



## MACS 4028 Wheat Variety

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Recently, scientists from Agharkar Research Institute (ARI), Pune, have developed a **biofortified durum wheat variety MACS 4028**.

ARI Pune is an autonomous institute under the **Department of Science & Technology, Government of India**.

### Note

- **Biofortification** is a process to increase the bioavailability and the concentration of nutrients in crops through both conventional plant breeding and **genetic engineering**.
- **Durum** is a kind of hard wheat grown in arid regions that is typically ground into semolina and used to make pasta.

**Durum wheat, or *Triticum turgidum*, is the second most cultivated species of wheat after bread wheat, which is also called common wheat or *Triticum aestivum*.**

### Key Points

- Biofortified durum MACS 4028 wheat variety shows **high protein content of about 14.7%, better nutritional quality having zinc 40.3 ppm, and iron content of 40.3 ppm and 46.1 ppm respectively, good milling quality** and overall acceptability. ppm stands for parts per million.
- MACS 4028, is a **semi-dwarf variety**, which matures in 102 days and has shown the superior and **stable yielding ability** of 19.3 quintals per hectare. It is **resistant to stem rust, leaf rust, foliar aphids, root aphids, and brown wheat mite**.

- The MACS 4028 variety is also included by the **Krishi Vigyan Kendra (KVK)** programme for United Nations Children's Fund (UNICEF) to alleviate malnutrition in a sustainable way and can boost the Vision 2022 "**Kuposhan Mukht Bharat**", the National Nutrition Strategy.

The **Indian Council of Agricultural Research (ICAR)** has also tagged this variety under the **Biofortified category** during the year 2019.

- MACS 4028 has been notified by the Central Sub-Committee on Crop Standards, Notification and Release of Varieties for Agricultural Crops (CVRC) for **timely sown, rainfed condition of Peninsular Zone, comprising Maharashtra and Karnataka.**

In the peninsular zone of India (Maharashtra and Karnataka states), wheat cultivation is majorly done under rainfed and limited irrigation conditions. Under such conditions, the crop experiences moisture stress.

- Efforts for the development of high yielding, early maturing varieties with good quality and disease resistance for rainfed conditions are carried out at **Agharkar Research Institute, Pune** under **All India coordinated Wheat and Barley improvement programme**, coordinated through **Indian Institute of Wheat and Barley Research, Karnal** governed by the ICAR.

The MACS 4028 is an outcome of such intervention for the farmers.

- **All India Coordinated Research Project on Wheat and Barley (AICRP)** mandates **multidisciplinary and multilocational testing of varietal, newly developed improved genotypes, crop management and crop protection technologies** across the diverse ecosystems for increasing and stabilizing the wheat production.

## **Wheat**

- This is the second most important cereal crop in India after rice.
- It is the main food crop, in north and north-western part of the country.
- Wheat is a **rabi crop** that requires a cool growing season and a bright sunshine at the time of ripening.
- It requires 50 to 75 cm of annual rainfall evenly-distributed over the growing season.
- There are **two important wheat-growing zones** in the country – **the Ganga-Satluj plains in the north-west and black soil region of the Deccan.**
- The Major wheat-producing states are **Punjab, Haryana, Uttar Pradesh** etc.

**Source: PIB**