OneZero

Why Agritech Is Israel's Next Big Import

The small country's agriculture solutions are spreading its tech-sector influence

Adam Popescu, May 30

Drip irrigation in the Sharon Valley, near Netanya, Israel. Credit: Dan Porges/Getty Images

ISRAEL—The train ride from Jaffa to Jerusalem passes through fields of grapes, lettuce, tomatoes, olives, and bananas. In many ways, these fields are a miracle.

As the Dead Sea evaporates and the Jordan River dwindles, Israel—a desert country of 8.7 million and smaller than the state of New Hampshire—has been forced to get creative around water efficiency. More than half of Israel's usable water is man-made from desalinated seawater, and 86% of its wastewater is treated and reused.

Israel has survived as a modern nation—and as a startup hub—in part because the country created a revolutionary irrigation system in the 1960s that would become the world standard for efficient and high-tech agriculture. Necessity is the mother of invention, and the concept of "drip" irrigation exemplifies that maxim. Drip irrigation is an efficient way to slowly distribute water directly to a plant's root system through a network of pipes or valves either from above or buried below the soil.

This minimizes evaporation, and in resource poor environments, like Israel, it can conserve water and increase efficiency. "The situation in Israel is 60%

arid desert, the rest is semi-arid," says Naty Barak, the chief sustainability officer of Netafim, the drip irrigation firm that now controls a third of the field's global market.

Born out of the kibbutz collective farm system, Netafim now operates in 110 countries and employs a process the company claims achieves as much as 97% efficiency in delivering water to the photosynthetic process. That cuts water waste, but it does more. "You boost yields," says Barak. "Big time."

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Netafim, which paved the way for today's agritech upstarts, is the brainchild of Simcha Blass, the inventor of drip irrigation. When he was in his early twenties, in the 1960s, Barak worked with Blass back on the kibbutz, watching history unfold in the desert. "[Blass] carried water from the Sea of Galilee in the north to agriculture fields in the south," says Barak. "When we met, he was quite frustrated that no one believed him that drip irrigation could work. Realizing water is going to be a challenge for Israel. We didn't think about California, India, or sub-Saharan Africa [places that also suffer from a lack of water]. We always thought about Israel."

Today, the firm irrigates thousands of farms worldwide and is worth around $2 billion. "I came here to become a farmer after the army," says Barak. "I didn't think I would end up being an industrialist."

Agriculture accounts for as much as 70% of global water use, most of which goes to irrigation, and water is quickly becoming an imperiled resource. Today, a third of the world's biggest groundwater stores are in danger of drying out. Israel, though, never had much choice but to innovate, notes Barak. Climate, location, and a slew of unfriendly neighbors all forced the country to grow much of its own food and not wait for the help of the rest of the world.

Israel's agritech sector now comprises 500 companies, many of them new, which have raised over $170 million in funding since 2017—more than competitors in far larger farming nations like Brazil and Australia. Agriculture and food tech startups received over $10 billion in investments last year globally, up 29% from 2016, and a significant proportion is going to Israel.

This month, Taranis—a four-year-old Tel Aviv startup whose drones monitor fields and diagnose nutrient problems, plant disease, and insect infestations in farms in the U.S., Brazil, Russia, and Australia—closed a $20 million investment round. There's also Sufresca, a Jerusalem-based firm that creates edible coatings for fruits and veggies to lengthen shelf life. Armenta is another Israeli agritech player that treats sick dairy cows without antibiotics, and Beewise, located just a stone's throw from the Galilee Sea, automates hive maintenance via machine learning. WeedOUT, which makes a biological herbicide, won the 2018 AgriVest prize last September at Israel's premier agritech investment event.

There's also major support from abroad. In February, the Israeli A.I. firm Prospera Technologies teamed up with Valmont Industries on a three-year, $40 million autonomous pest control and crop nutrition and management venture.

The project plans to not only advise farmers on how best to achieve optimal yields but hopes to be capable of automatically administering them in real time. Prospera now claims it can surpass the industry standard—ahem, Netafim—to better protect natural resources and cut cultivation costs. Data analytics might not be much of a draw for old-school farmers lacking smartphones, but big savings and bigger yields will certainly be a message understood loud and clear.

A similar deal between John Deere and Farm Dog was recently announced to develop variable rate sprays for disease and pest management, a partnership that Iowa Gov. Kim Reynolds said would "lead farm production into the future."

In January, Israel Aerospace Industries Ltd. signed an agreement to supply drones to Brazil's Santos Lab as a way to improve large scale precision agriculture. The first foray into the agriculture market for the Israeli company is estimated to be a more than $100 million deal. Last October, China's vice president Wang Qishan toured Israeli agri-parks, which have been popping up across China, as well as Ethiopia,

India, Greece, and Panama after similar state visits. In late 2017, China signed a $300 million "'clean tech" deal to import and white-label Israeli agricultural tech.

"They look at Israel as a startup hub," says Netafim's Barak. Why? Barak says it's a combination of many factors, but the fact that young people in Israel undergo military service is one of the greatest. "It's [about] taking young people and giving them responsibilities and trusting them with millions of dollars on R&D and commanding units and tech."

Many Israeli companies were founded by former Israeli Defense Force (IDF) military members. It helps that such startups are able to develop pricey equipment and software in state-sponsored labs. The army's prestigious 8200 cybersecurity unit is also considered a de facto incubator for many startups.

Beyond the IDF, there's also university incubator support and deep-pocketed programs like the joint Israel-U.S. Binational Industrial Research and Development (BIRD) Foundation**.** BIRD was established in 1977 by both governments in the hopes of promoting collaborative technology and funding major R&D projects. Israel gets access to bigger markets, and the U.S. gets to increase its competitive edge by gaining cost-effective innovation capabilities.

The project is far from altruistic: BIRD only funds 50% of research and development for each partner. And the big caveat is that compensation only consists of what's needed to bring projects to completion; plus funded firms are expected to give back what was given once they've achieved profitability. To date, that means $109 million in repayments.

BIRD has invested nearly $354 million in 982 projects since the 1970s, with cumulative sales exceeding $10 billion. "Fifteen percent of our funding goes to agritech," says Maya Vardi Shoshani, BIRD's West Coast director of business development.

That investment translates to over 32 projects in the agricultural sector, including a recent partnership between Juganu of Rosh Haayin and AeroFarms of Newark, two companies that have collaborated to develop a smart LED fixture for automated horticulture.

BIRD takes no board seats, no IP ownership, and no long-term financial interests. It's a novel concept in the wolfish world of venture capital. It also doesn't just fund startups—it funds established companies, too. In 2016, the IAI, the company that supplies drones to Brazilian farms, won a $900,000 BIRD award with Honeywell to develop a civilian-focused unmanned aerial vehicle. Not all funding is environmentally focused, but if you tally energy, water, life sciences, and agritech, it's over half of all BIRD projects.

"When we choose projects to fund, our main goal is to find innovation," says Shoshani. "Israel is known for water technologies. We see the social impact value of agritech in feeding the world and making food more accessible."

It may sound like hot air, but for a country of its size to have the funding it does, it's clear the claim could hold weight. "I'm sure we will see this trend growing," says Shoshani.