



REFUGEE SEEDS

The Israel-Hezbollah conflict threatens the Middle East's most valued repositories of plant biodiversity.

by Gary Paul Nabhan

WHERE MY FAMILY is from on the Lebanon-Syria border in the arid Bekaa Valley, wave after wave of armed conflicts over millennia have decimated rural families, destroyed their food supplies, seed stores, and irrigation canals, forcing many of the survivors to flee as refugees to other lands.

A century ago, my grandparents, aunts, and uncles fled the Bekaa Valley during the Ottoman War, when drought, locust plagues, and mulberry crop failures simultaneously impacted their livelihoods and food security. They arrived as undocumented refugees in the United States on routes that took them through Ellis Island, Windsor, Ontario, or El Paso-Juarez after sailing across the Atlantic to the Eastern Seaboard, St. Lawrence River, or Yucatan Peninsula.

Most of us know or have heard of farmers, herders, and orchard-keepers like my kin who have had to escape from wars and climate change. But how many of us recognize that along with their displacement from the homelands, “refugee seeds” are generated as well?

Historically, crop seeds were grown in the same landscapes for hundreds of years and were finely selected to tolerate the stresses there. They were handed down from generation to generation as priceless foundations for local food security. But during most wars, rural communities have suffered insults on top of grave injuries: While grieving the loss of family members and destruction of their properties, the seed stocks they need to recover are often damaged or destroyed as well.



The International Center for Agricultural Research in the Dry Areas conducts field trials of desert-adapted wheats (pictured), fava beans, barley, and other crops to evaluate unique traits that could serve farmers and rural communities.

A century ago, agricultural scientists devised a “back-up” system to help farmers safeguard and recover their heirloom seeds under such circumstances: seed banks. By collectively placing seeds in a reserve where they were protected from the elements and from military conflicts, farmers could take seeds from the bank after a disaster and move toward recovery much more rapidly. The “crop genetic resources” in these seed banks were also evaluated for their resistance to diseases and pests that plagued farmers, and used in crop improvement programs that freely shared the improved varieties with farmers facing diseases and pestilence in their fields.

Because of their capacity to help humanity after wars, floods, droughts, or famine, the seed banks — like hospitals and places of spiritual renewal — were considered sacrosanct. They were envisioned as demilitarized sanctuaries that were meant to be kept safe during times of internecine strife.

That isn’t happening in the current war in the Middle East, where “scorched earth” strategies that have been used for centuries to starve and cripple adversaries are being used extensively. Not only have fields been burned, waters contaminated, power and water infrastructures sabotaged, but hospitals, schools, seed banks, and food-relief convoys have been damaged or destroyed. This violence has left doctors, teachers, seedkeepers, first responders and other aid workers fleeing, or worse, wounded or killed.

And if those horrors visited upon children and adults

in Israel, Palestine, Syria, Yemen, and Lebanon were not enough, the war is threatening one of the world’s most valued repositories of seed biodiversity. I am speaking the network of five facilities used by the International Center for Agricultural Research in the Dry Areas (ICARDA) in eastern Lebanon’s Bekaa Valley, which is part of the Fertile Crescent where settled agriculture developed nearly ten thousand years ago. At these facilities, both crop seeds and their hardy wild relatives from rugged ranges and windswept deserts are regenerated and evaluated for unique traits. The more promising ones are integrated into farmer-breeder collaborations to assess their value to rural communities.

SINCE MID-SEPTEMBER, aerial photos and on-ground reports have documented that missiles have struck within 6 kilometers of several of the five ICARDA facilities. In addition, tanks and other military vehicles have damaged the natural vegetation where wild relatives of wheat, barley, oats, lentils, garbanzo beans, and vetches can be found in the understory of the sacred cedars of Lebanon. Although there are no reports yet of direct hits on the seed banks, electrical and water delivery systems vital to the facilities have been damaged throughout the valley.

To be sure, the human deaths, suffering, and displacement

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outrank any other tragedy in this year-long war. Such tragedy extends to ICARDA staff as well: Missiles have also landed on or near several of the Lebanese, Armenian, Palestinian, and Iraqi villages and refugee camps where some of ICARDA agricultural, administrative, maintenance, and security staff members reside.

This crisis threatens to be but one more twisted turn in a cycle of destruction and disruption that has resulted in some of the same food crop seeds being moved to safer havens four or five times over the last 20 years.

These include seeds that were looted in 2002, then partially recovered in the Afghanistan cities of Ghazni and Jalalabad. The seeds were then moved to Abu Ghraib and smuggled out of Iraq before that very same facility complex became a torture camp in 2004 during the Persian Gulf War. From there, they went to Tal Hayda near Aleppo, Syria, where many were regenerated to provide replicated collections for both ICARDA and the long-term “frozen” seed bank in the Svalbard on the Norwegian island of Spitsbergen in the Arctic Circle. The Svalbard seedbank has been dubbed the “doomsday vault” from which seeds are removed only when their duplicates stored elsewhere have been totally destroyed.

Although many of these “refugee seeds” eventually made it

to Svalbard and ICARDA, not all of the Tal Hayda seeds escaped damage. One of my friends at ICARDA confessed to me that the saddest day of his life as a seed keeper was when he was forced to request that seeds be removed from long-term storage in the Doomsday Vault, because their duplicates in shorter-term storage had been lost. He had never thought that, during his lifetime, he would have to ask for seeds held in Svalbard. He had hoped that they would be “preserved for posterity” there without the need to recruit them after tragedies.

Now the war in the Middle East threatens to force some of the most desert-adapted seed collections in the world into “refugee status” yet again. There is at least some comfort to be found in the fact that all the seeds at risk in ICARDA’s Bekaa facilities are now backed up elsewhere. Less comforting is the dramatic disruption to field trials and regeneration work in Lebanon.

The seeds of crops best suited to hyper-arid conditions, such as emmer and einkorn wheats, red and green lentils, giant fava beans, and two-rowed or six-rowed barleys, need to be regenerated in and evaluated under desert conditions if they are to be of current and future service to farmers challenged by climate change. These are most certainly plant resources that humanity may need to recruit as we enter the hotter, drier climates of the future world that I call Planet Desert.

ICARDA staff prepare seeds for viability testing at the Terbol seedbank. Though ICARDA’s Bekaa Valley facilities long felt like a safe haven for seeds, today they face the stresses of war and a growing humanitarian crisis in the region.



PHOTO MICHAEL MAJOR/GLOBAL CROP DIVERSITY TRUST



Seed samples are stored in foil packets in a large freezer room at ICARDA's Bekaa Valley seedbank. The facility can hold samples of up to 120,000 varieties of plants.

I GRIEVE FOR ALL seeds that have been threatened by the current war, given my high regard for and personal friendship with wild and cultivated “seed keepers” around the world. Since my early 20s, I have worked collaboratively with plant explorers and seed conservationists from a dozen

than 300 selections of seeds collected by my mentor Howard Scott Gentry — a legendary plant explorer for the United States Department of Agriculture (USDA) — arrived as well. I sat on a bench in the ICARDA facility that day, reading Dr. Gentry's name on seed packets, stunned that the legacies of

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countries to conserve and replenish stores of often-forgotten crop varieties that can already tolerate extreme heat, drought, solar radiation, and salinity stress. I have also safeguarded and documented the crop wild relatives like wild tepary beans, aromatic oreganos, and small but pungent chili peppers that naturally grow in both the Arab World and the Americas.

But my fears about current events are even more personal than that. Three of my Lebanese cousins have worked at ICARDA facilities in the Bekaa in the past, and our ancestral village is not far from one of field regeneration facilities for seed crops of lentils, vetches, and other legumes. I visited one of them several times in 2018, just two years after a state-of-the-art seed bank was inaugurated in the Bekaa, a founding which generated a sense of pride among locals. I arrived at the facility in November 2018 on the same day that more

my scientific mentor and my Lebanese kin had converged.

Dr. Gentry had originally collected those seeds with in-country colleagues in Afghanistan, Eritrea, Ethiopia, India, Iran, Iraq, Pakistan, and Turkey during the 1950s and 1960s. He worked for the USDA as part of collaborations with the United Nations and the Rockefeller Foundation to safeguard the diversity of nitrogen-fixing legumes and staple grains that could improve food security in drought-stricken regions. I later followed in his path, helping to found two nonprofit seed-conservation organizations — Native Seeds/SEARCH and the Seed Savers Exchange — through which I trained young professionals from many Indigenous nations and Latin American countries in seed collection, documentation, and storage. I have also personally — however briefly — assisted with seed and bulb harvests at one of the field stations for



Dry-adapted varieties of fava beans, lentils, garbanzo beans, and other legumes that could help improve food security in drought-stricken regions.

seed regeneration in the Bekaa Valley, while on sabbatical at the American University of Beirut.

My latest initiative, spearheading a Sacred Plants Biocultural Recovery Initiative to safeguard wild plants of spiritual significance in sacred sites along the US-Mexico and Lebanon-Israel borders, is also directly impacted by the war. The conflict has destroyed access and irrigation conduits serving sacred springs and ancient groves found between the world-renowned archaeological sites of Baalbek and Anjar Lebanon less than 50 miles from Israel's Golan Heights. While sacred plants are highly regarded among biodiversity conservationists as irreplaceable resources for the future, neither the actions of the Israel Defense Forces nor Hezbollah's military wing show respect or care for landscapes of regeneration or for plant resources that are being held for all of humankind.

For over 15 years, the Bekaa Valley of Lebanon had seemed like a "safe harbor" for these food crop reserves as seed banks near Ghazni, Jalalabad, Abu-Ghraib, and Tal-Hayda came under threat. But now Bekaa's "refugee seeds" are surrounded by 1.5 million Syrian, Palestinian, and Iraqi refugees, and a million of internally displaced Lebanese, most of whom had to flee their homes since mid-September. Amid this humanitarian crisis, the sense of safety has been irrevocably lost.

Many of us today feel deep sorrow over the conflicts in

Middle East that began last year. But I feel heartened by the words of my Lebanese colleague Ricardo Karam, founder of the Takreem Foundation, which promotes a favorable Arab identity and for which I serve as a Laureate:

"In a region burdened by hardship, the values of resilience, hope, and unity have never been more critical. This is especially true for Lebanon and Gaza, where lives are shattered, and entire communities displaced. Yet, amidst devastation, dreams persist. The road ahead will not be easy, but we cannot afford to falter. Together, we can extend a lifeline to those who suffer, rebuild shattered lives, and remind the world that even during destruction, we will not give up on our dreams, or on each other."

Mr. Karam has renewed my hope for the people and seeds of the Middle East, and for a future where none are made refugees. ■

Gary Nabhan is a Lebanese-American writer and plant conservationist who recently published two new books: *Against the American Grain: a Borderlands History of Resistance*, and *Chile, Clove, and Cardamom, a cookbook and celebration of desert cuisines* co-authored with Beth Dooley. He has been honored by both the Takreem Foundation as an Arab-American Laureate, and by the MacArthur Foundation with a "genius" award.