

WILD WHEAT FROM ISRAEL HARDY AND ABLE TO GROW IN POOR SOIL

By Lydia Peroni

The Israeli Pavilion at Expo 2015 Milan presents a video on Aaron Aaronsohn, an agronomist and botanist who, after an intensive research, realized that wild wheat is hardy and able to grow in poor soil. It is also rich in nutrients, such as iron and zinc.

Despite its small size, Israel is home to many genetically diverse populations of wild plants. Wild relatives of crop plants are especially important because they contain genes that make them particularly well-suited to differing ecological settings; they are also more resistant to some diseases and grow in a variety of soil types. The genes that allow this flexibility were often lost during domestication, when genetic diversity was sacrificed so that plants cultivated for farming could take on standardized forms.

Of the Israeli wild crops, wild emmer wheat, the progenitor of all domesticated wheat, is of particular interest because Israel is thought to be a secondary site (after Turkey) of wheat domestication. In this area wild emmer populations once mixed with domesticated strains. In addition, Israel is a hotspot of genetic diversity because four large regional botanic zones - the Mediterranean, the Great Rift Valley, the Saharo-Arabian desert and the Irano-Turanian eco-regions - converge here. These tracts support wild wheat populations that have adapted genetically to various ecological conditions, such as different soils and rainfall levels. By obtaining samples from various wild populations, plant scientists can access these wild plant genes and transfer them to crops of the same or even different species.

Israel has today repositories for preserving this wild wheat. The Israeli Department of Agriculture funded [Israel Plant Gene Bank](#), which stores wild relatives of crop along with thousands of non-wild samples. Another major repository for wild wheat is the Wild Cereal Gene Bank, which is housed at the University of Haifa's Institute of Evolution and contains more than 3000 wild wheat samples collected mostly in Israel.



Plant geneticist Tamar Krugman, the curator of the Wild Cereal Gene Bank, is currently using the genes of wild wheat to breed a drought-resistant variety. Using genetic mapping to trace genes as they diffuse in a population or sample, she has identified helpful genes from several wild emmer populations, including in wheat from the dry Judean mountains, which displays drought resistance, and from the moister Mount Gilboa, where wild wheat displays the ability to adapt to constantly changing conditions.

Currently, the researchers of the Wild Cereal Gene Bank are crossing samples to maintain the best of the wild traits while removing the wild wheat features that necessitated domestication in the first place. In a few years, they expect to be able to introduce a new variety of wheat that can grow with very little water and produce a large yield.

In a global context of climate change and population growth, usual battles against pests and diseases, countries and scientists are increasingly turning to wild, non-domesticated wheat to search for useful genes that can be bred into commercial grain and Israel is a centre for this new technologies.

These researches to enhance wild wheat can have a great impact on production of wheat in arid areas and on food safety of people living there.

To know more

[Article in Neot Kedumim.org](#)

[Article in Forward.com](#)

[Article in Greenprophet.com](#)

[Article in Springer.com](#)

[Video on Wild Wheat at Expo Pavilion](#)

