

## Great Expectations: **Entrepreneurs and Innovation in Indian Agriculture**

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I had the opportunity to moderate a panel on agri-tech at Tiecon-Delhi last month. It is an emerging area in terms of start-up investment in India, with huge potential as a market and in terms of alleviating poverty, enhancing rural employment, and driving economic growth.

Agriculture in India is approximately 15% of GDP amounting \$350B in annual output. For the Indian economy to grow at 8 – 9% annually, the agriculture sector needs to significantly increase its productivity. There are approximately 140 million farmers in India - 90 million operating very small farms with less than one hectare; and 40 million with between 2 and 4 hectares under cultivation. On a like to like basis, Indian agricultural productivity is about a third of global standards. There are multiple reasons for the productivity gap – small land parcels, water shortage, lack of modern

farming techniques, affordability for farmers, weak supply chains, limited access to credit among others.

Can agri-tech entrepreneurs harness Internet, mobile, and cloud technologies to deliver cost effective solutions that address this productivity gap? It's a massive opportunity but one that requires truly disruptive solutions to make a mark.

This was the topic of discussion with my four panellists – **Rohtash Mal, CEO of EM3**; Shardul Sheth, CEO of Agrostar; Krishna Kumar, CEO of CropIn; and Kartik Srivatsa, Managing Partner at Aspada Investments.

## INTRODUCTIONS

**Bala: Can each of you please provide a short introduction about yourself and your company?**

**Rohtash:** In my 35 year corporate career, I have been CEO of Escorts Ltd. and CEO of Airtel. Prior to that, I spent seven years in telecom before moving to FieldFresh (Bharti's agri-business and now Bharti Delmonte Ltd.). I have also sold cars for a living for Maruti Suzuki. So that's my corporate career. Now a bit about my startup career in agriculture - my company EM3 Agriservices, is in a sense, the Meru of agriculture, providing end-to-end services to farmers in a certain area. We put our technology, machinery and operatives to work for them and we charge them on a per acre basis. That's our business model.

**Shardul:** I am the CEO of a company called AgroStar. In a nutshell, we are out to build a Flipkart or an Amazon for farmers, with a focus on the agri-inputs space. The one question we have never been asked – and we have met many VCs – is how big is the market. Everybody knows that.

**Krishna:** At CropIn, we are trying to connect agriculture with technology and with businesses and their ecosystems so that we can find better solutions to problems. For example, take a company that is trying to work with 10,000 farmers. How can these farmers and the company operate in a connected way? That's what we enable in a nutshell.

**Karthik:** I help run Aspada, a venture fund. We manage a couple of funds, focused on solving difficult problems with an India context, on building India specific solutions for problems in sectors such as agriculture, healthcare, education, essential services, and access to markets. Given that 84% of India is informally employed, how do we find solutions that use technology and small innovation to address these problems? Agriculture is clearly one of the largest areas of focus for us and we have about six investments in this area.

## **THE IDEA AND ITS ORIGIN**

**Bala:** We have talked about this being a very large market with a lot of room for innovation. Maybe you can discuss why you picked that specific problem that you are trying to solve. How you got there and why not anything else?

**Rohtash:** This happened in two phases for us. First, when we were building telecom across a huge underserved portion of the market, we had a sense for the opportunity at that point of time. We didn't know exactly how but we felt that somewhere, telecom and IT would impact agriculture. CropIn is an example of that happening today. More importantly, while I was selling tractors, I discovered that we were stuffing steel down the throat of farmers and they couldn't digest it. We have small farms in India and the P&L of a small farm can't take the weight of that steel. That was a primary driving factor. Secondly, despite having arguably the best and the most fertile land in the universe, as well as optimal sunshine and water, agri productivity is variable in India - 3% per acre for tomatoes and 28-29% for rice and wheat. And the main reason is that we haven't applied technology to this industry called agriculture. So these two insights

along with the need to do something seriously impactful that got this started.. I guess nature conspires to make something like this happen. I didn't start with this vision and the need to fix things but it all just came together.

**Shradul:** I had spent 10 years in the US. I wanted to come back and do something on my own. My younger brother, who also happens to be my partner in crime, got into this at first. When we started off, we were developing organic products and inputs for farmers. We spent about two years on the ground - creating the traditional distribution channel, buying products from manufacturers, selling it to distributors and then to farmers. We made some products ourselves as well and that's when we realised that the traditional channel was broken and had seen no innovation in the past forty years. The farmer had to settle for whatever was sold to him. I worked at Best Buy and I saw what was happening in organised retail. We felt that there was an opportunity to try something like that in agriculture. In essence, we wanted to see if we could get good quality agri products directly to farmers and bypass the intermediary.

**Krishna:** When I started, I was thinking of doing something very impactful. I realised that the only place that technology has not touched is agriculture and nobody will touch that because it's still early. Doing this was more of an emotional decision since I was not familiar with the market at the time. Farmers are committing suicide because of a debt of Rs 50,000 - that's barely \$1,000. Underlying this is crop failure. On the other hand, farmers are also throwing tomatoes on the road in Chickballapur (40 km from Bangalore) because it was selling at 40 paise per kg – at a price lower than the labor cost of harvesting them for sale. And yet I never bought tomatoes in Bangalore at less than ten rupees per kg. I didn't know what the problem was but I knew that the right information was not with the right people at the same time. And that means we need connected farms. We need people in the system to know about the what, who and where of agriculture in their regions and about the dearth and oversupply of produce. That is how I started CropIn. We built this cloud-based

technology to connect farmers and businesses. There was scepticism at first. But the people who are paying me now are the ones who initially said ‘you will not make money’. So, they bought the idea and solution eventually.

## **UNIQUENESS OF INDIAN AGRI-TECH**

**Bala: Karthik, you're the investor. The Indian agri market is quite different from what you find in West – they have very large farms with the opportunity for large scale efficiency improvement. There has been serious investment in agri-tech start ups in the US and Europe – over \$2.5 billion invested last year alone. How do you see the Indian agri market in relative terms? I mean what is specific to India, what are the challenges, and as an investor how do you look at the opportunity?**

**Karthik:** We think the opportunity in Indian agriculture is significantly larger than that is available in the other markets. Let me talk about two or three important reasons. One - it's a large market. India is the number one, two or three producer of almost all food grains, fruits and vegetables, milk and even meat. So, from a venture capital or investor perspective, it's clearly an extremely large market – approximately \$350 billion. We have the second largest expanse of arable land in the world. So, the macro economics work in our favour. Despite the opportunity, people have not been interested in agriculture because they believe that productivity only comes from having large US or Argentina type farms covering many square miles. However, it has been proven that small farms are efficient as long as you find ways to atomise the inputs, services and whatever is required to produce more. At the same time, we have a very dysfunctional supply chain system with multiple intermediaries.. With a large and growing mobile and internet user base, we now have the tools of the trade to organise this fragmented supply chain. Indian agriculture is unique in terms of its size and structure and a cut and paste solution from the US, for example, will not work here. Therefore, we have to leverage all the latest technologies and find business

models that are specific to India. EM3 (Rotash's business) is a case in point there. In the US, we have heard of Software as a Service (SaaS) or Platform as a Service (PaaS) but nobody there has explored farming as a service. That is a uniquely Indian innovation. So we see this as a combination of large market and technology being able to solve the communication problem and tackle farming and supply chain inefficiencies.

## **WHAT DOES THE FARMER DO DIFFERENTLY WITH YOUR PRODUCT**

**Bala: Why don't you guys take two minutes and explain what is your product or service and what does the farmer do differently once he has your product.?**

**Shardul:** The current buying process of the farmer is flawed. They don't get the right products at the right time. I am talking specifically about agri-related purchases - seeds, crop protection products, crop nutrition and hardware. They don't get the brands that they want unless they are willing to travel significant distances. Quality is a huge issue. There are many small micro companies that sell adulterated or low quality products. Pricing is another big issue. Our solution is simple. We set out to build a platform based on the 500 million plus mobile phone connections out there. Our goal was to make products the farmer needs easily and directly available to them. We set up a 1-800 platform that the farmer uses to just give us a missed call. We work at the back end and with most major agri-chemical companies in order to source good quality inputs such as seeds and crop nutrition products. We have a centralised warehouse through which these products are delivered to the farmer's doorstep. We have now evolved to providing additional services on agri practices and methods.

**Bala: Shardul, how many customers so you have today? How many farmers?**

**Shardul:** We had about 10 lakh missed calls on the platform. We have got about a lakh and half farmers who have called us at least once.

**Bala: Rohtash , Farming as a service sounds really cool. What does that really mean?**

**Rohtash:** The farmer has historically followed a set of practices - chuck the seeds like this, dump bags of fertiliser on them, get money to scrounge around for a tractor here, a tiller there, a harvester there and so on. Essentially, the farmer spends his time arranging for the tools of the trade. Farmer suicide is driven by debt, not crop failure. That's what we are trying to change. A person can call in and say 'It's time for me to sow soya beans. Can you till my field?' We use GPS and telematics to get there and carry out the operation That is how we solved this problem. Across the value chain, all the way from soil preparation to harvesting, the farmer now has access to mechanisation on call. Essentially, his capex has now become opex. It is now possible to measure exactly how much and what type of nutrition is required for each square metre of soil, and set up your sprayers accordingly. We use optics to and chromatography to do that, along with soil and moisture analysis. Countries with massive acreage under farming have the technology in place. What we are doing, through this module, is fractioning out this technology for the small farm.

**Krishna:** When I started, we built this mobile app that is always connected to the cloud and that has all the information already embedded into it. Enter the farmers name, plot and area as well as the proposed crop, and the app starts suggesting optimal farming strategies for the plot, along with the type and quantity of inputs. The app measures acreage so that the farmer knows the plot was not two acres as previously assumed but actually 1.8 acres. It provides an accurate picture of the farm on the system. If the farmer needs a loan, there's an option to raise a loan request that then goes to the bank. We work with HDFC bank on that front. And we have started helping input or seed companies through this.

Let us say somebody is growing cotton or some other crop and there are a million farms that are now connected through the platform. People can learn from and share

with each other. It allows for using the knowledge of different farms in different areas, collecting it, processing it in real time and feeding it back to others.

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