

Creating a collection of wheat with 1800 different samples

Wheat collection with 1800 wheat samples with different cultivars resistant to salinity stress, dryness and good bakery value were gathered with the efforts of undergraduates and graduate students interested in Gorgan University of Agricultural Sciences and Natural Resources.

The application of new methods in crop cultivation due to water shortages and severe climate changes can increase performance per unit area, which in many cases each crop should be planted at a suitable level in each area.

Wheat collections

There is an evolutionary path for each plant. The wheat for bread and other products that are now being used have passed thousands of years of evolution to reach this point. Bread Wheat and durum wheat are two important species of Triticum. Species in this genus are divided into three groups of diploid, tetraploid and hexaploid in terms of ploidy levels, and each group has a certain number of chromosomes.

The properties and the quality of wheat

Wheat is used in the preparation of various products such as bread, biscuits, sweets, cakes, pasta, and... Earlier mankind used to collect any edible plant. As a result, they met a wild wheat plant and began planting wheat. In this way, they made this plant tame. For gaining better wheat, they chose more productive plants for field cultivation. Specimens that did not have brittleness in the spike axis due to the occurrence of a natural mutation, and the cloaks were separated from the seeds; this was a great benefit for collecting seeds and consuming them respectively. This was, in fact, the first step towards domestication of wheat.

From about 9,000 years ago, farmers have a role in wheat

breeding. In the course of cultivation on farms, farmers plant new mutations caused by the collision between the bushes and different species were selected and used to cultivate the following year and were able to obtain better seeds for planting. This was done in wheat fields around the world, which resulted in the production of thousands of different wheat genotypes.

The role of genetic science in wheat breeding

Before the distribution of improved wheat cultivars in the world, the selection and proliferation of higher-quality wheat was done only by farmers. After the advent of genetic science and plant breeding, nearly 100 years ago, cultivars, cultivated over the course of several thousand years, were harvested by today's farmers. Until about 60 years ago, new and improved wheat cultivars from Europe also entered the country from the International Center for Corn and Wheat Research in Mexico, distributed by related organizations.

These figures had high yields and replaced indigenous cultivars in the fields. Bleeding plants were suitable in some cases, as it increased the amount of wheat production, but in many cases the cultivars that cultivated thousands of years in each region and adapted to that area were removed from cultivation.

To preserve native cultivars, which was the result of several thousand years of farmers' efforts, researchers at relevant organizations in the world and the Ministry of Agriculture in Iran collected these samples and kept them at centers called seed banks or the gene bank .Due to the fact that these indigenous cultivars have been adapted for many years over many years due to climatic conditions and environmental stresses (drought, salinity, etc.), specialist experts are trying to maintain a suitable base for these cultivars in order to introducing new cultivars.

□The idea of creating wheat collection in Iran

Dr. Khalil Zeinalinejad, a faculty member at Gorgan University of Agricultural Sciences and Natural Resources, told about the creation of wheat collectively in an interview with ISNA, that

the idea of creating this collection began at the time of him being a PHD in Germany. Given the place where my PHD thesis was conducted at the German Gene Bank, a good opportunity was created to focus more on this idea. According to the professor's guide, along with the subject matter of the thesis, I was supposed to examine 140 samples of Iranian wheat cultivars in the German Gene Bank. At the time of my graduation in Germany, I could bring over 350 other samples, including about 500 to Iran in addition to 140 wheat cultivars.

Collection of wheat with 1800 different samples

Zinelinezhad added: In 2011, with the assistance of the University, 550 specimens were culled at a university research farm. In the following years, wheat cultivars in Iran also provided a number of examples of the Gene Bank of Czech Republic and the ICARDA Institute in Syria and were added to this collection. Since 91 to 96 each year approximately 850 varieties of wheat were planted in the University Research Farm as a collection and their characteristics were recorded. In the year 1397, all of these specimens were cultivated along with 900 others, and our sample collection has now reached to the figure 1800.

He stressed that various studies would be carried out on these figures, in more than 15 MS students theses that were working on the same figures. Regarding the stress of salinity, dryness and the value of the bakery, good work has also been done. This collection has been able to reach this place with the support of the undergraduate and graduate students.

This faculty member of the Gorgan University of Agricultural Sciences and Natural Resources said: About 220 samples from Iran has been taken including 70 modified wheat cultivars and 145 samples from the IPK gene bank in Germany. Samples are available from Afghanistan, Azerbaijan, Turkey, India, Pakistan, Iraq, Nepal, Tajikistan, and Syria and modified cultivars from around the world. As well as samples of species of the wild and non-farm species is also in the collection.

Efforts to establish gene banks in Golestan province

Zynlynzhad stated: since 2011 the Department of Plant Breeding and Biotechnology at Gorgan University of Agricultural Sciences and Natural Resources is seeking to create a wheat collection in Iran and is trying to create a college of wheat at the university using the opportunity of graduate students and university supporters at the University.