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A Review of Types and Classes of Wheat

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Abstract : As atmospheric temperature and soil salinity rise, wheat (*Triticum aestivum L.*) no longer yields enough grain to be used as a primary food source for humans. Wheat is most vulnerable to high temperatures and salinity during the early growing stages and at flowering and booting. Research has shown that individually stress factors including salinity and high temperature influence wheat, but the combined stress factors of salinity and high temperature during critical growth stages continue to be examined.

Key words : Wheat, leaves, leaf size, Temperature

Introduction : Wheat is the world's most commonly grown cereal crop and is a major food supply (Carte, 2002). Wheat is a highly adaptable crop, grown from areas that have mild irrigation, up to dry and hot regions, and from locations that are either hot and humid, or dry and cold (Dubcovsky et al., 2007). Wheat, considered to be the oldest cereal grain in the world, is believed to have originated about 10,000 years ago and has since expanded across the globe to become a major crop (Dubcovsky, 2007). *Triticum aestivum* is the most widely grown species of wheat (Cooper, 2015). Around 735 million tons of global wheat production was anticipated in 2015, and the world wheat trade was estimated at 150 million tons for the 2015-16 season (FAO, 2015). 95% of global wheat production in 2016-17 is expected to rise due to an increase in global acreage and production from many countries, including Argentina, Australia, Canada, Russia, Serbia, Ukraine, and the United States (FAO, 2015).

Wheat supplies approximately 21% of the total calories eaten by humans worldwide (Nechaev and Gaponenko, 2013.). Wheat has two critical elements, all of which are carbohydrates and proteins. wheat is a wheat grain with the highest protein content (McCance et al., 1945; Cooper, 2015). The most profitable commercial by-product of wheat is wheat starch, and it is second in monetary value to wheat gluten (Cooper, 2015). Other essential vitamins present in wheat foods include vitamin B1 (thiamine) and other B vitamins as well as vitamin A. Wheat is also a very nutritious food that includes vast quantities of fibers, nutrients, fats, and bioactive substances, many of which have been used as medicines for thousands of years. Wheat is mostly produced

for human food consumption, but it is often applied to pet foods as an ingredient (Spragg, 2008). Many of the total antioxidant compounds in wheat bran have antioxidant activity that leads to health benefits because of this activity (Gao, 2002). In agricultural applications, wheat grain is used for the processing of starch paste, alcohol, cooking oil, and gluten. Paper, newsprint, and paperboard are all things that may have been made from straw (Spragg, 2008). In addition, wheat is used for the processing of ethanol and biofuel (Hazzledine et al., 2011).

Botany of the Wheat Plant

Wheat (*Triticum sp.*) is a cereal, which belongs to the Poaceae family (formerly called the Gramineae family). Important grains such as rice, wheat, corn, sorghum, and barley also belong to this family (Peterson, 1965). In the early stages of growing, the plant is green and, as it matures, it turns golden yellow. The plant has two kinds of roots: seminal roots, which grow from the lower nodes of the stem, and nodal roots, which emerge at the nodes' midpoint (an autochthonous type of root that grows on its own from the plant's roots) (Kirby, 2002). In addition to 2-6 tillers, each plant has a single main stem (culm) as well as 2-6 tinelets. Vertical stems have a vertical "cane" structure; however, certain varieties have vertical stems that are firm (Peterson, 1965). A stem would have a leaf sheath and a leaf blade. wheat's stem auricles are thin, and they are shaped in a circle around the stem where the leaf sheath meets the leaf blade (Peterson, 1965). The flowers are in groups called spikes (also called the ear or the head). A spike normally appears at the top of the plant, and the spike is packed with about 35-50 grains (Kirby, 2002). At the middle of each spike, a main axis sprouts, followed by different filaments. Each of these filaments then gives rise to two glumes (fertile structures that surround the flowers) and a main glume (Shitsukawa et al., 2009). Petals and sepals are not present on wheat flower stalks. Each flower contains an ovary that produces two styles and is followed by two sticky, feathery stigmas. Three yellow, green, or violet stamens characterize male flowers (Peterson, 1965). Wheat spikes are long, usually between two and eight inches (5 to 20 cm), and they hold between 20 and 50 kernels. The glumes are scale-like leaves that are present on any kernel (Shitsukawa et al., 2009). As a general rule, wheat grains weigh between 30 and 66 mg (Gooding et al., 1997). The kernel is composed of several layers of bran, which form a robust outer membrane, known as the aleurone layer, which is full of proteins and minerals; the embryo is situated within the endosperm (Peterson, 1965).

Types and Classes of Wheat

Following its primitive variety of wheat (*Triticum vulgaris*), which comprises several types, diverse species, and grades, wheat has evolved into distinct types and varieties, each with its own characteristics. The following year, classes were formed based on the biology, growing habit, and grain quality of the crop.

The three varieties of wheat have been derived from a genetic point of view:

- Diploid varieties: Each cell in a diploid individual comprises two sets of chromosomes. species such as einkorn (Macdonald, 1994).
- Two groups of tetraploid plants: Each cell comprises four sets of chromosomes. *Triticum turgidum* is in the durum group (Macdonald, 1994).
- The number of sets of chromosomes a cell possesses is six. Many species, including *Triticum aestivum* and *Triticum spelta*, belong to this group (Macdonald, 1994).

Based on the consistency of the crop, wheat is broken into two classes:

Soft wheat: The protein matrix does not bind to the starch granules in wheat varieties which belong to this group. Although these varieties are usually used for the manufacture of baked goods, they may also be used in more varied applications. This group of species has the most widespread species in general, the wheat species *Triticum aestivum*. Soft wheat is mostly cultivated in areas that are mild and temperate. Breaking open the grains shows a change in texture at the grain's edge, which is tougher, and in the centre, which is more gelatinous. Durum wheat has more of these components, such as starch, fat, iron, phosphorus, and vitamin B (Oleson, 1994).

Strong wheat: The protein matrix adheres closely to the starch granules, and this induces breakage in the starch granules during milling. Wet climate regions are not ideal for it. When the grain is cracked, it shows a crystalline and uniform interior. The percentage of protein (gluten), water, and calcium is higher in soft wheat than standard wheat. hard wheat is the most commonly used variety for producing bread (Oleson, 1994).

References :

1. Behairy, R.T., M. El-Danasoury, and L. Craker. 2012. Impact of ascorbic acid on seed germination, seedling growth, and enzyme activity of salt stressed fenugreek. Journal of Medicinally Active Plants 1: 106-13.
2. Behnassi, M., O. Pollmann, G. Kissinger (editors). 2013. Sustainable Food Security in the Era of Local and Global Environmental Change. Springer pp 274.
3. The International Wheat Genome Sequencing Consortium (IWGSC); Mayer, K.F.X.; Rogers, J.; El, J.D.; Pozniak, C.; Eversole, K.; Feuillet, C.; Gill, B.; Friebe, B.; Lukaszewski, A.J.; et al. A chromosome-based draft sequence of the hexaploid bread wheat (*Triticum aestivum*) genome. Science 2014, 345, 1251788.
4. Nevo, E.; Korol, A.B.; Beiles, A.; Fahima, T. Evolution of Wild Emmer and Wheat Improvement: Population Genetics, Genetic Resources, and Genome Organization of Wheat's Progenitor, *Triticum dicoccoides*; Springer: Berlin, Germany, 2002.
5. Vaughan, J.G.; Judd, P.A. The Oxford Book of Health Foods; Oxford University Press: Oxford, UK, 2003; p. 35.
6. Dinu, M.; Whittaker, A.; Pagliai, G.; Benedettelli, S.; Sofi, F. Ancient wheat species and human health: Biochemical and clinical implications. J. Nutr. Biochem. 2018, 52, 1–9.
7. Cooper, R. Re-discovering ancient wheat varieties as functional foods. J. Altern. Complement. Med. 2015, 5, 138–143.
8. Thellung, A. Neuere Wege und Ziele der botanischen Systematik, erläutert am Beispieleunserer Getreidearten. Naturwiss Wochenschr 1918, 33, 449–458 und 465–474.
9. Goriewa-Duba, K.; Duba, A.; Wachowska, U.; Wiwart, M. An Evaluation of the Variation in the Morphometric Parameters of Grain of Six *Triticum* Species with the Use of Digital Image Analysis. Agronomy 2018, 8, 296.
10. Rovner, I.; Gyulai, F. Computer-Assisted Morphometry: A New Method for Assessing and Distinguishing Morphological Variation in Wild and Domestic Seed Populations. Econ. Bot. 2007, 61, 154–172.
11. Sonka, M.; Hlavac, V.; Boyle, R. Image Processing Analysis and Machine Vision; Thomson Learning: Boston, MA, USA, 2008; p. 829.