



Farming Automation Expert

BACKGROUND

Agriculture has been a key contributor to the Indian economy since independence. It is estimated that the sector contributes around 18% to India's Gross Domestic Product (GDP) and employs more than 50% of the country's workforce. Over the years, India has made significant progress in the agricultural sector, with a focus on increasing productivity and ensuring food security. The Green Revolution of the 1960s and 70s was a major turning point in India's agriculture, leading to a significant increase in food grain production and paving the way for self-sufficiency. Despite such gains, Indian agriculture faces issues associated with adaptation to climate change disturbances, fragmented landholdings, low farm productivity and high food price volatility. Limited income and fragmented landholdings are also reasons for the non-adoption of the latest technologies such as the Internet of Things(IoT), Drones, Robotics etc. Affordability is the main issue here.

WHO ARE WE

Vision AgriTech is a start-up that aims to make onion transplantation faster and more efficient. We develop technologies to help farmers plant more onion saplings in shorter periods and tackle the labour crisis faced during the onion transplantation season.

WHY

We aim to increase productivity in various agricultural practices in India. Our goal is to reduce farmers' dependency on farm labourers in agriculture.

HOW

By helping farmers automate labour-intensive agricultural practices. We aspire to build a platform that will help farmers and labourers coordinate on a single platform.

WHAT

We are providing the service of onion transplantation using our in-house built automatic onion transplanter on **PaaS(Product as a Service)** model.

PROBLEM STATEMENT

Context

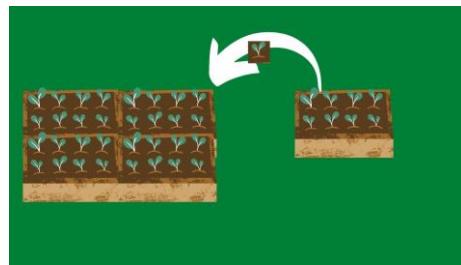
In India there are primarily 2 seasons of harvesting of onion crop:-

In plains, seeds are sown during October-November for a rabi crop. In hilly regions, seeds are sown from March to June. The rabi onion crop has more shelf life than the onions of the hilly regions. Due to this, rabi onion can be stored for a larger period of time and can be sold at better margins

Here, we will be mainly catering to the onion farmers who have done transplantation in the month of November-December and Early January(seeds are sown during October-November period).

Onion Transplantation

The process of onion transplantation is somewhat similar to rice/paddy. Initially, onion seeds are sown on a small piece of land and then after around 40 days, these grown saplings are then transplanted to the larger piece of land where the production of the crop actually takes place.



PROBLEM

Even today, the process of plantation is done by the traditional method i.e. by the farm labours. There is no automation in this process. So, during this peak phase of plantation(November-December), farmers are facing the problem of labour shortage. Since the saplings should be planted in the prescribed range of time, every farmer wants the plantation of his crop should be done in that period. Some farmers prefer to give some extra money to the labours for that reason. The labour shortage also results in unfair demands from the farm labours. Also, due to a lack of technological advancement, the process is very time-consuming.

CUSTOMER

Onion farmers in India's highest onion-producing states, including Maharashtra, Karnataka, Gujrat, and Bihar. Our main target will be the farmers owning land for 1 to 2 hectares.

WHY PAAS(Product as a Service)

Our main product is the in-house built automatic onion transplanter. We will provide the service of transplantation of onion saplings instead of selling this product directly to the farmers and then farmers doing the transplantation using our machine. We will generate revenue in proportion to the area of land transplanted(Rs 12500/hectare).

Due to lack of education and limited income, farmers are not ready to adapt the latest technology. After adaptation, there is saturation in the usage of the adopted technology. (e.g In the case of tractors in the areas where land is irrigated, fertilizers).

Our transplanter will be completely operated by our support staff. There will be 3-4 people working on each machine. Due to this, there is easier adoption of technology for the farmers. Since the machine will be available on a rental basis the problem of saturation of technology will be solved to some extent.

MARKET ANALYSIS

We would be creating a new market as this kind of service are not provided earlier. Such machines are used in Japan. However, they are not yet widespread around the world.

This technology has not been used in India before on a large scale. As it is a new market, the farmers must be made aware of our product.

Market Entry

We will begin with Maharashtra, the highest onion-producing state of India. Our niche will be the Nashik Region, known for its onion production. As our target customer is in rural areas, advertising would mean one-to-one talking and convincing in the initial stages.

BUSINESS MODEL

In our initial days, we will have a constraint of resources related to finance and workforce. So, we will be focusing on a small geographical location, the Nashik District which is in Maharashtra State. It's the largest onion-producing district in India accounting for nearly 10% of India's Onion Plantation. For the current year, the plantation of summer onion was done on nearly **2 lakh hectares***, which makes Nashik the hotspot for onion farming.

<https://timesofindia.indiatimes.com/city/nashik/area-under-summer-onion-cultivation-up-by-40-in-nashik-dist/articleshow/90039549.cms>

Spreading Awareness(Marketing)

A Krishi Vigyan Kendra(KVK) is an agricultural extension centre in India. The centres are associated with a local agricultural university and serve as links between the Indian Council of Agricultural Research and the farmers to apply agricultural research in a practical, localized setting. In Maharashtra, there are KVK centres for every 3-4 villages. We will organise seminars at KVK to market our product. Farmers will be given working demos of the machines. We will also take feedback from the farmers.

Getting initial customers

There will be our in-house built app through which farmers can book an appointment for transplantation. But, in our initial days, we will also have a middleman for every village. The work of the middleman will be to collect payments from the farmers who are not comfortable paying online. He will be the first point of contact for the farmers. Since the middleman will be from the same village, farmers will have more trust in our product.

Building the Workforce

The workforce working in the field is one of the most important parts of our startup as each machine requires 3-4 workers. We will build our workforce of recently graduated ITI, Diploma students who are willing to work to support their families.

For providing basic training of operating the transplanter, we will partner with Skill Development Centre which comes under the Government Of India. It is responsible for building the vocational and technical training framework and skill up-gradation for the people of rural India.

In the long term, we will make SOPs for operating the machines in order to increase the productivity of the workforce.

TAM, SAM & SOM

For the calculations of TAM, SAM & SOM we have referred the below article:-

<https://agricoop.nic.in/Documents/agristatglance2018.pdf>

TAM(Total Addressable Market)

For onion farming, the TAM for us will be the total amount of land on which onion plantation is done.

TAM = Onion Cultivation Area all over India(in hectares) * Revenue generated per hectare of land on which onion crop is transplanted.

$$= 13,15,240 * 30,888 = ₹ 4,062.51 \text{ Cr.}$$

SAM(Serviceable addressable Market)

Due to the resource constraint in the early days, we will be majorly focusing on the state of Maharashtra where around 38% of onion plantation is done.

SAM = Onion Cultivation Area all over Maharashtra(in hectares) * Revenue generated per hectare of land on which onion crop is transplanted.

$$= 5,01,760 * 30,888 = ₹ 1,549.98 \text{ Cr.}$$

SOM(Serviceable Obtainable Market)

In our initial days, we will have majorly target the farmers of Nashik District. Nashik contributes around 10% of the onion production of entire India.

SAM = Onion Cultivation Area all over Nashik(in hectares) * Revenue generated per hectare of land on which onion crop is transplanted.

$$= 1,31,524 * 30,888 = ₹ 406.25 \text{ Cr.}$$

COMPETITION ANALYSIS

	SP AgroTech	Traditional Method	Vision AgriTech
Mode of Operation	Semiautomated Machine is provided for transplantation	Saplings are transplanted from one place to another by hand	The whole process of onion transplantation is managed by us using our fully-automated machine
Price(per hectare.) (Excluding price of Machine and Sapling production.)	Rs 17,000-Rs 20,000*	Rs 24,700-Rs 30,000	Rs 30,888
Area transplanted per day	1 acre*	0.5 acre	3 acres
Workers required	7-8	10-12	3-4

*This excludes the price of SP Agro's Transplantor which starts from 4 lakhs.

SP Agro Innovations

It is a small startup started by 2 young farmers of Ahmednagar District, Maharashtra. They have made a semi-automated machine that they claim can transplant the sapling over 1 acre(0.4 hectare) of land. But, in reality, when we talk to the farmers we got to know that the semi-automated machine can only transplant on 0.75 acres of land.

MVP(Minimum Viable Product)

Currently, we are at the ideation stage and are working on the prototype of the machine. We have also taken some help from the PhD seniors of the Mechanical Engineering Branch.

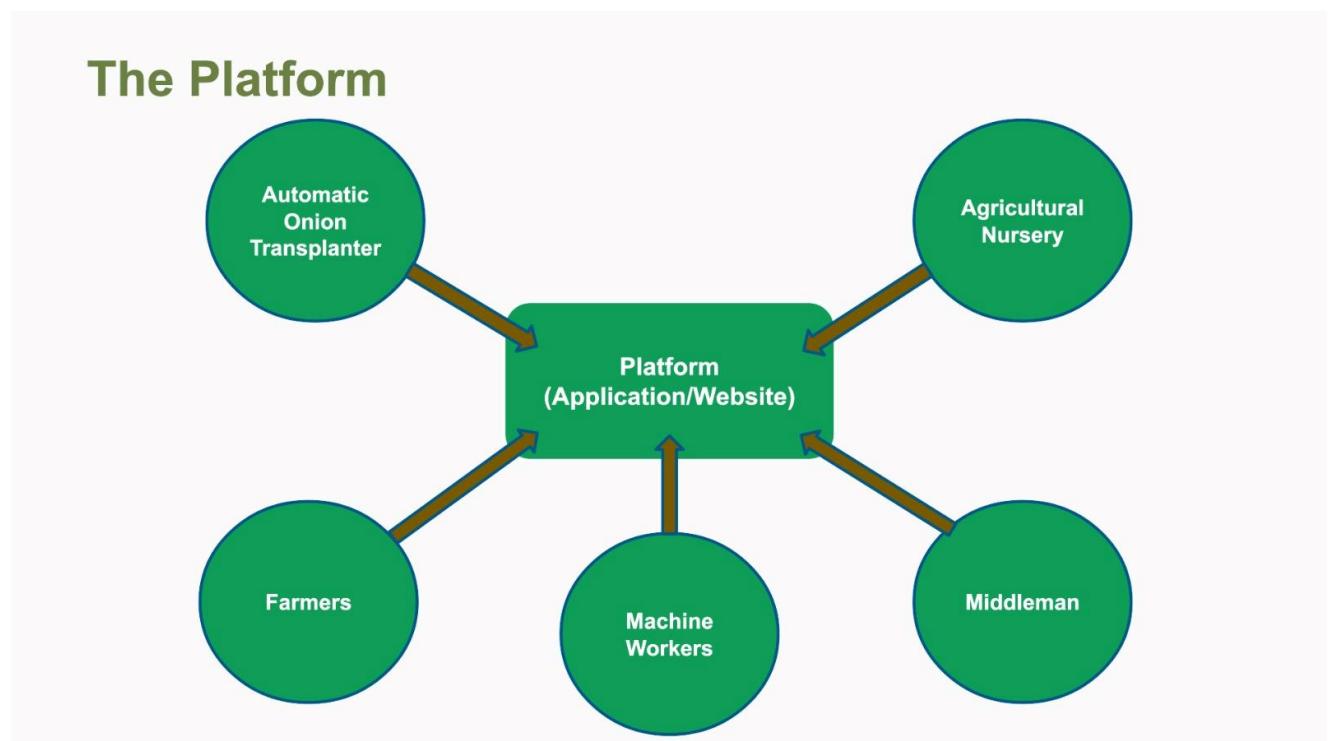
LONG-TERM GOALS

Our long-term goal is to create a platform to bring farmers, farm labours and various agri-input companies on a single platform.

As we expand to other geographies, we will need a platform through which we can coordinate with our workforce who are working on the automated machine.

We aim to build a tech stack (similar to what is made by DeHaat) primarily focusing on automating various agricultural practices. We will also develop the technologies to automate the agricultural process of other cash crops like sugarcane, cotton, grapes etc. After building the platform, we can partner with agri-input companies so that they can sell their products on our platform.

THE PLATFORM



OUR TEAM

We are a team of 2 members, Vishal and S Sreesanker. We both are 2nd-year Undergraduate students from the Department of Chemical Engineering and Physics respectively. Our duo is dedicated to helping Indian farmers get better produce and profit. Currently, we are at the ideation stage, so we both are working on product development.