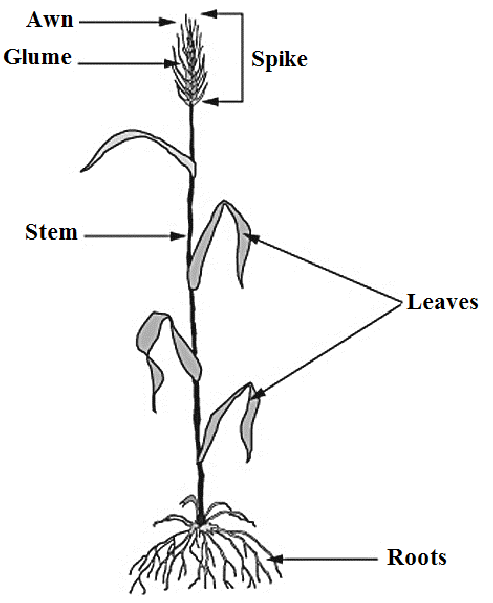
**WHEAT** Common name :- Bread wheat Vernacular name :- Gehun Botanical name :- Triticum aestivum **CLASSIFICATION** Class :- Monocots/Liliopsida Order :- Poales Family :- Poaceae/Gramineae Genus :- Triticum

1. It is one of the oldest and most important of the cereal crops. 2. In total production it is second to Rice in our country as a main food crop. 3. It is an annual crop. 4. Wheat is a [cereal](https://en.wikipedia.org/wiki/Cereal) [grain](https://en.wikipedia.org/wiki/Grain), which is a [staple food](https://en.wikipedia.org/wiki/Staple_food). 5. It has a life span of about 6 months. 6. Its fruit is a head of wheat containing the edible seeds. 7. The genus Triticum has several species. 8. Some of the common species of wheat are :- T. aestivum T. spelte T. durum T. monococcum etc. 9. The most widely grown is T. aestivum.

**DISTRIBUTION/OCCURRENCE** 1. Wheat is grown on more land area than any other food crop. 2. It is best grown to temperate regions between 30 – 60\*N and 24 – 40\*S. 3. It is widely cultivated from near the tropics to the colder regions of the temperate zone. 4. It is generally grown in the cool season. 5. It grows best in areas where annual daytime temperatures are within the range 15 – 23°C, but can tolerate 5 – 27°C. 6. These are grown in loamy soils with pH 8.3 are suitable. 7. It is now widely grown in most countries of the world. 8. China is the leading producer, Producing one-fourth of the world total production,followed by United states. 9. The other Wheat producing countries are Canada, Argentina, Australia, France, Russia, Turkey, Germany, Pakistan, United Kingdom, Iran, India etc. 10. In India, the wheat producing states are Haryana, Punjab, Madhya Pradesh, Bihar, Rajasthan, Maharastra, Uttar Pradesh etc. 11. The India stands 5th position of total yield of Wheat in the world.

**NUTRITION** 1.Wheat is an important source of protein and [carbohydrates](https://en.wikipedia.org/wiki/Carbohydrate). 2. It also having an [essential amino acids](https://en.wikipedia.org/wiki/Essential_amino_acid), multiple [nutrients](https://en.wikipedia.org/wiki/Nutrient), [fat](https://www.britannica.com/topic/fat), minerals, and dietary fibres. 3. It also contain [thiamin](https://www.britannica.com/science/thiamin), [riboflavin](https://www.britannica.com/science/riboflavin), [niacin](https://www.britannica.com/science/niacin), and small amounts of [vitamin A](https://www.britannica.com/science/vitamin-A).

**BOTANICAL DESCRIPTION/STRUCTURE**



**Root** :- 1. It has two types of roots, the seminal (seed) roots and the nodal roots (adventitious roots). 2. The seminal root arises from the seed and the nodal roots arise from the lower nodes of the shoot (stem).  **Stem** :- 1. The stem of Wheat plant (culm) is erect and cylindrical. 2. It grows upto 150 cm. tall. 3. The height of the plant is effected by the external factors. 4. The nodes of the stem are being solid, whereas the internodes are hollow. 5. In early stages, the nodes are very close but later the internodes elongates when the plant attains its full height. 6. The mature plant have a number of sub-terranean nodes. 7. It usually produces 2 – 5 tillers. 8. The secondary shoot or tiller arises from the axillary buds present on the underground portion of the stem. 9. The shoot is terminated by an ear or spike bearing about 20 spikelets. **Leaves** :- 1. The wheat [plant](https://www.britannica.com/plant/plant) has long, slender, curved [leaves](https://www.britannica.com/science/leaf-plant-anatomy) on opposite sides. 2. Leaves are flat, narrow, 20–38 cm. long and about 1.3 cm. broad. 3. The leaf consist of four parts :- i. Lamina or Leaf blade :- It is narrowly linear. ii. Leaf sheath :- It encircles the stem tightly. iii. Ligule :- A membranous ligule is present at the junction of the blade & the leafsheath. iv. Auricles :- These are two claw like appendages at the base of the blade. **Inflorescence/Flower** :- 1. The Inflorescence is terminal. 2. The inflorescences are composed of varying numbers of minute [flowers](https://www.britannica.com/science/flower), ranging from 20 – 100. 3. The flowers are borne in groups of 2 – 6 in structures known as spikelets. 4. The spikelets are borne singly at the node on alternate sides. 5. The spikelets are nearly sessile, erect, slightly overlapping and compactly arranged on a zig-zag axis or rachis. 6. The 2 – 3 grains are produced by the flowers/spike. 7. Each spikelet have 2 – 5 florets attached alternately on opposite sides of a short central axis called rachilla. 8. Flower- spikes are long, slender, dorsally compressed, somewhat flattened.

**Fruit** :- 1. The fruit of wheat are dry, one-seeded, indehiscent [fruit](https://en.wikipedia.org/wiki/Fruit) called a [caryopsis](https://en.wikipedia.org/wiki/Caryopsis). 2. The fruit are of different shape and size. 3. They may be either soft or hard in texture, creamy white, red or purple colour depending upon the variety. 4. The fruit bears two sterile empty glumes, a Palea and a Lemma. 5. Lemmas are awned or awnless, 6. Palea is as long as the lemma, remaining entire at maturity. 7. The glumes lies below the Lemma.

**Seed** :- The side of the seed is smoothly rounded, while the ventral side has the deep crease (furrow)

**TYPES OF WHEAT** 1. In India, Wheat is essential a winter or rabi cop. It is only in the hills of South India (Nilgiri hills). 2. In North India, the wheat is grown in winter as well as in summer but the production from the summer crop is very small. 3. According to the cultivated varieties, there are the two major types of the Wheat crop.

**I. Spring Wheat** i.The spring wheat are of short growing season. ii. They are of atleast of 100 days. iii. They do not require very low temperature in their phases of growth. iv. They are sown in March – May and is harvested in the late summer from August – September.

**II. Winter Wheat** i. The winter wheat are of long duration. ii. They need low temperature during the initial stage of development. iii. The crop is sown in October – November (autumn) and harvested in the early summer from May – July after maturity.

**CULTIVATION/PLANTING** 1. When a seed is sown in a suitable moist and aerated soil it germinates. 2. As growth continues, the seminal roots develop. 3. The sowing season starts from October and continue upto middle of November. 4. In some areas of India (Madhya Pradesh), it is sown sometimes in September. 5. In some areas (Delhi, Punjab etc.), the sowing is done in November and sometimes in December depending upon the climatic conditions. 6. The field is ploughed 4 – 5 times before sowing. 7. Proper soil moisture content is essential for getting best germination of the seeds. 8. In India, Wheat is grown mostly during the rabi season, when the amount of rainfall is low. 9. Tall Indian varieties of Wheat requires 3 – 4 irrigations for maximum yield. 10. The seeds may be sown by broadcast method or by drilling machines. 11. The seeds are sown deeper in rough, dry, light soils and, shallower in moist and heavy soils. 12. Seeds used for sowing should be treated with chemicals to make them disease free. 13. Weeding is constantly done because Wheat is easily chocked by weeds. 14. Major nutrients required for cultivation Wheat plants are nitrogen, phosphorus, potassium, calcium etc.

**HARVESTING**  1. When the grain is ripe and the straw becomes golden yellow, the crop is harvested. 2. In large farms harvesting is done by machines. 3. In small fields, plants are usually harvested (cut) with sickle.

4. In India, the time of harvesting varies from place to place :- Mid-January – Karnataka February – South and Eastern Maharashtra March – North Maharashtra, Madhya Pradesh, Bihar, Uttar Pradesh and Rajasthan April – Punjab and Delhi May and June – Mountainous regions of the North 5. After harvesting, the grain are separated from the spike by threshing. 6. In our country, the threshing is usually done by treating the spikes on ground under the feet of cattle. 7. Winnowing is done with baskets, when the husk is removed by blowing wind. 8. Simple mechanical threshers winnowers are also used. 9. The dry grains are stored in godowns, which are waterproof. 10. They should be fumigated to keep away the pests.

**ECOLOGICAL FACTOR** 1. Wheat is grown under a wide range of climates and soils. 2. The nutritional [composition](https://www.merriam-webster.com/dictionary/composition) of the wheat grain varies with differences in climate and [soil](https://www.britannica.com/science/soil).  **Climate** :- 1. Because of its widespread cultivation, Wheat plant grows and matures at all times in the world. 2. The cool winter of the temperate zone is best for the growth of plant. 3. It is best adapted to temperate regions with rainfall between 30 – 90 cm. 4. It prefers a mean annual rainfall in the range 750 – 900 mm. 5. For floral induction, spring types usually require temperatures between 7 – 18°C. for 5 – 15 days, while winter types require temperatures between 0 – 7°C. for 30 – 60 days. 6. In India, Wheat is grown best in the areas with 15 – 35\* rainfall. **Soil** :- 1. Wheat can be cultivated over a wide range of soils. 2. It prefers a sunny position in a rich well-drained soil. 3. It Prefers a pH in the range 6 – 7. 4. The medium textured soil (high clay content with sand) need 3 – 4 irrigation, the coarser soil (sand soil) needs more number of irrigation. 5. Wheat grows well in fertile, medium to heavy textured soils. 6. Highest yields are obtained on the slit (porous) and clay loams.

**SOME VARIETIES OF WHEAT** There are many named varieties of Wheat. In India, the three Mexican varieties Kalyan Sona, Safed Lerma and Sonalika are used to increase yield. Some of the common varieties with specific characters are :- **1. Sonalika (HD – 1553)** :- This is an early maturing variety. This is a dwarf variety. It is suitable for late sowing in Uttar Pradesh, Haryana, Delhi, Rajasthan, Madhya Pradesh, Maharashtra, Andhra Pradesh, Tamil Nadu, Karnataka etc. It is resistance to black and brown rusts. **2. Kalyan Sona (HD – 1593 )** :- This is a medium late maturing variety. This is a dwarf variety. It is resistance to loose smut and hill bunt disease. **3. Sharbati Sonara (S – 64)** :- This is an early maturing variety. This is a dwarf variety. It is resistance to black rust. **4. Safed Lerma** :- This is a dwarf variety. It is resistance to black and yellow rust. In India, it is particularly sown in Nilgiri and Palni hills of Peninsular India.

**USES** 1. It is one of the most important human food crops. 2. It is the most common flour used for making bread.    3. It is also used to make [pasta](https://www.britannica.com/topic/pasta), cake, biscuits, cookies, pastries etc. 4. Additionally, some wheat is used by industry for the production of [starch](https://www.britannica.com/science/starch), paste, [malt](https://www.britannica.com/topic/malt), dextrose, [gluten](https://www.britannica.com/science/gluten), [alcohol](https://www.britannica.com/science/alcohol), and other products. 5. The seed also added to salads or juiced to make a healthy drink. 6. The straw can be used as a substrate for mushroom production. 7. A fibre obtained from the stems is used for making paper. 8. The straw is chopped and mixed with clay to produce a building material. 9. The bran is high grade animal feed. 10. Wheat straws are used as fooder for animals. 11. Dry wheat straws are used in packing and stuffing (material put inside bed). 12. They are also used in manufacturing of straw carpets, straw hats, baskets etc.

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