

Wheat

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Scientific name:- Triticum aestivum

Family:- poaceae

Vernacular name:-Gehoon

Origin and distribution :-

- **Wheat is a staple food of about half of the population.**
 - **It is basically a crop grown in temperate region.**
 - **South west Asia is the centre of origin.**
 - **Mainly two types of wheat originated .**
 - **Emmer wheat which later got replaced by Macaroni wheat.**
 - **In India 3 species of wheat is cultivated .**
1. Triticum aestivum **(Bread wheat)**
 2. Triticum durum **(Macaroni wheat)**
 3. Triticum dicoccum **(Emmer wheat)**
 4. **In India Emmer wheat is cultivated in Tamil Nadu, Andhra Pradesh, Gujarat, Maharashtra.**

Major cultivated species of wheat

- **Durum - (*T. durum*)** The only tetraploid form of wheat widely used today, and the second most widely cultivated wheat today.
- **Einkorn - (*T. monococcum*)** A diploid species with wild and cultivated variants . One of the earliest cultivated, but rarely planted today.
- **Common Wheat or Bread wheat - (*T. aestivum*)** A hexaploid species that is the most widely cultivated in the world.
- **Emmer - (*T. dicocum*)** A tetraploid species, cultivated in ancient times but no longer in widespread use.
- **Spelta - (*T. spelta*)** Another hexaploid species cultivated in limited quantities.

Important Species of Wheat

CLASSIFICATION OF WHEAT

<u>Common name</u>	<u>Botanical name</u>	<u>Chromosome no. (2n)</u>
Mexican dwarf wheat	<i>Triticum aestivum</i>	42 (Hexaploid wheat)
Club wheat	<i>Triticum compactum</i>	
Bread wheat	<i>Triticum vulgare</i>	
Spelta wheat	<i>Triticum spelta</i>	
Macha wheat	<i>Triticum macha</i>	
Macaroni/ Durum wheat	<i>Triticum durum</i>	28 (Tetraploid wheat)
Emmer wheat	<i>Triticum dicoccum</i>	
Persian wheat	<i>Triticum persicum</i>	
Poulard wheat	<i>Triticum turgidum</i>	
Einkorn wheat	<i>Triticum monococcum</i>	14 (Diploid wheat)
-	<i>Triticum aestivoides</i>	

Species of wheat grown in India

Scientific name	Common name	Chromosome number	Set of chromosomes
<i>T. aestivum</i>	Common bread wheat	$6x=42$ $2n=42$	AABBDD
<i>T. durum</i>	Macaroni wheat	$4x=28$ $2n=28$	
<i>T. dicoccum</i>	Emmer wheat	$4x=28$ $2n=28$	AABB
<i>T. turgidum</i>	Rivet wheat/poulard wheat	$4x=28$ $2n=28$	AABB
<i>T. sphaerococcum</i>	Dwarf wheat	$6x=42$ $2n=42$	AABBDD

➡ **Morphology:-**

- ➡ ***It is an annual herb of about 0.6 to 1.5m height.***
- ➡ ***It have culms and it is differentiated in to nodes and internodes .***
- ➡ ***Roots are formed in the tiller.***
- ➡ ***More tiller promotes more production.***
- ➡ ***The inflorescence is terminal spike which consists of 15 to 20 spikelets ,each spikelets is covered by a pair of glume.***

Morphology

- **Habit** : Annual, 60-150cm in height.
- **Stems** tufted, jointed, with nodes, internodes hollow, leaves linear, parallel venation, sheathing leaf base, ligulate
- **Inflorescence** : erect terminal spike of spikelets called as ear/head of grains; flowers grouped into 15-20 spikelets arranged alternately on rachis, each spikelet with 2-6 flowers; only 2-3 flowers are fertile and produce grains
- **Flowers** : Sterile Glumes 2 (Lodicules), loose and broad, awned; paleas (2) and lemmas(2) thin , pale, rounded at the back; stamens 3, anthers versatile, carpel with 2 hairy styles, ovary superior
- **Fruit**: caryopsis, oblong, plump and swollen 5-10mm long, with a shallow ventral groove .



Morphology..grain

- **1. Seed coat (testa/spermoderm) fused with fruit coat (tegmen)**
- **2. Embryo**
- **3. Nucellus**
- **4. Endosperm- thin walled parenchymatous tissue loaded with starch and gluten**
- *** Thiamin, riboflavin, niacil and some vit A are present in seed coat and embryo**



➤ **Cultivation:-**

- **Wheat are basically cultivated in Punjab.**
- **Wheat is a rabi crop which grown in temperate region i.e cool winter followed by dry and warm summer with a moderate rainfall of 30 to 90cm.**
- **It can be grown on all types of soil except saline or acidic soil.**
- **On the basis of soil type 5 wheat growing region have been recognize.**

1. Gangatic

2. Indus

3. Black soil region of central and Sudan areas

4. Hilly region of Himalaya and Siwalick

5. Desert soil of Rajasthan

- **It is swon from early October to late November.**
- **Swoning is fone by broad casting or drilling methods.**
- **Periodical weeding is necessary.**
- **Weeds can be controlled by spraying 2,4-D.**
- **Irrigation is very much necessary from the dwarf veaity where as tall veraity requires less water.**
- **Wheat is grown I rotation with other crops like cotton, maiz eand moong.**



Processing

- **Harvesting** – done when the grains become hard and straw becomes dry. In India harvesting is done by the sickle. In NW parts combine machines are also used
- **Threshing** – done by trampling of the plants by bullocks on a threshing floor; simple mechanical threshers are used in Punjab
- **Winnowing** of grains is done with the help of winnowing-basket
- **Storage** – The grains having less than 10% moisture can be stored well, thus they should be thoroughly dried
- **Milling** – Motor-driven flour-mills using two stones for

Indian veraitys:-

1. Sonata 64
2. Sonalika
3. Kalyan Sona



Sonalika
64



Kalyansona



SC

➤ **Economic importance:-**

- **Wheat is consumed all over the world in various forms like durum wheat are specially hard and preferred for macaroni and vermicelli.**
- **Industrial use includes manufacture of starch, gluten .**
- **Gluten is used for production of monosodium-glutamate which is used for flavoring the food.**
- **Wheat bran is rich in protein .**

➤ **THANK YOU**

Uses

- Manufacture of flour for bread (hard wheat varieties) and pastries (soft varieties)
- Whole meal atta and flour are used for chappatis, bread, baked preparations
- More refined flour or maida is used in bakery products – biscuits, pastries
- Wheat flakes is common cereal food
- In preparation of alcoholic beverages
- Suji used in various preparations
- The protein called gluten (with no particular nutritive value) obtained from wheat is used in additives to whole wheat or rye to add elasticity.
- Low grades of wheat used for fodder
- Wheat straw used in fodder
- Wheat straw is good for packaging
- Wheat straw is useful in mushroom cultivation
- Wheat starch is used in sizing for textile fabrics
- The extract of leaves of the wheat sprouts is a good tonic for cardiac and diabetic patients