
- FAMILY : Graminae
- Useful Part : grain, spirit



- Rice is the seed of a monocot plant *Oryza sativa*, of the grass family (Poaceae). As a cereal grain, it is the most important staple food for a large part of the world's human population, especially in East, South, Southeast Asia, the Middle East, Latin America, and the West Indies. It is the grain with the second highest worldwide production, after maize ("corn")

Taxonomical order

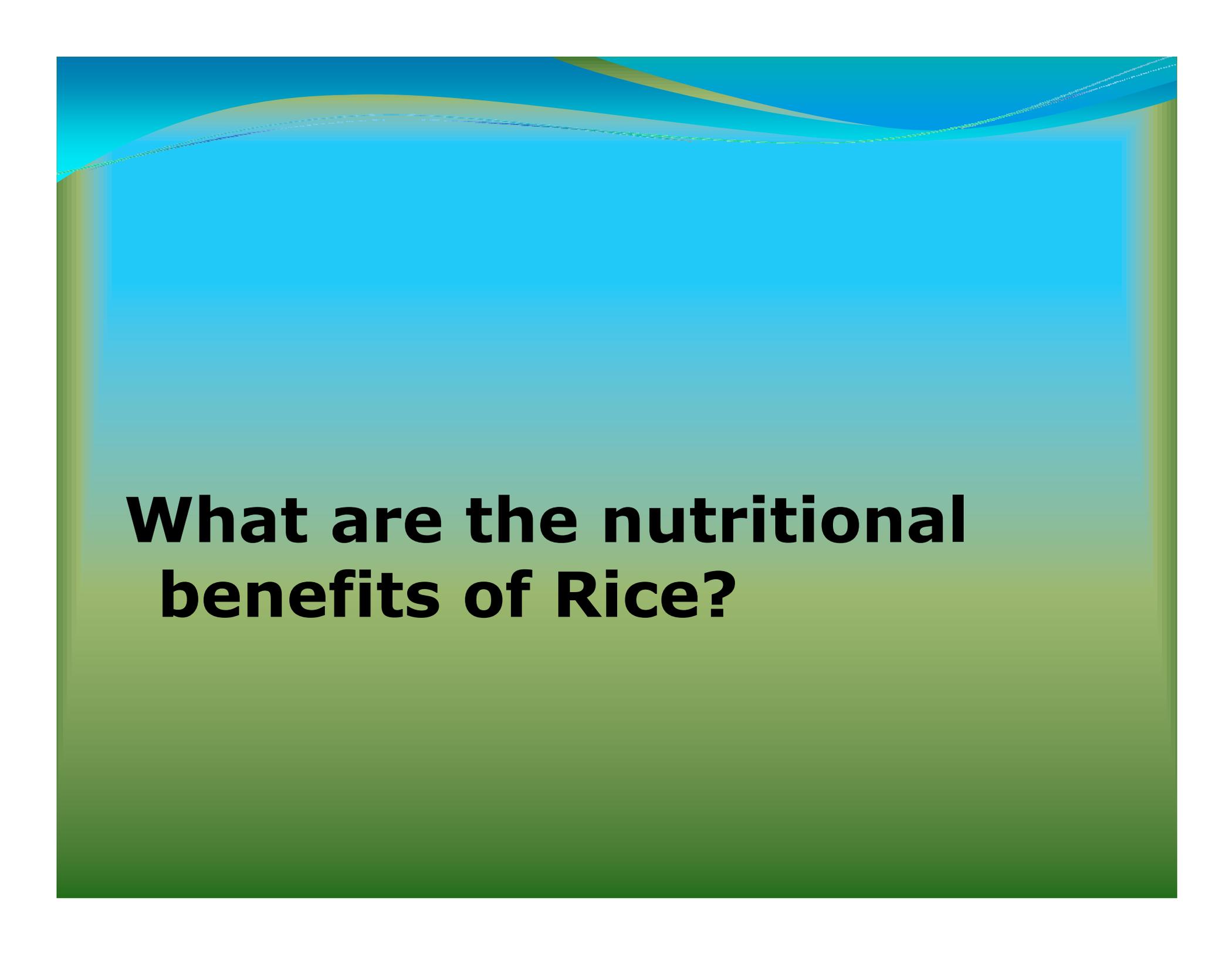
- Kingdom
 - plantae
- Subkingdom
 - Tracheobionata
- Division
 - Magnoliophyta
- Class
 - Liliopsida
- Order
 - cyperales
- Family
 - Poaceae
- Genus
 - Oryza
- Species
 - sativa



- Nutritional value per 100 g (3.5 oz)
- Energy 370 kcal 1530 kJ
- Carbohydrates 79 g -
- Sugars 0.12 g =
- Dietary fiber 1.3 g
- Fat 0.66 g
- Protein 7.13 g
- **Water** 11.62 g
- Thiamine (Vit. B1) 0.070 mg 5%
- Riboflavin (Vit. B2) 0.049 mg 3%
- Niacin (Vit. B3) 1.6 mg 11%
- Pantothenic acid (B5) 1.014 mg 20%
- Vitamin B6 0.164 mg 13%
- Folate (Vit. B9) 8 µg 2%
- Calcium 28 mg 3%
- Iron 0.80 mg 6%
- Magnesium 25 mg 7%
- Manganese 1.088 mg 54% Phosphorus 115 mg 16%
- Potassium 115 mg 2% Zinc 1.09 mg 11%

chemical composition

contents	rice	husk	bran	Polished rice
moisture	12.4	3.2	9.7	10
Ash	0.4	13.2	10	6.7
Crude fiber	0.2	35.7	9.5	6.3
carbohydrate	79.2	38.6	49.9	59
protein	7.4	3.6	12.1	11.7
fat	0.4	0.7	8.8	7.3



**What are the nutritional
benefits of Rice?**

- **Excellent source of carbohydrates**
 - **Good energy source**
 - **Low fat, Low salt, No cholesterol**
 - **A good source of vitamins and minerals such as thiamine, niacin, iron, riboflavin, vitamin D, calcium, and fiber**
 - **high sugar**
- No gluten**
- No additives and preservatives**

cont.....

- **Contains resistant starch**
- **Non-allergenic**
- **Cancer prevention and diet**
- **Rice is a low-sodium food for those with hypertension.**
- **It is a fair source of protein containing all eight amino acids**

some important facts about rice

- More than 90 percent of the world's rice is grown and consumed in Asia, where people typically eat rice two or three times a daily. Rice is the staple diet of half the world's population

Rice farming has been traced back to around 5,000 BC

Hundreds of millions of the poor spend half to three fourths of their incomes on rice and only rice

- More than 140,000 varieties of cultivated rice (the grass family *Oryza sativa*) are thought to exist but the exact number remains a mystery
- Three of the world's four most populous nations are rice-based societies: China, India, and Indonesia. Together, they have nearly 2.5 billion people almost half of the world's population
- In Kerala Rice is thrown on newly married couples as a symbol of fertility, luck and wealth

Medicinal Uses of Rice

- **Philippines:** Rice polishings-the bran-is extracted and used as an excellent source of Vitamin B to prevent and cure beri-beri.
- **Malaysia:** In the Medicinal Book of Malayan Medicine, it is prescribed that boiled rice "greens" can be used as an eye lotion and for use with acute inflammation of the inner body tissues. The book also recommends applying a mixture of dried, powdered rice on certain skin ailments.
- **Cambodia:** The hulls (husk) of mature rice plants are considered useful for treating dysentery. The hulls of a three-month old rice plant are thought to be diuretic.
- **China:** The Chinese believe rice strengthens the spleen, as well as "weak stomach," increases appetite, and cures indigestion. Dried sprouted rice grains were once used as an external medicine to aid in digestion, give tone to muscles, and expel gas from the stomach and intestines.
- **India:** Rice water is prescribed by the Pharmacopoeia of India as an ointment to counteract inflamed surface

rice varieties in kerala



- South indian favourite rice varieties are
- JAYA & SUREKHA
- In Kerala most acceptable is jaya type.
- Palakadan Matta & njavara - another types they got GI status from India govt.
- MATTA red rice with a unique taste, grown largely in Palakad & thrissur.
- POKKKALI –Developed by kerala agriculture university.
- KURUVA RICE-preferred in north kerala.

BASMATHI RICE

- **Basmati** is a variety of long grain rice grown in India and Pakistan, notable for its fragrance and delicate, nuanced flavour. Its name means "the fragrant one" in Sanskrit, but it can also mean "the soft rice". The grains of basmati rice are longer than most other types of rice.
- Cooked grains of Basmati rice are characteristically free flowing rather than sticky, as with most long-grain rice. Cooked basmati rice can be uniquely identified by its fragrance. Basmati rice is available in **two varieties** - white and brown

basmathi rice nutrition

- Basmati rice, 1 cup (200g) (cooked)
Calories: 205
Protein: 4.2g
Carbohydrate: 44.5g
Total Fat: 0.44g
Fiber: 0.63g
*Good source
of: Iron (1.9mg), Selenium (11.8mcg),
• Thiamine (0.26mg), and Niacin (2.3mg)



YAVA



- In Bava prakasa two types
- haritha
- various other types like anuyava, athiyava, harita etc.....

nisooka &

A bowl of almonds is shown in the background, with a blue decorative header at the top. The almonds are light brown and appear to be in a glass or ceramic bowl. The text is overlaid on the left side of the bowl.

• SYNONYMS

- sitasooka
- tikshnasooka
- vajipriya
- suchi
- akshata
- divya
- medya etc.....



PROPERTIES & ACTIONS

- Rasa :madhura,kashaya
- Guna :guru,sara,rooksha
- Virya :seetha
- Vipaka :katu
- Doshakarma :vathavardhaka

main karmas

- Vit vardhaka
- Moothra samaka
- Vrushya
- Sthairya kruth
- Medosamaka
- Lekhana
- Medhya
- Rakthakrit
- Agnivardhaka
- Balya





therapeutic indications

Types of yava	books	indications
Anuyava	AS	Pinasa,svasa,kasa,uru stamba,kanda twakamaya
Yava	AH	
Yava	BPN	Pinasa,kasa,svasa,trit
Yava	AC	
Venuyava	CS	Meda,krimi,visha
Yava	KDN	Meha,trit,pinasa,svasa,kasa,urustamba,kanda twakamaya
Yava	RN	Prameha
Venuyava	RN	Meha,krimi,visha
Yava	VSS	Trit

BARLEY

- BOTANICAL NAME: *Hordeum vulgare*
- FAMILY :Graminae



- . It serves as a major animal feed crop, with smaller amounts used for malting and in health food, as well as the making of the alcoholic beverages beer and whisky.
- *Hordeum vulgare*, divided into subspecies *spontaneum* (wild) and subspecies *vulgare* (domesticated). The main difference between the two forms is the brittle spike on the seeds of the *spontaneum*, which assists dispersal



Taxonomical classification

- Kingdom :plantae
- Division :Magnoliphyta
- Class :Liliopsida
- Order :Poales
- Family :poaceae
- Genus :Hordeum
- Species :vulgare

How many types are there?

- Barley can be classified according to the number of kernel rows in the head. Two forms have been cultivated; two-row barley (formerly known as *Hordeum distichum* but now also classed as *Hordeum vulgare*), and six-row barley (*Hordeum vulgare*) Two-row barley has a lower protein content than six-row barley and thus more fermentable sugar content.

CHEMICAL CONSTITUENTS



Water	12.5 pc
Albuminoids	11.5pc
Starch	70pc
Fat	1.3pc
Fiber	2.6pc
ash	2.1pc

NUTRITIONAL VALUE

- **Raw barley**
Nutritional value per 100 g (3.5 oz)
- Energy 350 kcal 1470 kJ
- **Carbohydrates**
- 77.7 g
- - Sugars 0.8 g
- - Dietary fiber 15.6 g
- **Fat**
- 1.2 g
- **Protein**
- 9.9 g

CONT.....

- Thiamine (Vit. B1) 0.2 mg
- 15%
- Riboflavin (Vit. B2) 0.1 mg
- 7%
- Niacin (Vit. B3) 4.6 mg
- 31%
- Pantothenic acid (B5) 0.3 mg
- 6%

Alcoholic beverages made of barley

- It is a key ingredient in beer and whisky production. Two-row barley is traditionally used in German and English beers. Six-row barley was traditionally used in US beers, but both varieties are in common usage now. Distilled from green beer, whisky has been made from barley in Ireland and Scotland
- Non-alcoholic drinks such as barley water and barley tea (called mugicha in Japan), have been made by boiling barley in water. Barley wine was an alcoholic drink made in the 1700s, prepared from recipes of ancient Greek origin.

DO you know?

- Barley contains all eight essential amino acids.
- According to a recent study, eating whole grain barley can regulate blood sugar for up to 10 hours after consumption compared to white or even whole-grain wheat, which has a similar glycemic index.
- Barley can also be used as a coffee substitute
- Barley grains were used for measurement in England

uses

- As nutritious food
- Its decoction used as demulscent.
- Barley gruel is diuretic
- Is laxative.

GODHUMA



- गोधुमः सुमनः समौ
- गोधुमः गुध परिवेशट्णे which whorls around
- सुमनः न्जाने which gives good knowledge

synonyms

- Alpa goduma
- Aroopa
- Apoopaa
- Apushpa
- Bahudugda
- Chamada
- Kshudra
- Madhuli
- Sumana etc.....,



TYPES

- In charaka -maduli
- &
- nandimuki
- In Bavaprakasa -mahagoduma
- maduli
- dirga goduma
- In Kaiyadeva nigantu -maduli
- &
- dirgagoduma



properties & actions.

- Rasa :madura
- Guna :guru,snigda,sara
- Virya :seetha
- Dosha karma :vathapitthasamana

MAIN KARMAS

- Sukrala
- Pathya
- Brmhana
- Varnya
- Pushtivardaka
- Balya
- Hridya
- Madakrit
- Ruchya
- Vrushya



WHEAT

- BOTANICAL NAME : *Triticum aestivum*
- FAMILY : Graminae
- Synonyms;
 - *T. sativum* Lam, *T. vulgare* vill.,
 - Common wheat, Breadwheat



- **Wheat** (*Triticum* spp.) is a worldwide cultivated grass from the Levant region of the Middle East. Globally, after maize, wheat is the second most-produced food among the cereal crops just above rice. Wheat grain is a staple food used to make flour for leavened, flat and steamed breads; cookies, cakes, breakfast cereal, pasta, juice, noodles and couscous; and for fermentation to make beer, alcohol, vodka or biofuel.

scientific classification

- Kingdom: Plantae
- (unranked): Angiosperms
- (unranked): Monocots
- (unranked): Commelinids
- Order: Poales
- Family: Poaceae
- Subfamily: Pooideae
- Tribe: Triticeae
- Genus: ***Triticum***

Species

- *T. aestivum*
- T. aethiopicum**T. turanicum*
- T. turgidum*
- T. urartu*
- T. compactum*
- T. dicoccoides*
- T. dicoccon*
- T. durum*
- T. ispahanicum*
- T. karamyshevii*
- T. macha*
- T. araraticum*
- T. boeoticum*
- T. carthlicum**T. militinae*
- T. monococcum*
- T. polonicum*
- T. spelta*
- T. sphaerococcum*
- T. timopheevii*

Important artificial species & mutants

- *Triticum ×borisovii* Zhebrak - (*T. aestivum* × *T. timopheevi*)
- *Triticum ×fungicidum* Zhuk. - Hexaploid, artificial cross (*T. carthlicum* × *T. timopheevi*)
- *Triticum jakubzineri* Udaczin & Schachm.
- *Triticum militinae* Zhuk. & Migush. - Mutant form of *T. timopheevi*.
- *Triticum petropavlovskyi* Udaczin & Migush.
- *Triticum sinskajae* A.A.Filatenko & U.K.Kurkiev - mutant, free-threshing form of *T. monococcum*.
- *Triticum ×timococcum* Kostov
- *Triticum timonovum* Heslot - Hexaploid, artificial cross.
- *Triticum zhukovskyi* Menabde & Ericzjan (*T. timopheevi* × *T. monococcum*)

TYPES

- Mainly TWO types :spring wheat & winter wheat
-
-
- About 30 species ,only 3 are common
- 1.durum wheat
- 2.common wheat
- 3.club wheat

cont.....

- 4 most common types of wheat
- 1.hard red
- 2.soft red
- 3.white
- 4.durum

WHEAT FLOUR

- Is a powder made of cereal grains or roots.
- - main ingredient of bread
- -one of the most important food in European culture
- -Flour contain high amount of starchs.



Nutritive facts

- For 1 cup wheat
- Calories-657kcl
- Total fat-3.3g
- Saturated fat-0.5g
- Poly unsaturated-1.4g
- Protein-21.7g
- Iron-49%

ATTA and MAIDA

- Atta and Maida are wheat flour but maida is from refined wheat and Atta is made by grinding wheat.
- Maida is of white colour, Atta have wheat colour
- ATTA is nutritive food and MAIDA not so.

MAIZE



- Is a tall, annual grass. deep rooted, requires abundant moisture for best development.
- Require 100-140 days for ripening
- Corn kernels vary in size.
- Maize is the most widely grown Americas



Which are the different types of maize?

- Flour corn — *Zea mays var. amylacea*
- Popcorn — *Zea mays var. everta*
- Dent corn — *Zea mays var. indentata*
- Flint corn — *Zea mays var. indurata*
- Sweet corn — *Zea mays var. saccharata* and *Zea mays var. rugosa*
- Waxy corn — *Zea mays var. ceratina*
- Amylomaize — *Zea mays*
- Pod corn — *Zea mays var. tunicata* Larrañaga ex A. St. Hil

TAXONOMICAL CLASSIFICATION



- Kingdom :plantae
- Order :poales
- Family :poaceae
- Genus :zea
- Species :Z.mays

nutritive value of sweet corn?

- Sweet corn (seeds only)
Nutritional value per 100 g (3.5 oz)
- Energy 90 kcal 360 kJ
- Carbohydrates 19 g
- - Sugars 3.2 g
- - Dietary fiber 2.7 g
- Fat 1.2 g
- Protein 3.2 g
- Vitamin A equiv. 10 μg 1%

cont.....

- Thiamine (Vit. B1) 0.2 mg 15%
- Niacin (Vit. B3) 1.7 mg 11%
- Folate (Vit. B9) 46 µg 12%
- Vitamin C 7 mg 12%
- Iron 0.5 mg 4%
- Magnesium 37 mg 10%
- Potassium 270 mg 6%

useful forms of maize

- Flour corn — *Zea mays var. amylacea*
- Popcorn — *Zea mays var. everta*
- Dent corn — *Zea mays var. indentata*
- Flint corn — *Zea mays var. indurata*
- Sweet corn — *Zea mays var. saccharata* and *Zea mays var. rugosa*
- Waxy corn — *Zea mays var. ceratina*
- Amylomaize — *Zea mays*
- Pod corn — *Zea mays var. tunicata* Larrañaga ex A. St. Hil.
- Striped maize — *Zea mays var. japonica*

maize- uses

- As food
- Chemical & medicines
- Biofuel
- Ornamental & other uses also.



Triticale



- **Triticale** (\times *Triticosecale*) is a hybrid of wheat (***Triticum***) and rye (***Secale***) first bred in laboratories during the late 19th century.
- . It is grown mostly for forage or animal feed although some triticale-based foods can be purchased at health food stores or are to be found in some breakfast cereals
- . The word 'triticale' is a fusion of the latin words *triticum* (or wheat) and *secale* (rye).
When crossing wheat and rye,

Sorghum



- **Sorghum** is a genus of numerous species of grasses, some of which are raised for grain and many of which are used as fodder plants either cultivated or as part of pasture



- Numerous *Sorghum* species are used for food (as grain and in sorghum syrup or "sorghum molasses"), fodder the production of alcoholic beverages, as well as biofuels. Most species are drought tolerant and heat tolerant and are especially important in arid regions. They form an important component of pastures in many tropical regions. *Sorghum* species are an important food crop in Africa, Central America, and South Asia and is the "fifth most important cereal crop grown in the world

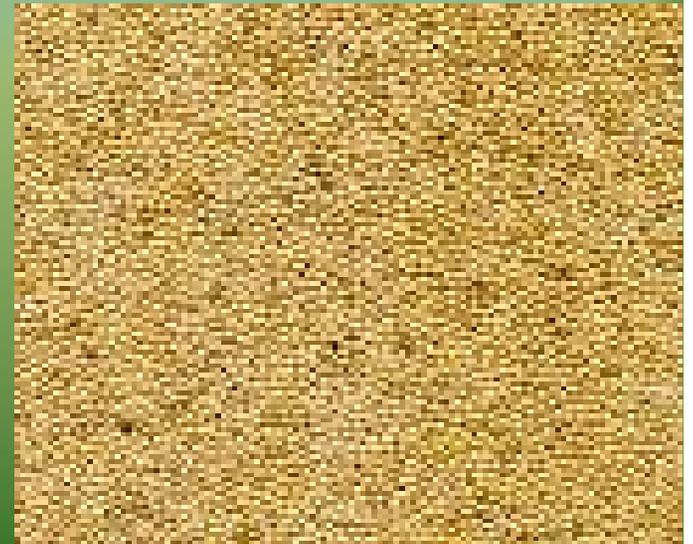
Millet



- The **millet**s are a group of small-seeded species of cereal crops or grains, widely grown around the world for food and fodder. They do not form a taxonomic group, but rather a functional or agronomic one. Their essential similarities are that they are small-seeded grasses grown in difficult production environments. It was millets, rather than rice, that formed important parts of prehistoric diet in Chinese Neolithic and Korean Mumun societies.

varieties-millet

- Pearl millet (*Pennisetum glaucum*)
- Foxtail millet (*Setaria italica*)
- Proso millet also known as **common millet**, **broom corn millet**, **hog millet** or **white millet** (*Panicum miliaceum*)
- Finger millet



CONT.....



- The protein content in millet is very close to that of wheat; both provide about 11% protein by weight.
- Millets are rich in B vitamins, especially niacin, B17 (see nitrilosides), B6 and folic acid, calcium, iron, potassium, magnesium, and zinc. Millets contain no gluten, so they are not suitable for raised bread. When combined with wheat or xanthan gum (for those who have coeliac disease), however, they can be used for raised bread. Alone, they are suited for flatbread.

Rye



- **Rye** (*Secale cereale*) is a grass grown extensively as a grain and forage crop. It is a member of the wheat tribe (Triticeae) and is closely related to barley and wheat. Rye grain is used for flour, rye bread, rye beer, some whiskies, some vodkas, and animal fodder. It can also be eaten whole, either as boiled rye berries, or by being rolled, similar to rolled oats.

OATS

- Scientific classification
- Kingdom: Plantae
- Order: Poales
- Family: Poaceae
- Genus: Avena
- Species: ***A. sativa***





- The common **oat** (***Avena sativa***) is a species of cereal grain grown for its seed.
- consumption as oatmeal and rolled oats, one of the most common uses is as livestock feed.
- Oats make up a large part of the diet of horses and are regularly fed to cattle as well.
- Oats are also used in some brands of dog and chicken feed.

USES



- Oats have numerous uses in food; most commonly, they are rolled or crushed into oatmeal, or ground into fine oat flour. Oatmeal is chiefly eaten as porridge, but may also be used in a variety of baked goods, such as oatcakes, oatmeal cookies
- Oats are also occasionally used in Britain for brewing beer.
- A cold, sweet drink made of ground oats and milk is a popular refreshment throughout Latin America.

CONT.....

- Oats are also commonly used as feed for horses.
- Oat straw is prized by cattle and horse producers as bedding, due to its soft, relatively dust-free, and absorbent nature.
- Oat extract can also be used to soothe skin conditions, e.g. skin lotions.

Pseudocereals

- **Pseudocereals** are broadleaf plants (non-grasses) that are used in much the same way as cereal (true cereals are grasses). Their seed can be ground into flour and otherwise used as cereals. Examples of pseudocereals are amaranth, quinoa and buckwheat.



they are...

- Breadnut
- Buckwheat
- Cattail
- Chia
- Cockscomb
- Grain amaranth
- Kañiwa
- Pitseed Goosefoot
- Quinoa
- Wattleseed





BRAN



- Bran is hard outer layer of grain and consists of combined aleurone and pericarp, along with germ.
- USES:
 - -used to enrich breads & breakfast
 - -used for pickling
 - -used in dish washing
 - -fermented wheat bran for sour soup
 - -bran oil may also extracted

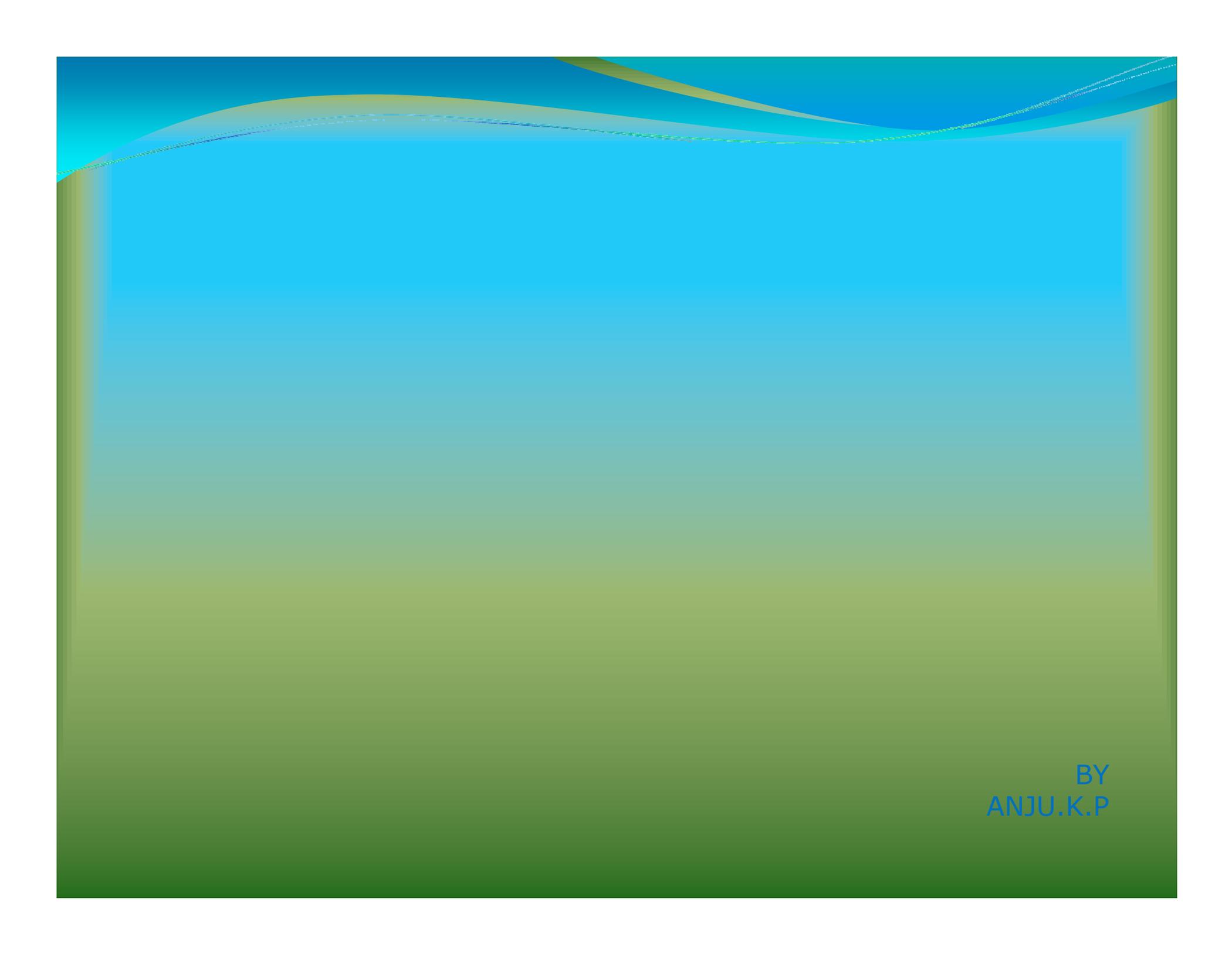
conclusion



- As dhanyas are important part of our day to day life we must protect them.
- Better field preparation, crop management and post harvest storage will lead to better quality of crops as well as yields.

THANK YOU





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