W6-L01: Start-ups in CASI

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What is startup?

1. Upto a period of ten years from the date of incorporation/ registration
   - Private limited company
   - Partnership firm
   - Limited liability partnership

2. Turnover of the entity for any of the financial years since incorporation/ registration has **not exceeded one hundred crore rupees**.

3. Entity is working towards innovation, development or improvement of products or processes or services, or if it is a scalable business model with a high potential of employment generation or wealth creation.

(Source: www.startupindia.gov.in)

Business Idea in CASI

1. CASI Machineries
   - Manufacturer
   - Service Provider
   - Service Provider + Protocol
   - Retailers
2. Quality inputs
   - Seeds
   - Fertilizers
   - Pesticides
   - Herbicides

Business Idea in CASI

3. 360 degree solutions
4. Mat nursery
5. Consultancy
6. Output market

Tips for Sustainable Business Model

- Group Approach
- Farmers' Clubs
- Farmer Producer Company
- Innovation Platforms
- Micro-entrepreneurs at grassroots

W6-L04: DeHaat: One stop solutions

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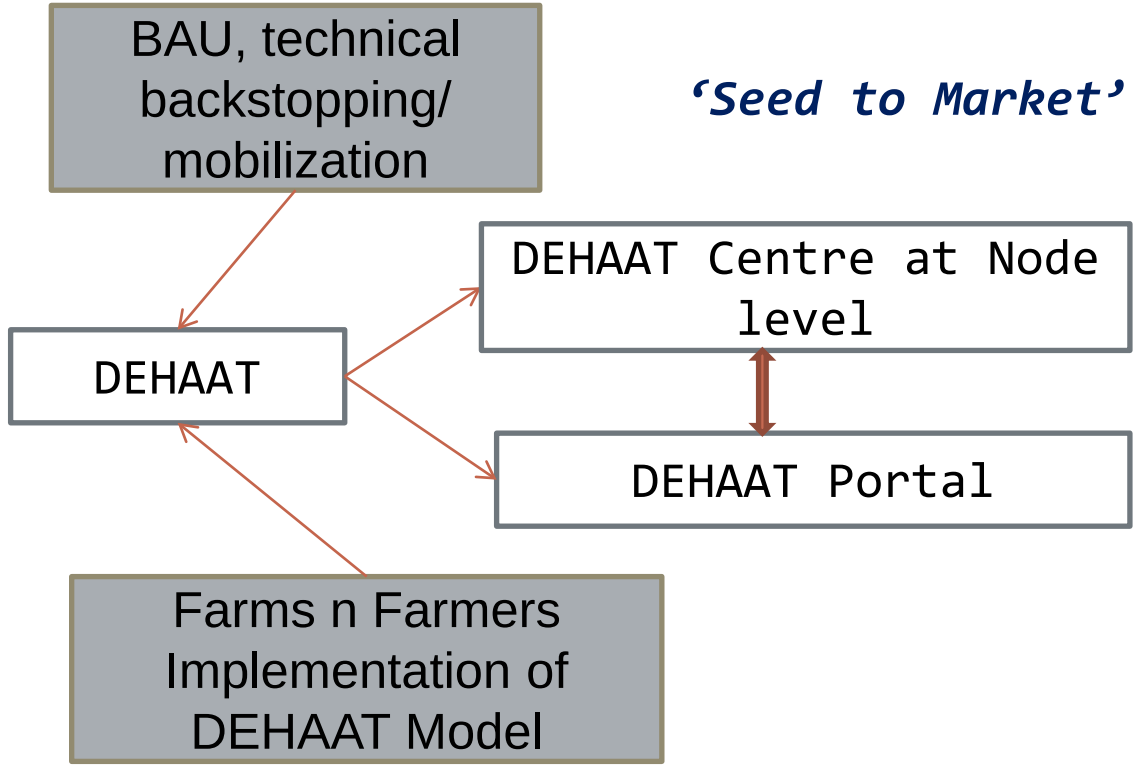
DEHAAT Model *(Dogachhi, Kathaili, Tikapatti and Amaur)*

- ✓Availability of quality fertilizers at reasonable price
- ✓Availability of farm machinery (e.g. Zero Tillage Machine, Sprayers etc.)
- ✓Availability of pesticides, herbicides, insecticides)
- ✓Improved Seed
- ✓Capacity building
- ✓Voice Message
- ✓Credit
- ✓Soil testing

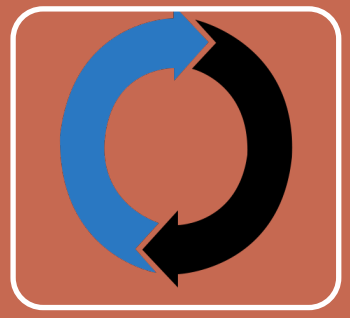


'Seed to Market'

Marketing of Produce (Moisture Meter, Electronic weighing machine, Electronic payment)

Promotion of CASI Technologies

SUSTAINABILITY



End To End Services

- Adoption Rate goes high
- Make farmer's field activities easier
- Cost reduction

Information and Linkage

- Only Information is not going to help Farmers
- Excited to get the doorstep services
- Hand holding of the farmers on each step of farm activity

Faith Generation

- Local Micro Entrepreneurs
- Regular touch through physical visit, call centre team & call scheduling

Course Name: Conservation Agriculture based Sustainable Intensification
Week 06-Lecture-1: Startups in CASI
Course Instructor: Dr. Ram Datt, Assistant Professor-cum-Jr. Scientist (Extension Education), BAU, Sabour

Hello friends. In the last 5 weeks, we learnt about CASI, the machines it requires, its advantages and residue management. We also looked at the challenges we face if we are doing conservation agriculture. Now we will look at if there are any business opportunities in CASI in addition to doing just farming. We will see that there are such opportunities available and in today's lesson we will look at the topic of startups in CASI. We will talk about how to set-up a startup under CASI and how to work with a business model under CASI.

Now what is a startup? Of late there is a growing trend of startup businesses in India. The Government of India has set up three criteria to define a startup. The first is that the business or venture should not be older than 10 years and it should be registered as a private limited company or partnership or via an LLP model. The second criterion is that the business turnover should not exceed 100 crores. And the final criterion is that the business should involve innovation and product or service improvement and should have scaling and employment generation potential. The above criteria's need to be fulfilled in order to be registered as a startup.

Now we will try to understand the business ideas and areas where we can establish ourselves as a startup. The first thing that we had learnt was the availability of machines for CASI to be successful in India or EGP. So a startup can enter into the area of machine manufacturing and service provision. A lot of times it is the big farmers that have powerful tractors who work as service providers. Many times they complain of not having enough business for their services. So we will look into how we can overcome this and grow as a sustainable business model.

Some farmers not just became service providers but they also underwent training and started training other farmers. So with the success of CASI, its adoption area will increase and as a result the business of service providers would also increase.

One can also work as a retailer. There is also potential of a business venture into solving maintenance issues and providing on site home maintenance services as sometimes it gets difficult to find spare parts or resolve maintenance issues.

Second, from the perspective of farmers is the availability of quality inputs. When we do DSR, then the use of herbicide is very important. Seeds are required in both conventional agriculture and CASI. Once we have a relationship and network established with farmers then we can also provide quality seeds, fertilizers and pesticides to farmers.

Some have started providing 360 degree solutions to farmers where they offer certain packages to farmers and take responsibility for their crop from sowing till harvest and they also guarantee that there will be no decrease in their crop yield. We will look at such a case study in the coming lecture.

In West Bengal there was a case where some women and a local farmers group got into the production of mat nursery and started selling it to other farmers. They developed a business model around this activity.

There is also the scope of consultancy as this is a new technology and one can provide consultations and machinery to farmers.

Once we have established a network, then we can also get into output marketing. We will discuss the DeHaat model and how they buy maize from farmers and sell them to international and national markets. This proves beneficial to farmers and also profitable to DeHaat.

I will now provide some advice on how we can scale out a sustainable business model as one might feel that very few farmers are doing it and not much area is under its practice.

Our suggestion would be to always do it in a group as opposed to doing it individually. With a group approach as scaling takes place, our business would also increase at the same time. In West Bengal, conservation agriculture was started through multiple farmers' clubs and hundreds of farmer clubs joined hands to expand conservation agriculture. So the bigger our network is, the bigger will our business grow. In Purnea, we worked through Aranyak company that was backed by JEEViKA in the promotion of conservation agriculture. So conservation agriculture can be promoted through a producer company.

When we introduce a new technology then a lot of new stakeholders also come in the picture. Like in the case of zero tillage machines, there are sellers who have never sold this machine or will be selling this machine. There will be people who will provide technical knowledge of this machine. So new stakeholders get involved with the technology and with old stakeholders who are already in the market and social system, a new type of structure and system is formed whom we call an innovation platform. We prepared an innovation platform under the SRFSI project and through this network we can promote conservation agriculture.

So this is how we prepare a new network which is efficient. It should put too much burden on farmers and should be profitable for the farmers and all the stakeholders. People will get involved in this new technology only when it is more profitable than the existing conventional system. So we have to make sure that all the parties involved in this technology like farmers, manufacturers, marketing, input retailers of seed and fertilizers, and everyone else involved find its adoption profitable.

We will soon look at the concept of micro entrepreneurs brought by DeHaat. They developed micro entrepreneurs at village level and connected farmers with them. They started providing end to end services to them. We would discuss this in detail as part of a case study.

So friends, conservation agriculture is in a way new for eastern gangetic plains and its area is growing very fast. There are a lot of opportunities available for new startups in this field.

Thank you.

Course Name: Conservation Agriculture based Sustainable Intensification
Week 06-Lecture-2: CASI Value Chain: One Stop Solutions
Course Instructor: Dr. Ram Datt, Assistant Professor-cum-Jr. Scientist (Extension Education), BAU, Sabour

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Hello friends. Today, we are in Satmile Satish Club in Cooch Behar. You must have come across words like startups or entrepreneurs. Today, we are with such a startup that started out with conservation agriculture and now has successfully expanded to its allied sectors like fisheries, poultry, selling input to farmers and providing machines to them. This enterprise also works in the area of capacity development of farmers and also provides them with important information.

We have Amal ji with us and from him we shall know how he started out on this journey.

Hello. My name is Amal Roy and I am the secretary of Satmile Satish Club. Our enterprise works as a custom hiring Centre. We started working on conservation agriculture from the year 2009. Now, we have started to work on SRFSI project based on conservation agriculture. Our focus is on rental model. We provide every type of conservation agriculture based machines on rent to farmers. Farmers are able to do farming on a larger area in less time with these machines. This is beneficial to farmers as it is cost effective. In addition to providing machines on rent, we also have an input shop where we sell inputs to farmers. Our shop has all kinds of pesticides, insecticides and fertilizers. We also provide agriculture advice to farmers.

Our Satmile Satish Club is connected directly to around 30,000 farmers and indirectly to around 1 lakh farmers through FPC (Farmer producer organization). For this, CIMMYT and Godrej agrovet is providing us with the required funding for 3 years for the capacity development of farmers. Through this initiative, we have done a lot of capacity development work for farmers. As a result, technology is getting popular among farmers. Also as there is a lot of labor problem, so farm mechanization is very important and is being introduced through a rental model. This work is being done throughout West Bengal.

In 2009, we started our work through zero tillage with KVK. Now from 2014-2015, we got associated with SRFSI project with KVK.

In the beginning, when we started to work on conservation agriculture based zero tillage, it was very difficult to convince people to practice zero tillage wheat and maize. So we would organize a lot of training programs and capacity building in association with the agriculture department. We would also organize a lot of demonstrations.

By doing all this, we explained to farmers that we can do conservation agriculture based zero tillage under SRFSI project. During that time, there were problems in rice transplanter technology. Farmers were unable to understand how to grow seedlings so we worked on their capacity building of raising seeds through farmer's club.

The rice transplanter machine does uniform sowing of rice. Its main advantage is that it costs just around 1500 rupees per acre to the farmer with a rice planter as opposed to 3600 to 3700 rupees during transplanting with labor. Farmers are able to save time as they are able to transplant a

one-acre field in 2.5 hours. So farmers are happily accepting this technology in renters' model as they are able to save cost and time.

Parutosh Da has completed a diploma in fertilizer from Cooch Behar KVK. He provides farmers with the correct advice and guides them in the right direction.

This is the training centre of our Satmile Satish club. We provide training to farmers over here. Farmers from other blocks and even other countries come here for training. This is our conference room. We also have a residential facility and a place to stay upstairs.

When we talk about business then it should cater to the problems of someone. We saw how Amal ji first understood the needs and problems of farmers. He has every type of machinery that one needs be it small or big.

We know agriculture is a system. Many times we just provide information or just capacity development to farmers. But over here, he has developed this enterprise as a one stop solution where we can find machines, technology, capacity development, quality inputs and free information. So he has developed a 360-degree business model. So far he has only touched a few dimensions of the value chain. Agriculture is a very big sector and conservation agriculture has immense scope.

So any new upcoming startups can learn from this case study and begin their own startup and also work together with Amal ji.

Thanks

Course Name: Conservation Agriculture based Sustainable Intensification
Week 06-Lecture-3: Mat Nursery: A Profitable Venture
Course Instructor: Dr. Ram Datt, Assistant Professor-cum-Jr. Scientist (Extension Education), BAU, Sabour

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We have developed a seedling factory on renters' model through which farmers get seedling and rice transplanter services. Farmers are able to save time, money and their yield also increases.

You can see over here a seedling factory is at work. Just like this, around 35 farmers' groups or clubs are growing seedlings in our district. It is our business model and we sell seedlings to the farmers. The farmers are also able to save time.

Over here is a 4 feet wide seed bed. We prepare the bed with soil and organic matter. We mix 20% organic fertilizer with soil and then screen and separate the dust and transfer this soil to the seed bed where we do seeding.

After preparing the soil, we place a plastic on the seed bed. These are mat seedlings and it requires plastic.

You can see our workers are at work. This soil has 20% organic stuff and the rest 80% is soil. We mix them and prepare a seed bed with them. The seeds are used to grow seedlings. Once the seedlings are ready, we cut it in 1x2 feet layers and transport them in a tray to farmers.

You can see the seed bed is ready after which we provide water and do the seed sowing.

You can see the seed sowing is taking place. This is the seeder machine and it does sowing in a uniform manner on the mat seedling bed for the rice transplanter machine.

After seed sowing, we spray fresh water to increase the moisture. We also cover the mixture of organic fertilizer and soil. Once the entire process is complete, we give it plastic and keep it like that for 17 to 18 days. We remove the plastic after 3 to 4 days when we have to take out the seeds. We do this because of the cold. After 13 to 14 days we open it up.

You can see that the seedling is ready after 13 to 14 days. We will cut it and transport it in trays to the farm.

You can see we are putting the seedlings that germinated on plastic on the trays.

We require 60 trays for an acre of land. It cost 2400 rupees per acre to the farmer for seedlings. If the farmer does traditional transplanting then, only for seedlings, it would cost him around 4500 rupees per acre. So the farmer is able to save time and money with this technique.

Once we bring the rice seedlings that we developed in our seedling factory, we provide service to the farmers in their farm. We set the seedlings in the transplanter machine for transplanting.

Course Name: Conservation Agriculture based Sustainable Intensification
Week 06-Lecture-4: DeHaat: One Stop Solutions
Course Instructor: Dr. Ram Datt, Assistant Professor-cum-Jr. Scientist (Extension Education), BAU, Sabour

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Hello friends. Today, we want to share a case study with you that provides 360 degrees one stop solutions to farmers. They provide every kind of input and information to the farmers from seeds to anything in the market. This is a Bihar based startup called DeHaat and it was started by a group of 5 people. They provide all kinds of services to farmers. As part of the SRSFI project, we requested them in 2015 to start working on conservation agriculture in Purnea district. We will look at how they started and developed a sustainable model and established a business on conservation agriculture.

First, they have a mobile app through which we can order any inputs and get them delivered to our home. We can also sell our output through it. But there are difficulties as many farmers are difficult to connect as they are not very ICT literate. To overcome this problem, DeHaat made micro entrepreneurs or DeHaat coordinators at village level and they started working as nodal officers with whom the contract farmers would work. So if any farmer needs any input then they will contact the micro entrepreneurs and get the needed things.

Now like I said earlier, a problem in conservation agriculture we face is that of machines. So DeHaat bought a lot of machines like laser land leveler, zero tillage machine or small harvesting machines or rain guns. They bought these machines and organized demonstrations among farmers and started to work as service providers.

Many times as part of our project, we would need machines like we did land levelling of many farmers as part of the project. So we provided the contract of doing such things to DeHaat and this helped them grow their business. They did very well in marketing maize crop and they established a network with farmers. In addition, they also started providing information through sms or call centre. These days they also provide credit to farmers. They started providing information and services about how much fertilizer and what quality is required for soil testing and about insecticide and pesticides.

BAU also started providing technical backstopping about conservation agriculture to them and other people from the project also started working with them. They were able to set up a sustainable private business institution in Purnea. Today, farmers are able to get services in a timely manner and DeHaat is able to profit from such activities as they now have a network setup.

There are three main things behind the success of DeHaat and how the business model turned out to be a successful sustainable model. First, it works on an end to end one stop approach. If anyone wants to buy inputs, then they can do that through DeHaat or if anybody wants to sell their output then they can also do that through DeHaat. Earlier, vendors were into malpractice like cheating while weighing output so they used electronic weighing machines or cheating farmers in the name of moisture. Also, many times farmers would give their output to vendors and then they had to wait for their money for like 3 to 6 months. In worst case scenarios, the

vendors would run away. So farmers would incur a big loss because of these things. But DeHaat, provided an assured medium to sell output and would promise payments within a week. So in this way, DeHaat did very well in output marketing.

The second success point after the end to end approach is the flow of information. We are wrong to think that a technology will scale out just by providing machines, seeds or quality inputs. We have to also provide the protocol or information related to the technology to the farmers. So DeHaat collaborated with BAU to work on this information flow.

The third success point is relationship building. They formed a relationship and network with the farmers and made them a contract farmer and micro entrepreneurs. So these three points of end to end approach, flow of information and relationship building helped DeHaat become a successful business model.

So friends, there is a lot of work that young entrepreneurs can do in this value chain. Farmers can also benefit from this and at the same time also set up a successful business model.

Course Name: Conservation Agriculture based Sustainable Intensification
Week 06-Lecture-5: Learning Experiences vis-à-vis CASI
Course Instructor: Prof. (Dr.) Ajoy K. Singh, Vice Chancellor, BAU, Sabour

Friends, today as part of this MOOC course, I would like to share my experience with you all. I remember in 1998, the National Agricultural Technology Project was being run by ICAR and a project was formulated in resource conservation technology. The objective of the project was resource conservation in technology for accelerated growth in agriculture. Nine centers were included in this project including Punjab and Haryana. One of the center's was the western Uttar Pradesh centre of project directorate for cropping systems research where I was working at that time. Not many scientists were keen on taking up this project and also the director of the centre was not very fond of me so he handed over this project to me.

I read the details of this project and attended the preliminary meeting of this project. I had studied in BSc. Ag about zero tillage technology but I was not much aware about its application. So when we used to go to farmers then they would come to us in large groups of 50 to 60 people. They would laugh among themselves when we would talk about zero tillage technology and that we wanted to sow wheat without tilling. It would appear that they had never heard anything like this before. Also in western Uttar Pradesh it has been a tradition that as a farmer gets up in the morning, they go to their tractor and till their farm. In such an environment, we practically had to request them to come forward and adopt zero tillage and also guarantee compensation for any losses incurred in the process.

Still only few farmers came forward reluctantly and some of them would plough their fields when we were not present and would lie about doing zero tillage. But they had indeed reduced the amount of times they till their farm. Earlier they would till their farms 7 to 8 times but now they do it only 1 or 2 times. In the first one or two years, farmers watched the results of demonstrations that were organized on zero tillage and luckily during this time, there was good rain. Along with rain there were also winds which lodged down wheat that were planted on tilled soil while the zero tillage wheat stood strong. Farmers also noticed that this technology has less growth of weed.

The first year, we were not able to convince farmers about zero tillage but from the second year, they themselves would come to us and say that I have done zero tillage farming in my field and also that it requires only two hours to irrigate farm as compared to the traditional way where it would take nearly 3 hours to irrigate the entire farm. So all these things slowly started getting popular among farmers and by the second and third year, we had to face less problems.

When work on Zero tillage technology started, it was not meant only for western Uttar Pradesh, Punjab and Haryana. It was also understood that zero tillage would have a significant contribution in Bihar as it could reduce the time between rice harvest and wheat sowing. It could bring forward wheat sowing by 10 to 15 days depending on the situation of moisture in the soil. In Bihar there was acceptance of zero tillage technology when it was first introduced as they could do early sowing of wheat.

In Bihar, we know that wheat always dries rather than maturing and this is the reason why wheat production is lower in Bihar when compared to other states. Zero tillage was introduced in Bihar with the objective of sowing wheat crops early. So the motive of farmers in Uttar Pradesh, Punjab and Haryana was different from the farmers in Bihar as over there farmers were looking at minimum tiling cost and irrigation and less weed growth with almost similar yield. So farmers understood that they could reduce their cost of cultivation by 3000 to 4000 rupees per hectare with slight or similar production levels resulting in higher profits. In Bihar, farmers understood that they could sow wheat at the appropriate time and thus avoid terminal heat.

The second phase of National Agricultural Technology Project (NATP) was sanctioned by the world bank after the then director general of ICAR made a statement about the project in a meeting with the world bank team. He said that with zero tillage technology, we were able to provide benefits to farmers equivalent to the total outlay of NATP. This was a very convincing point and the second phase of the project was sanctioned without any further discussions.

I have been working in Bihar on zero tillage and have noticed that though zero tillage has been accepted in Bihar by farmers but its farming has not expanded in a similar proportion. We tried to look for answers and found that the biggest problem that we are facing is the availability of machines. In Bihar, around 90% farmers are small and marginal farmers who do not have the capacity to buy a zero tillage machine and use it in their own farm. It is not profitable for them to use the machine just on their own farm as the machine requires an investment of about 50,000.

In its early phase, a group tried to stop the expansion of zero tillage as a lot of tractor owners' main source of income was the tilling of fields and they would practice tilling 5 to 6 times in a field. So this group started a negative campaign against zero tillage in the early phases. But farmers are very smart and intelligent and they can do all the calculations and realize that this zero tillage is very beneficial and has a lot of scope in the future.

There was also the problem of repairing this machine if it stopped working. We did not have the expertise to repair these machines. The agriculture university had the knowledge to repair the machines but it was not possible to go everywhere and provide repairs. So we started a training program under skill development where we train the local youth on how to overcome the common problems that one has to face while using these machines. We have also requested manufacturers to keep stock of certain machine parts that are more prone to break down. So to an extent we have been able to find solutions to these problems.

The motto of "Jal, Jeevan aur Haryali" provided by our chief minister is getting popular among our farmers. We all agree that if there is water, then there will be life and greenery. We know that zero tillage technology requires less amount of water. The government has also appreciated the benefits of zero tillage technology and they are now providing subsidies of around 80 to 85% on machines and equipment for farm mechanization. Farmers are able to benefit from these schemes and the government is also trying to make available all machines in each cluster. Some machines are big and they are also made available so that farmers can use it. Our university is working on this initiative and the Bihar government is also supporting us in this endeavor. Compared to when we started working on Zero tillage, the number of problems that are reported to agriculture universities and other such organizations have definitely reduced.