THE CROP TRUST
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Its story, however, was just beginning.

Years later, three Moroccan PhD candidates studying at Kansas State University rediscovered this wild relative and recognized something in it: traits that could potentially help wheat cope with new challenges. Farmers back home in Morocco were facing persistent drought and Hessian fly, an insect that causes severe yield losses in wheat.

After completing their PhDs, they brought the wild plant back home and continued experimenting with it. They later shared its characteristics with Dr. Nachit, a Moroccan scientist based at **ICARDA's** offices in Aleppo, Syria. Recognizing its potential to benefit farmers far beyond Morocco, Dr. Nachit was given one of its progeny to take back to Syria. He named the resulting work **"ICA-MOR" (ICARDA–Morocco)**, combining this unique wild species with high-yielding lines and initiating the development of new durum wheat lines derived from it.

That set in motion a journey that would take *Triticum araraticum* and its derived lines across borders

From wild diversity in the Fertile Crescent to farmers' hope: How global research partnerships are helping farmers

In Morocco, Syria and Lebanon, investment in crop diversity, science and international collaboration deliver new resilient durum wheat varieties for farmers facing the changing climate.

has been leading the work on durum wheat in the region. Alongside their national partners from Morocco, Syria and Lebanon, researchers have tamed this wild genetic resource to develop improved varieties adapted to the realities farmers face today.

The result is not one variety, nor one country's achievement. It is three varieties, which are now moving into farmers' fields in Morocco, Syria and Lebanon.

In Morocco, the National Institute of Agricultural Research (**INRA**) developed "**Jawahir"**, which means "jewels" in Arabic. Today, "Jawahir" is under seed multiplication after showing its potential across Morocco's southern regions, where drought is a growing concern for farmers. The variety combines strong drought tolerance with resistance to the Hessian fly, carrying some of the valuable traits inherited from its wild ancestor.

In Syria, "**Cham 11"** was developed by the General Commission for Scientific Agricultural Research (**GCSAR**) and is presently under seed multiplication. "Cham 11" is well appreciated for its adaptation to rain-fed conditions and is known for its high yield potential and high-quality grains.

And the very same *Triticum araraticum* contributed to the development of "**Red Grain"** by the Lebanese Agricultural Research Institute (**LARI**). "Red Grain" is already in farmers' hands in Lebanon. It is valued for its high yielding capacity in the Beqaa Valley and, as its name suggests, for the distinctive red color of its grains, particularly appreciated for making **burghul**, a traditional food in the country.

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> *"This shows how an original collection of wild relatives in the middle of nature, protected in genebanks, used by breeders, resulted in fantastic varieties that are now available to farmers to really help their livelihood. Three varieties. Three countries. Three different sets of farmers' needs, all connected to the genetic diversity of one wild wheat collected decades ago", explains Dr Filippo Bassi, Principal Scientist at ICARDA and BOLD's lead partner for durum wheat.*

Science meets the farmers

A variety that performs well under controlled research conditions must also withstand the unpredictable conditions farmers face.

That is why "Jawahir", "Cham 11", and "Red Grain" were tested both through national research systems and, importantly, in farmers' fields. Farmers were not simply waiting at the end of the research process to receive a new variety. They were part of the process of evaluating which materials showed the greatest promise.

> *Dr Filippo Bassi explains, "We establish agreements to plant in their farms to engage them in a participatory way, asking farmers what is good or bad about what we are showing. Sometimes we get the response we expect, but very often we don't, and that is where we draw from the ancestral knowledge of farmers, better matching their own needs."*

This participatory approach changes the way innovation happens. Rather than asking farmers to adapt to a variety developed elsewhere, scientists can work with them to identify which characteristics matter most, and which new candidate line has the greatest potential in their fields. The same genetic resource, here *Triticum araraticum*, can take a different path depending on where it is used.

> *"This kind of collaboration between ICARDA and national programs is very important for us. ICARDA provides us with its new derived lines, which we then test here in Lebanon in a participatory approach for variety selection. We are trying to put farmers at the center, providing them with the best solutions to help them adopt resilient varieties that will enhance their livelihoods." says Dr Rola El Amil, Head of the Plant Breeding department at LARI.*

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A story that begins in the Fertile Crescent, and reaches beyond it

There is something powerful about the journey of this *Triticum araraticum*. It began in the Fertile Crescent, in Northern Iraq, but in time, became a global one. Today, it's a story that belongs to many countries and many people.

"Jawahir", "Red Grain", and "Cham 11" show how genetic diversity conserved decades ago should be brought back to address the increasing pressures of drought, heat and pests farmers are facing today. And they demonstrate something even bigger: the solutions to tomorrow's agricultural challenges may already exist in the diversity we conserve in genebanks today.

Investing in crop diversity is not only about preserving plants for the future. It is about creating the possibility of global solutions for farmers today and tomorrow.

> *"This is a story about collaboration across borders at a time when agriculture faces challenges that no country can solve alone. It shows that with the right long-term investment and collaboration, crop diversity conserved for decades can become part of the solution to a challenge we are facing today," says Dr Benjamin Kilian, the BOLD Project Coordinator at the Crop Trust.*

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About the Crop Trust

The Crop Trust is an international organization working to conserve crop diversity and thus protect global food and nutrition security. At the core of Crop Trust is an endowment fund dedicated to providing guaranteed long-term financial support to key genebanks worldwide. The Crop Trust supports the Svalbard Global Seed Vault and coordinates large-scale projects worldwide to secure crop diversity and make it available for use. The Crop Trust is recognized as an essential element of the funding strategy of the International Treaty on Plant Genetic Resources for Food and Agriculture. Learn more at**A story that begins in the Fertile Crescent, and reaches beyond it**

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About ICARDA

The International Center for Agricultural Research in the Dry Areas (ICARDA) delivers science-based solutions to improve food, water, and climate resilience in dry regions. Operating across Central and West Asia, North Africa, the Middle East, and beyond, ICARDA focuses on climate-smart crops, integrated crop-livestock systems, and sustainable land and water management. A CGIAR center, ICARDA works to empower smallholder farmers, particularly women and youth, while preserving regional biodiversity through its genebanks in Lebanon and Morocco. For more information, visit www.icarda.org.

About the BOLD Project

BOLD (Biodiversity for Opportunities, Livelihoods, and Development) is a major 10-year project to strengthen food and nutrition security worldwide by supporting the conservation and use of crop diversity. The project works with national genebanks, pre-breeding and seed system partners globally. Funded by the government of Norway, BOLD is led by the Crop Trust in partnership with the Norwegian University of Life Sciences and the International Plant Treaty.

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