



DruFarm

Creating sustainable future for the farmers, by the farmers and with the farmers.

A fourth generation farmer, Mr. Sanket A Kedar, comes from a farming family.

An unfortunate accident in December 2015 brought Sanket's life to a standstill for the next 8 months. Completely bedridden with accident induced injury, Sanket was confined to the four walls of his home. It was at this juncture of his life that he was brought face-to-face with his father's predicament as a farmer.

"The accident was actually a vital misfortune for me. It was during this period I saw my father's struggle.

My father has been working on his five acre of grape vineyard from 2006. The crop yield, productivity and income levels were all good for the first five years. But after that the productivity and income levels started declining. A similar pattern was observed for the 25 odd grape farmers in my area. Despite toiling hard, putting in the inputs & the efforts he was not getting optimum yield and the frustration was simply mounting with each crop season. His helplessness hit me hard and in my condition I could do nothing but be a silent observer. This incident got etched in my memory and the moment I recovered I set myself to the task," says Mr. Sanket.

Curious to understand what led to the decline in grape productivity he started conversations with grape farmers to dig deep into the matter.

Determined to go the root of the problem, he went around talking to farmers, "From August 2016 to August 2018 I personally visited and interviewed over 100 farmers in the region of Maharashtra, spending days with them and understanding the core issues ailing the farm community.

I came to know that most the farmers even with changing times were still upholding the agricultural practices of their fathers and forefathers. Their deep seated belief in traditional farming ways was unshakable to the point where income enhancing evidence based technological solutions failed to grab their attention, with them continuing in their old ways.



This got me really thinking of what other reasons held back farmers from adopting newer technologies? To gain a 360 degree perspective on the issue, I held detailed discussion with researchers and became aware of the glaring gap in Agricultural research and call to action. Language barrier acted as a big chasm in any research finding getting translated into required action.

One other core factor that prevented farmers from adopting newer technologies was the hegemonic presence of Farm Doctors. The grape farmers in my area relied heavily on the advisory of these consultants and despite being charged an exorbitant amount of ₹ 20,000 for an acre of land were not reaping any substantial benefits from the advisories.

These farm doctors are basically consultant for grape fields who prescribes crop schedule to farmers for optimal yield. I went through their crop schedule for the past five years and was shocked to see that the grape doctor had prescribed same crop schedule each year without considering the soil and climatic conditions. It so happened that in a group of 20-25 farmers a couple of farmers would get optimal yield due to varying factor while rest suffered the same fate. And when farmers complained that their crop schedule was not fetching them any result they would cite example of one or two odd grape farmer who got good yield. Thus making the farmer double guess themselves. They were clearly benefitting from farmer's ignorance and continued their business unabated. Caught into the quagmire of illiteracy farmers had to option but to rely on grape doctors. Thus no one was pushing farmers to adopt new technology. That epiphanic moment made me resolve in my heart to work out a solution to alleviate the sufferings in this profession.

Now that I understood the problem, I started out to find the solution. I visited ICAR-National Research Centre for Grapes and there I got my hands on world over research on this topic. And all of them pointed out to irrigation management as the key for best yield.



I started my work in 2018, tapping on to my engineering knowledge I came up with a Proof of Concept (PoC) for an IoT based irrigation management solution, a device with soil moisture sensor. With the prototype in hand, I could not find any farmer willing to try out the irrigation device. Most farmers like my father inherently believed that new technology can lead to crop loss and might ruin their crop. And they did not wanted to lose out on their yearly crop.”

The very evident reluctance on farmer's end made Sanket try the product himself. Installing the IoT prototype he cultivated an acre of area on his father's land and was quite successful in getting optimum yield with reduced water and fertilizer intake.

This immediately sparked an interest in the grape farming community towards this new technology. Now the only challenge left was to make it cost-effective so it's in the reach of even small scale farmers.

“I told my father let me cultivate on 1 acre of land to determine the efficiency of my device. The bargain that I struck with my father was that even if there is a loss on that one acre then I will compensate for it. So I installed the prototype in field and collected data from soil sensor. Based on the data we were able to determine soil type, soil moisture and the optimal irrigation required as per the season.

This one time experiment helped us to determine the water level requirement of grape farms. Irrigating field this way led to a 30 percent reduction in water levels, increase in white roots, which are extremely important for absorption, 10 percent reduction in fertilizer levels”, says Sanket.

About the Start-up

Nashik based DruFarm works to overcome 'Soil Salinization'. They have developed an affordable and farm specific 'Farm Intelligent System' (FIS) for fruit farmers that can effectively prevent soil salinization & maintain soil health. Their IoT system is equipped with 15 on-board sensors to measure on-farm Climatic, soil and canopy parameters of a crop. This measured on farm data is sent to cloud where the 'cloud based Farm Analytics system' analyses the data using 'Proprietary Analytics Algorithm' to provide call-to-action to fruit farmers. Initially their products and services were targeted to grapes but now they are slowly expanding to other crops like sugarcane and tomatoes.

Product details & Working

Their smart farm analysing system analyses the real-time on farm conditions and provides call to action to the farmers in their local language using IoT and cloud platform. The sensors come at a one-time installation cost of ₹ 15000 and presently the advisories are delivered over call and WhatsApp.

“Our module consists of two types of sensor: a soil sensor which detects soil moisture and an atmospheric sensor which detects temperature, humidity, air pressure, sunlight intensity and wind speed and wind direction. Our devices are installed based on soil Composition. If the soil composition is even throughout then we only install a single soil sensor and an atmospheric sensor on farm fields. In case the soil composition is uneven then we install different soil sensors in different areas of the land and a single atmospheric sensor. The installed devices then collect data from soil and send it over to cloud. The cloud data is then processed to provide field recommendations,” explains Mr. Sanket.

The start-up is in the process of developing an application which will provide direct recommendation through a smart phone in local language. Farmers will get to know details like the percent of moisture in soil, type of soil, what is the plant water availability, what is the level of irrigation required to reach optimum water levels as per the soil type.

Presently they are working with 24 farmers in Nagpur district of Maharashtra and based on the feedback received they are improving the device and application.

Talking about the hardships in the journey Mr. Sanket says, “Convincing farmers to adopt any new technology has always been a challenge. One other challenge for us right now is to bring down the cost of our equipment to ₹10,000 so that small scale farmers can also access it.”

Marketing strategy

Presently they are relying on word of mouth for providing visibility to their product in the market. They are also participating in Agri-Expo demonstrating their product. They are holding trials in Government Institution. Their future expansion plans include:

- **Pilot/demo plots with progressive/influential farmers.**
- **Demo in Agri exhibitions.**
- **Word of mouth.**
- **Collaboration with various Agri Input companies.**
- **Tie-ups with FPO's, NGO's, Contract farming companies.**



Key takeaways & Association with MANAGE



MANAGE is reputed and prestigious name in agriculture sector not only in India but globally. I got incubated in MANAGE through RKVY-RAFTAAR. And it was the turning point for us. From then to till now MANAGE helped us a lot in connections and knowledge. Talking about takeaways, the program equipped us with necessary entrepreneurial skills and we learnt how to present our ideas to anyone. It also helped us to fine-tune our idea. Pitch deck session proved quite helpful. We learnt how to market our product and what kind of go-to market strategy to adopt. In total I can say the program helped to provide new direction to my start-up.

- Mr. Sanket

Vision as an Entrepreneur

Our target is to reach 15000 farmers all over India in the coming five years. We want more and more farmers to adopt this technology and reap benefit. In the first leg of expansion we will target states that are ahead in Horticulture.



Company Name
DruFarm



Date of Incorporation
17 November 2017



Age of Company
4 years, 10 months, 5 days



Mobile No
+91 99706 92524



e-Mail
director@drufarm.com / info.drufarm@gmail.com

Citation

Saravanan Raj and Zeenat Shana (2022). DruFarm: Creating sustainable future for the farmers, by the farmers and with the farmers, MANAGE-Centre for Innovation and Agripreneurship (CIA), National Institute of Agricultural Extension Management (MANAGE), Hyderabad, India.



Centre for Innovation and Agripreneurship (CIA)

(A Centre of Excellence in Agribusiness Incubation and Knowledge Partner of RKVY-RAFTAAR)

National Institute of Agricultural Extension Management (MANAGE)

(An autonomous organisation of the Ministry of Agriculture and Farmers Welfare, Government of India)

Hyderabad, Telangana, India

www.manage.gov.in

<https://www.manage.gov.in/managecia/>