

Farmville's Bull Run

Balu Mhaske, a farmer in Maharashtra's Yevati village, has been growing marigold flowers on his 10-acre farm the past 15 years. Whatever he couldn't sell went waste, which used to be a lot at times. That changed last year when he began renting a solar-powered cold-storage unit to keep his flowers.

"It helps keep my flowers fresh for up to 10 days," said Mhaske. "Last year, instead of selling the flowers at the market price of ₹20 per kg, I stored them in the storage unit and then sold them for ₹100 per kg during Diwali."

The cold storage is one of several products developed by startups that are transforming India's agriculture sector and the lives of its farmers. While farm-focused startups services such as weather-tracking and lending market-places continue to evolve, the more time-consuming and arduous route of developing and selling products for this niche market is now becoming a mainstay.

And the main areas of focus are automation and bio-engineering.

Take Satish KS, who has developed an automatic, low-cost irrigation controller called Siri. The former software engineer and cofounder of Flybird Farm Innovations recalled the several hurdles he struggled with while working on his farm land at Holalkere, near Chitradurga in Karnataka.

"Especially with water management and labour costs. And crop yield was not up to the mark. That's when I started looking into automation. I was from tech, so why not explore?" said Satish.

Since 2014, he has installed Siri in more than 65 farms in Karnataka and Andhra Pradesh. The basic system is priced at ₹12,000 per acre. Satish is now working on making the product wireless.

Flybird recently raised more than ₹1 crore in equity and grant-funding from Villgro, Rianta Capital's Artha Initiative and others.

YCook, which sells organic, ready-to-cook processed foods, trains farmers to grow and handle post-harvest processing for a hybrid seed variety called Sugar 75, used to produce American sweet corn. The seeds have a shelf life of up to 12 months without needing refrigeration or preservatives.

"These seeds help to reduce post-harvest loss by over 30%," said Gayathri Swahar, cofounder of YCook. "The mission is to enable each farmer to earn ₹1 lakh annual revenue from every one acre of land. We have managed to work with over 1,000 farmers from Andhra Pradesh, Karnataka, Telangana and other states."

The initial challenge for agri-products startups, though, has been in gaining the trust of the farmers.

This "is a bit of a challenging job. Especially with small farmers," said Satish. "They need to see demo and benefits, so the initial challenges are big. We called 40-50 farmers and promoted our product by doing a free demo. Then, over time, there were testimonials from existing customers."

Eventually, the benefits become self-evident as these products reduce costs in terms of labour, electricity, water consumption.

"If a grape farmer buys our machine, the first tangible difference is that he saves on labour, who sometimes never show up to perform a critical manual task like 'dipping', without which his table grape is rendered unsellable," said Devneet Bajaj, chief executive of Mitra, which sells automated air-blast sprayers. "Our sprayer can automate this task," he said. "Sprayers from abroad require more horsepower and are costly. Our price is 30-50% lower and it uses less energy. Our sprayers also allow the farmer to keep his chemical sprays at a minimum, so he can then export his product."

Barrix Agro Sciences has developed non-chemicals-based alternatives for pesticides, an easy sell with farmers.

"We have developed pheromone-based traps and sticky sheets, chromatic traps, and plant growth supporters that are cost-effective, saving up to Rs

With more startups developing a range of innovative products to make life easier for farmers, more investors are paying attention to the agriculture technology sector, write **Shashwati Shankar** and **J Vignesh**

Agri-tech Innovations



Nayan

is a quad-rotor drone for developers and researchers. It comprises camera-enabled sensor devices, including a scanning range finder, that enables it to collect data in real time. (Aarav Unmanned Systems)



Ecofrost

is a solar-powered, cold-storage system. The product is primarily designed for the rural segment and does not depend on grid electricity. (EcoZen Solutions)



Grapemaster Blast+

is an air-blast sprayer developed for vineyards. A computer-balanced fan ensures uniform air output. It has an air recovery system that provides efficient air output and better coverage. (Mitra)



Barrix Catch Vegetable Fly Trap

has synthetically produced pheromones that act as a trap to eliminate specific insects. It works on the principle that different pests are attracted to unique pheromone compounds. (Barrix Agro Sciences)

20,000 per acre of land," said founder Lokesh Makam. He said it was easy to get farmers to adopt his products since they otherwise have to spend heavily on pesticides. Barrix has sold its products to more than 2 lakh farmers in India and exported to Mauritius, Tanzania and Sri Lanka as well.

And EcoZen Solutions, the maker of the solar-powered cold storage that Mhaske uses, offers a quarterly lease to win customers. "The idea is that the farmer will use our product and like it and eventually buy it," said cofounder Devendra Gupta.

Another focus area is data collection. Aarav Unmanned Systems, Airwood Aerostructures and Drona Aviation develop products that use drones to collect farm-related data. A complex camera-like system is attached to the drones to record information in real time.

"One of the products we will introduce is called a Hexacopter," said Yeshwanth Reddy, cofounder of Aarav. "It's autonomous and can be used for multiple purposes from precision agriculture to topographic surveying and industrial inspection. It has a very simple and interactive interface that uses symbols to indicate water, for instance... there is no specific need for language."

With such products spreading wings, investors Omnivore Partners, Aspada Advisors, Infuse Ventures and Villgro, among others, are looking at this space with growing interest.

"It's a \$400-billion (₹27 lakh crore) market," said Jinesh Shah, cofounder of Omnivore Partners. "Around two years ago, we used to get one or two applications a week or every 10 days from entrepreneurs. Now, we see around 10 applications a week. As the number of entrepreneurs has gone up and innovations in this space are becoming clearer, there is an increasing investor interest."

But late-stage investors aren't yet showing the same level of enthusiasm, which means agri-tech startups will likely be stranded for cash when they need to scale up.

"(Late-stage funds) are doing it really well in consumer-tech in urban India, but some of that risk-taking appetite needs to filter into agri-tech," said Bajaj of Mitra. "I have taken about \$4 million from Omnivore in three years. Because we have good gross margin, we are being able to scrape through with a limited budget. But to export our technology and build a global brand we will seek capital shortly."

Shyam Menon, investment director at Infuse Ventures, says the agri-tech startups need a combination of early-stage funds, debt, etc. "All of these are needed to enable innovations. It's not just (venture capital) or equity."

Shashwati Shankar & J Vignesh

Fundraising

● **AARAV UNMANNED SYSTEMS**
StartupXseed Ventures, 3ONE4 Capital

● **AIRWOOD AEROSTRUCTURES**
StartupXseed

● **SURYA POWERMAGIC**
Infuse Ventures

● **FLYBIRD FARM INNOVATIONS**
Villgro, Rianta Capital's Artha co-investment Initiative

● **GREENWAY APPLIANCES**
Former Genpact CEO Pramod

Bhasin

● **EM3 AGRISERVICES**
Aspada Advisors

● **ECOZEN SOLUTIONS**
Omnivore Partners, Villgro

● **MITRA**
Omnivore, Unilazer Ventures



ILLUSTRATIONS: ANIRBAN BORA



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SATISH KS,
Cofounder, Flybird Farm Innovations



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JINESH SHAH,
Cofounder, Omnivore Partners



For the agri population, we have all the need in the world to put more capital. Combination of early-stage, debt, etc. All financing mechanisms are needed

SHYAM MENON,
Investment director, Infuse Ventures