

How many millennia can the hazelnut survive?



While some allege that interfering in the genetic makeup of food items such as corn and wheat will be a hazard to human health and jeopardize the future of humankind, others view GMO foods as a ray of hope for impoverished nations.

Claims that the world's population is growing rapidly and that the world's current food stock will not be able to meet the demands of this new population also affect the debate. Undoubtedly poverty and hunger are significant and life-threatening issues for human beings, and history provides evidence that starvation has wiped out entire generations, permanently transforming the demographic makeup of the earth.

Humans pass on not only magnificent structures, technology and works of art to their inheritors, but also agricultural knowledge – with agriculture being one of the characteristics distinguishing humans from other creatures. The Italian National Agency for New Technologies, Energy and Sustainable Economic Development (ENEA), which primarily focuses on researching global issues such as nuclear energy, global warming and genetics, aims to protect this universal knowledge.

The agency started the SAFENUT project in 2007, focusing on the genetic structure of hazelnuts and almonds within the European Union. The project aims to determine the genetic diversity of hazelnuts and almonds in the Mediterranean and to code the related genetic diseases in order to establish a data bank. It aims to preserve the diversity of the two nuts and make it possible to transfer this diversity on to future generations. As of today, 820 types of hazelnuts and 90 diseases have been identified. The research is focused on the genetic structure of not only hazelnuts and almonds, but also considers other plants. The staff is made up of a diverse team of researchers from Syria to South Korea.

Dr. Loretta Bacchetta, a biologist specializing in hazelnuts and almonds, coordinates the research of this project. Dr. Bacchetta reveals why hazelnuts and almonds were chosen for the research, "The two products have great economic value for Italy and cover an extensive region from the point of production. Italy is the second largest producer and exporter of hazelnuts, next to Turkey. The production of almonds started to decrease rapidly after 1980, and we witnessed the American almond invade the market. The research is thus important in keeping the native genes alive.

Dr. Bacchetta also stressed the need to preserve agriculture as an occupation and to protect conventional agricultural techniques, thereby passing them on to future generations. Thus, the SAFENUT project focuses mostly on improving and preserving the genetic structure of the diverse species of hazelnuts. The project manager, Dr. Laura Maria Padovani, stresses that sustainability is key to these projects. Padovani revealed that her focus is mainly on energy research that helps to meet Italy's increasing energy demand. She also does not fail to put aside time for genetic research and criticized the Italian government for not supporting these projects nearly enough. She noted that the Italian government should provide incentives, as agriculture is crucial for Italy.

Lack of demand for GMO hazelnuts

Speaking on whether genetically modified hazelnuts are possible, Dr. Bacchetta notes that although this is possible, there may not be positive results. Maria Aramini, who researches the molecular and genetic structures

of the hazelnuts that are grown in regions like Sicily and Torino, stated that the hazelnut already has the perfect mix of nutrients for our bodies with its existing genetic structure. Aramini, speaking about the benefits of consuming hazelnuts, noted that eating only 25-30 grams of hazelnut each day meets the daily requirement for vitamin E. The hazelnut is a vital source in balanced daily nutrition, and it is the most beneficial nutraceutical substance for a healthy cardiovascular system.

Thankfully there isn't much research into or demand for the genetic modification of the hazelnut, according to Arzu Sizer, from the Hazelnut Research and Implementation Center of Turkey. According to Sizer there is no modification of the hazelnut because neither the producers nor the consumers demand it. Hüseyin İrfan Balık, also from the same center, emphasizes that there is no need for genetically modified hazelnuts because the shelf life of hazelnut is already very long. Another issue to which Balık draws attention is that the residues of agricultural pesticides are much more dangerous than GMO hazelnuts. Balık, noting that developed countries are sensitive on this subject, says that Turkey has implemented strict regulations in recent years. Balık, speaking on these restrictions, revealed that pesticides can only be applied with a permit, and fertilizer is only used after soil analysis.

Different taste, different uses

The almond is important not only for the unique flavor it provides to desserts and salads, or its oil, but sculptures are also carved from its wood. Despite the many uses associated with the almond, the genetic structure of the almond is at risk today. Especially in Italy, production has decreased significantly in recent years. Dr. Bacchetta draws attention to the fact that after 1980 production dropped rapidly, and many varieties of almonds came under the risk of extinction. A young researcher, Kiarra, focuses on this aspect of the research project. Kiarra, speaking to Sunday's Zaman, states that almonds can best be preserved at their place of cultivation and that their seeds should be collected in the same place where they're planted.

Fortunately, this risk does not exist for hazelnuts. Biologist Hüseyin Balık, giving an example from Turkey, says:

There are 16 standard types in Turkey. All of them are types which are chosen by the selection of producers, and none of them are obtained through an attempt at improving the genetics of the seeds.

The production and consumption of hazelnuts and almonds is not totally independent of market conditions. Research specifically points out that the US has promoted the use of almonds in products rather than hazelnuts. Later however, after realizing that almonds have a shorter shelf life and hazelnuts a longer one, the country dropped such promotion. On the global scale, countries such as Chile, Azerbaijan and Georgia invest heavily in hazelnut production. Hazelnuts are mostly exported to countries such as the Netherlands, Germany and Switzerland, where they are processed. Sizer, mentioning the situation in the US, stated that the US wants to use more almonds than hazelnuts because its strategy is to export its hazelnuts -- it produces nearly 30,000 to 40,000 tons annually -- abroad.

Turkey is one of the most significant countries in the world in the production and export of hazelnuts. The Hazelnut Research Institute stated that 550,000 tons of hazelnuts are produced worldwide each year, and Turkey produces 330,000 tons of that. In a study that started in 1969 in Turkey, 822 different types of hazelnuts, each with its own genetic structure, were detected; today this figure has been reduced to 500 types of hazelnuts, with 16 standard varieties.

Turkey's most important advantage is that its hazelnut production spans a wide area and it produces high quality hazelnuts; however, its yield is still very low. Yields in the US are 2,000 kilograms per hectare, compared to 130 kilograms in countries such as Italy and Spain. Turkey's orchards yield only 98 kilograms per hectare. In the eastern Black Sea region, where the land is more rugged, this may drop to 34-40 kilogram.

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