

An IT Enabled Technology
Driven Solution for Additional
Income for Farmers/FPOs and
Climate Change Impact
Alleviation

**Fruit Tree Planting Life Cycle
Management Solution**



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1. INTRODUCTION

1.1 Purpose of the system: *This project focuses on developing a Fruit Tree Planting Lifecycle Management Solution and its implementation in the Tribal Districts of Jharkhand, Sikkim and West Bengal phase wise.*

1.2 Scope of the system:

- a. App based Solution supported by a call centre
- b. One Vriksha Sevak will be engaged and developed in each cluster of gram panchayats to support all farmers/fruit tree planters of a village cluster which will plant trees between 20-40k
- c. Among its multiple services, Solution will:
 - i. Assess and capture demand for planting
 - ii. Provide frequent fruit tree planting and nurturing notification voice calls in local language to the farmer specific to their fruit tree planting. Thus, Farmers will be informed about the right dosage of input as well as the best available fruit tree planting consultation.
 - iii. Map & geo tag the plant location and capturing it.
 - iv. Monitor the health of saplings planted on a regular interval and capturing it.
 - v. Integrate State Level Support and Benefits, about drip irrigation, rain water harvesting, and all subsidies, provided to farmers by the State Govt.
 - vi. Provide the farmers with the flexibility to order input through the solution for fruit tree planting and vii. Even sell their fruits directly to the end customer through the solution
 - vii. Carbon credit capturing & benefits

1.3 Objectives and success criteria of the project: This project focuses on developing a Fruit Tree Planting Lifecycle Management Solution and its implementation in the Tribal Districts to get a steady Income for farmer. This project is very helpful to farmer. Farming is impacted by the vagaries of weather, unexpected rainfall, unexpected drought impacting their income. This solution and the Fruit Tree Planting Ecosystem we are creating will support farmers manage fruit tree planting and get regular warranted income from selling fruits
With time farmers will also benefit from the Carbon Credit Ecosystem where by tree planting is rewarded with financial gains

1.4 Definitions, acronyms, and abbreviations: Our IT enabled platform will bring in all players in a Fruit Tree Lifecycle Management connecting the full supply chain with farmers interest at the core and with focus on climate change with all relevant and concerned players engaged, which the farmers will leverage through their aggregation power.

1.5 References:

1.6 Overview: This is a very important part of the overall project for next 5 years for TribalAg Limited which is focussed on creation of social forest, our second mission. This we have included in our full submission to Innovative MSME. In this specific part of the project, we are developing an ecosystem driven by a technology platform which will bring all the players for fruit tree planting ecosystem along with climate change alleviation ecosystem, supporting the farmers earn a steady source of income from fruits and at the same time engaging in climate change action. We have ideated and analysed the full project requirement for next 5 years with the bigger picture of TribalAg's scaling in mind to make an impact. But this part of the project which we have submitted will be taking: 1st. Phase: 12 months to detail analyse, design and develop the IT Platform enabled ecosystem and trial run it where we are planting internally which is about 2 lakh fruit trees in FY22-23, 2nd. Phase: Another 6 months to run as a trial and 3rd. Phase: Finally, another 12 months to be fully implemented at the state level as a pilot project facilitated and supported by the State Administration. For scaleup this project we need IT enabled technology, that's help the Vriksha Sevak, Administration as well as farmers also.

2. **CURRENT SYSTEM:** Currently, One Vriksha Sevak who is the part of TribalAg Limited, will be engaged and developed in each cluster of gram panchayats to support all farmers for fruit tree planters of a village cluster. First, he/ she goes to the village and find which peoples are engaged with farming Then he collects all the data (name, how much farming land is available, which crop is cultivated now etc.) from the farmer. When he satisfies from farmer and his land, he encouraged him(farmer) to planting fruit saplings on his land and discussed with him what is the benefits of this project and what's his income from this. After this meeting, another day the Vriksha Sevak goes to the field visit and check the condition of this field. Then he gives him a number of saplings for plantation. After some days the vriksha sevak go there and seen the condition of this saplings. Also gives him organic fertilizer and pesticides. After harvesting of this fruits, it s will be marketing through company and gives the profit to the farmer properly.

3. **PROPOSED SYSTEM:** – Fruit Tree Planting Lifecycle Management Solution - Make An IT Enabled Technology Driven Solution for Additional Income for Farmers / FPOs & Climate Change Impact Alleviation.

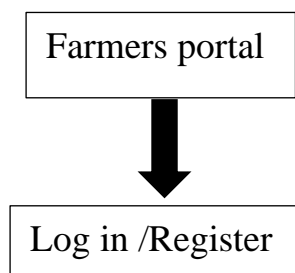
3.1 Overview:

The application has three major processes with underlying subprocesses:

- 3.1.1 Farmers Portal: In the Application this portal is vary useful for farmer, as they can apply for plantation easily. Shear his /her problem about fruit plant and get feedback instantly. He/ she also known about weather report.
- 3.1.2 Vriksha Sevak Portal: In this portal a vriksha sevak can store the documents of the farmers. He also records the distribution of the saplings and required things for farming. Here he het a map for finding the GPF location of the farming land and the truck, which is carrying the saplings. He also keep record about fruit collection from the farmer.
- 3.1.3 Administrative and Management Portal: this portal is used only who is the part of administration of this company. Use this portal a administrative person can monitor and manage all the whole process of this project. He /she also regulate the marketing criteria.

3.2 Functional requirements ("shall lists"):

3.2.1 Process Flow - Farmers Portal:



At first a farmer should be registered in this Application. For complete Registration the application required Name, Mobile number, Address (Village, Gram Panchayet, Block, District, State, Country, PIN Number) of the farmer. After putting all this the registration will be completed. Then the farmer login to the application.

For login the app required Name and Mobile number. After put this an OTP is generated. When the OTP is put then all menu bar for farmers will be open.


There are several menus for farmers:

- ❖ Application for planting
- ❖ Weather
- ❖ Plant Protection
- ❖ Agro Advisory
- ❖ Make Call

Application for planting Menu: It is for new application for planting fruit saplings. If a farmer thinks to planting fruit saplings in his own land, then he/ she can apply through this menu.

In this menu the required information is Name, Mobile number, Address (Village, Gram Panchayet, District, State, Country, PIN Number) Aadhaar number of the farmer, and also how much land is available for planting and which fruit saplings he/she is interested to planting and then the application form will be submitted. After that day one Vriksha Sevak will be going to this particular address and meet him/ her.

click here



Application
for planting

↓

Name:

Mobile no:

Address:

Village:

GP:

District:

State:

Country:

PIN:

Aadhaar no:

Land in acre:

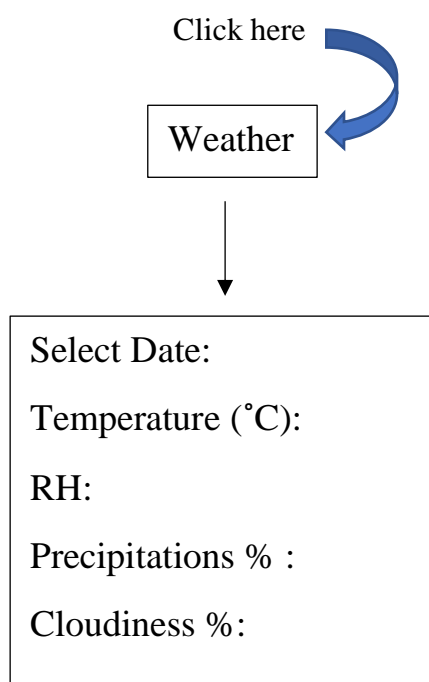
Fruit saplings:

Number of saplings:

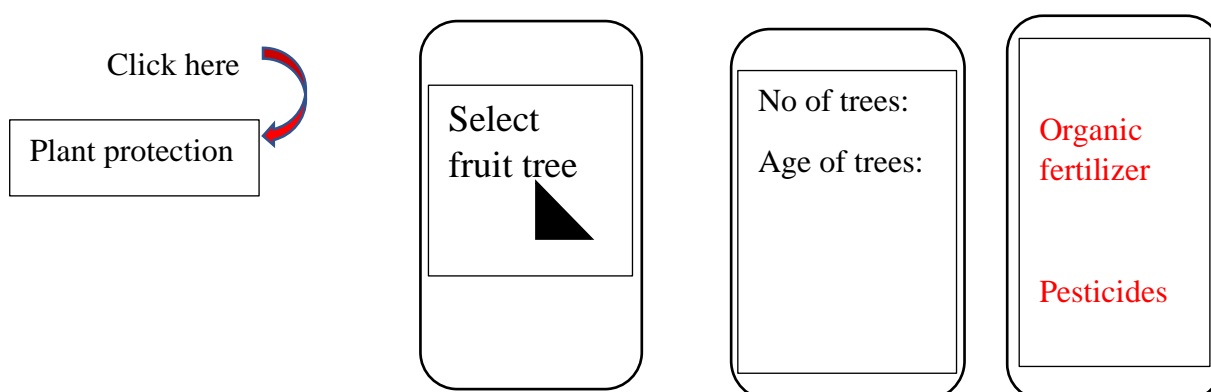
submit

Weather menu: If any farmer trying to know about weather, then he/she enter in this menu by a click. When he/she enter this menu, then he/she should be putting the required information, that's are country, state, district, gram panchayat. After putting all this he should

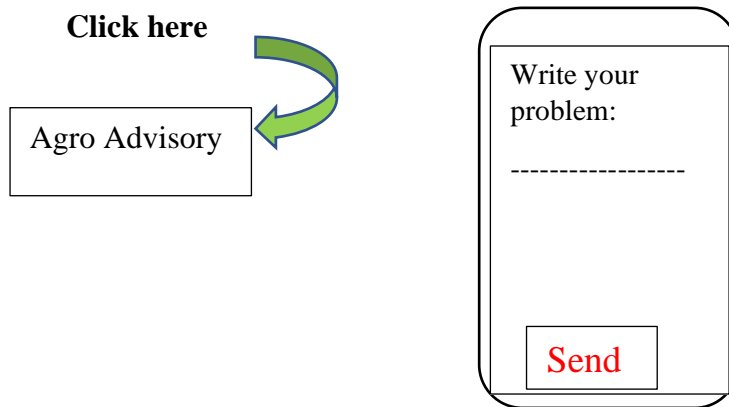
be get all weather report from GIS. He also gets the information about weather 10 days before and one month after the present day.



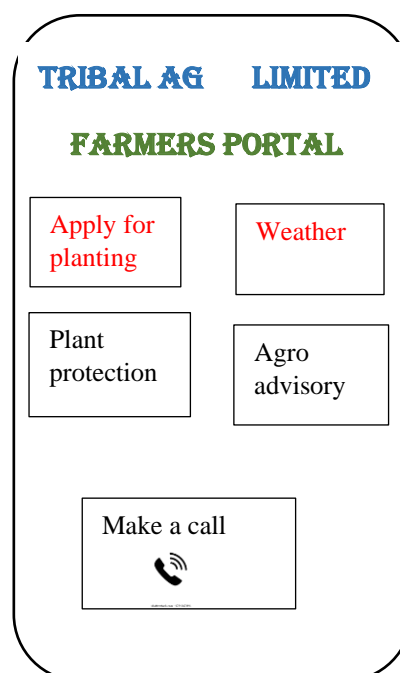
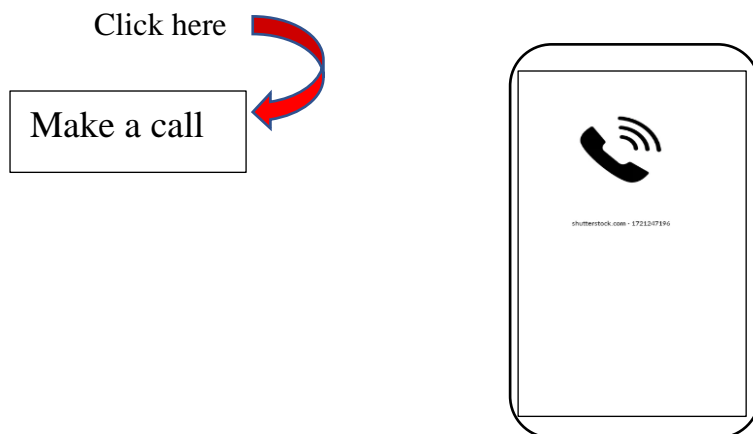
Plant protection menu: In this menu the required organic fertilizer, pesticides for a specific fruit sapling in a specific doze are mention and timing also be mention previously.



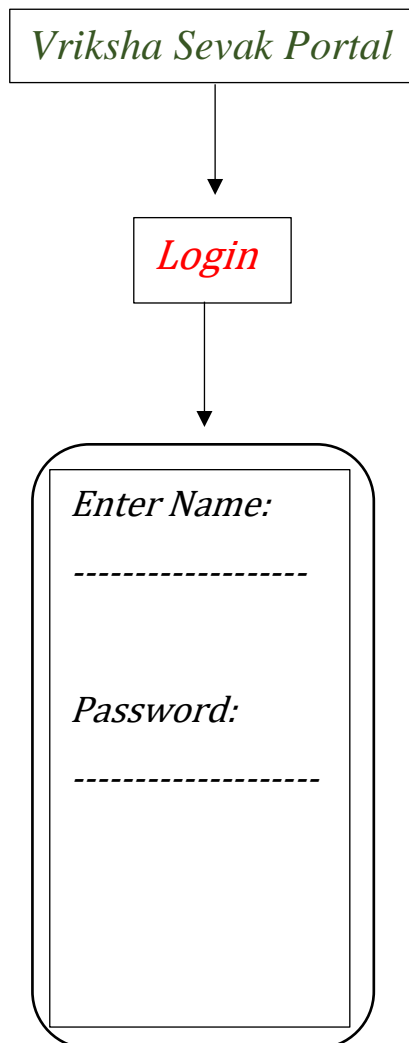
Agro advisory menu: In this menu we try to solve the problem of the farmer about plant through messaging. If a farmer required to massage our expert then he/ she just click on this menu and enter tis menu. There is a massage box for messaging. The farmer should write about him /her problem then click send button and send the message. He /she will get feedback as soon as possible.



Make a call menu: Use this menu a farmer calls our expert. And shear him/ her problem about fruit plant. For this click on this menu and clock on the dial.



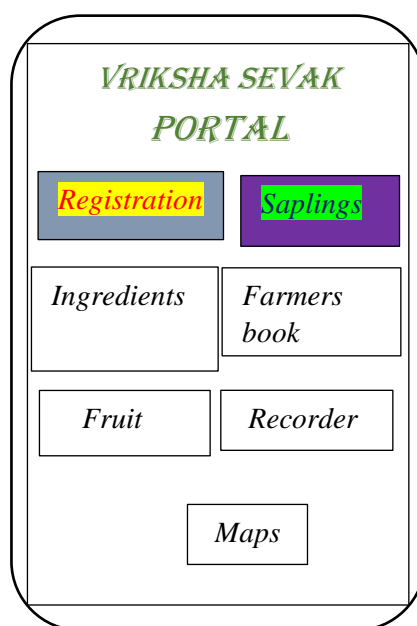
3.2.2 Process Flow – Vriksha Sevak Portal:



If a Vriksha Sevak can use this application, he/she should be first entering the Vriksha Sevak portal. After that he/she should be click on the login menu and the login menu will be open. After that he/she should be enter him/her name and password (which is generated by the company only). After put all this then all menu bar for Vriksha Sevak will be open.

There are several menus for Vriksha Sevak:

- ❖ *Registration*
- ❖ *Saplings*
- ❖ *Tools*
- ❖ *Location*
- ❖ *Recorder*
- ❖ *Fruit*



Registration menu: In this menu, a Vriksha Sevak can register the new farmer. For registration the required data are: Name, Address (Village, Gram Panchayet, Block, District, State, Country, PIN Number), Aadhaar number, Voter card number, Land availability for planting, Land location, Mobile number, Signature and Photo of the farmer. Also required types and number of fruit saplings. After put all this, The registration will be completed. After that he/ she will be get saplings for planting.

Click here

Registration

Name:

Address:

Village:

Gram panchayet:

Block:

District:

State:

Country:

PIN:

Aadhaar number:

Land availability:

Mobile number:

Type and number of saplings:

Signature **Submit**

Photo

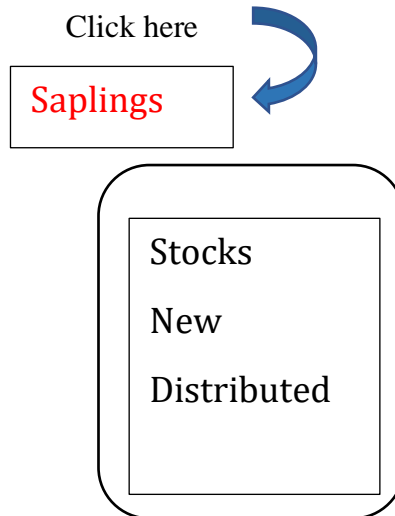
Saplings menu: In this menu a *Vriksha Sevak* can counting new, stock and distribution saplings.

Saplings menu:

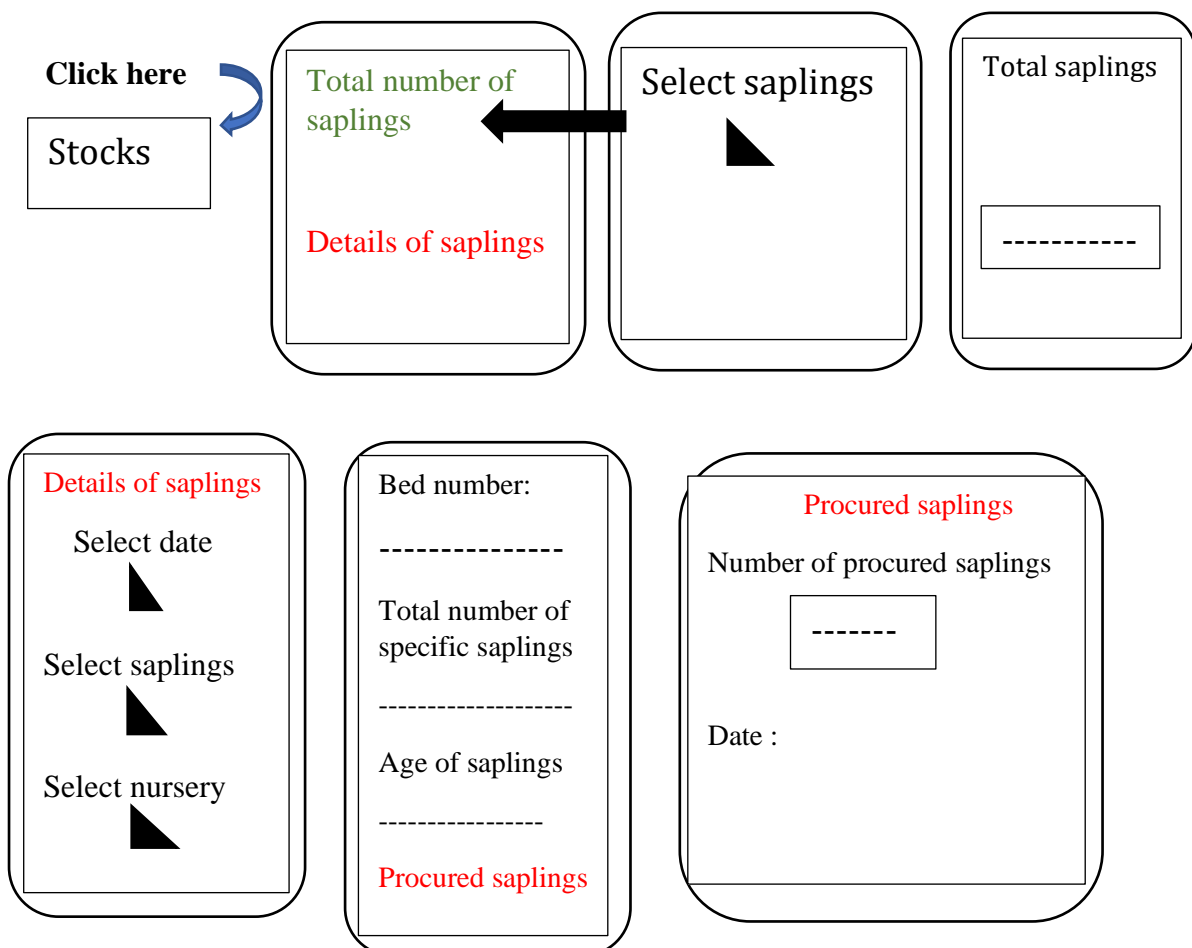
- ❖ Stocks
- ❖ New
- ❖ Distributed

Stock menu:

- 🌳 Total number of saplings
 - Type of saplings
 - Number of saplings
- 🌳 Details of saplings
 - Arrival date
 - Saplings name
 - Nursery name
 - Bed number
 - Total available
 - Age of saplings



The *Vriksha Sevak* use this menu for counting and knowledge about how many saplings and which type saplings are stocked on field bed in our company. Its also seen that the arrival date of this particular saplings, which is placing in a particular bed.



New menu:

- Offloaded saplings
 - Date
 - Nursery name
 - Sapling name
 - Healthy saplings
 - Wastage saplings
- Add New
 - Enter Saplings name
 - Enter date
 - Enter nursery name
 - Enter offloaded total saplings
 - Enter healthy saplings
 - Enter procured saplings

Use this menu a *Vriksha Sevak* can added how many saplings are offloaded from a particular nursery at a particular date and how many are healthy. In this menu he/she can seen the number of saplings, before placed in a bed.

New

➤

Off-loaded saplings

Add New

Enter saplings name

Nursery name

Date:

Off-loaded total saplings

Healthy saplings

Procured saplings

Add New

Enter saplings name

Enter Nursery name

Enter Date:

Enter Off-loaded total saplings

Enter Healthy saplings

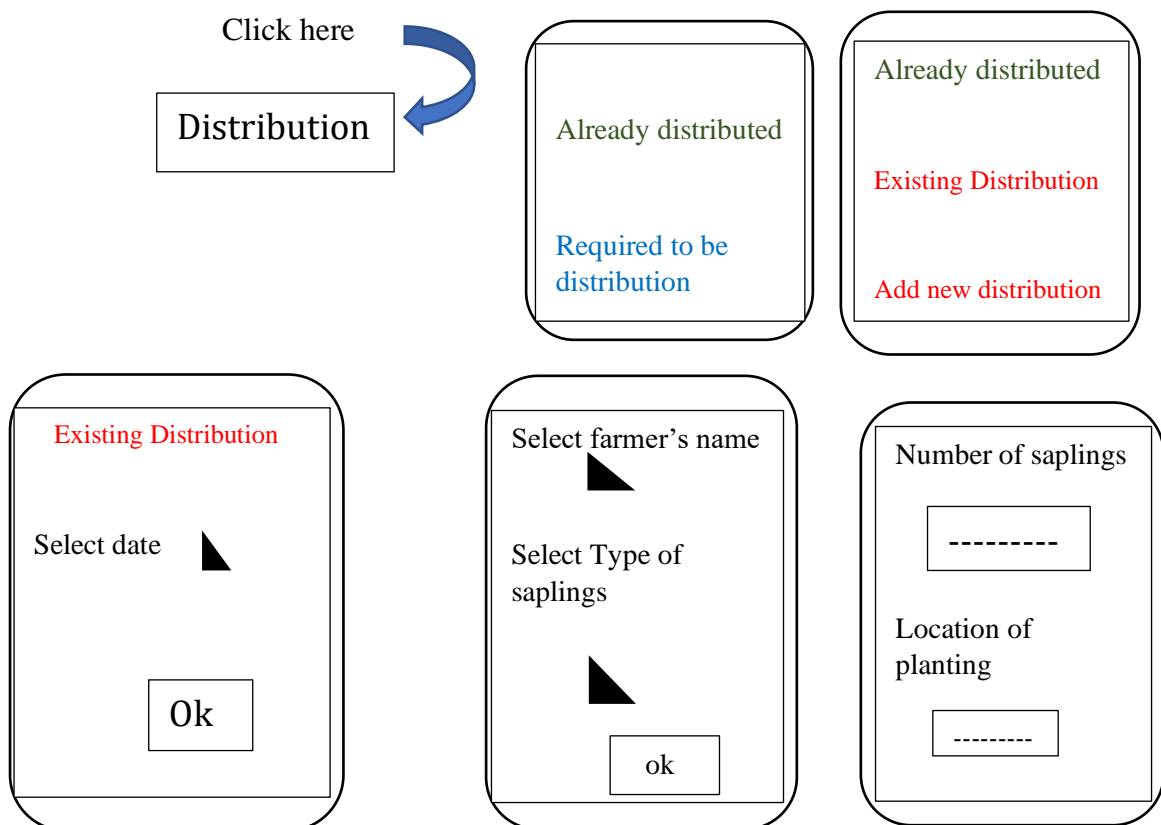
-

Enter Procured saplings

Distribution menu: Use this menu, a *Vriksha Sevak* can add and seen the number of saplings to be distributed and seen the number of saplings required to distribution.

Distribution menu:

- ✚ Already distributed
- Existing distribution
 - Select Date
 - Select farmer's name
 - Select type of saplings
 - ❖ Number of saplings
 - ❖ Location of planting
- Add New distribution
 - Enter farmer's name and mobile number
 - Enter date of distribution
 - Press submits
 - Enter the name of various type of saplings
 - Number of saplings
 - Enter location of planting
- ✚ Required to be distribute.
- Select date
 - Select farmers name (seen full details of farmers)
 - select saplings name
 - Number of saplings required
 - Location of planting



Add new distribution

Enters farmer's name

Enter date of distribution

[Submit](#)

Select the saplings

Enter date of distribution

Enter location of planting

[submit](#)

Required to be distributed

Select date

Select farmer's name

Select saplings name

Number of saplings

Planting location

Ingredients menu: Use this menu a *Vriksha Sevak* can see how much ingredients for agriculture purpose are stored, how many should be distributed and how many distributed already done.

Ingredients menu:

- Stock
- Add new
- Distribution

Click here

Ingredients

Ingredients

Stocks

Add new

Distribution

Stocks menu: In this menu a *Vriksha Sevak* seen how many Ingredients (specific ingredients for specific work are available)

Stocks menu:

- ❖ Select type of ingredients
 - Tools
 - ✓ Number of tools
 - Fertilizer & Pesticides
 - ✓ Types of fertilizer
 - Kg of fertilizer
 - ✓ Types of pesticides
 - Packets of pesticide

Fertilizer & Pesticides

▼

Fertilizer

Pesticides

Stocks

Select
Ingredients types

▼

Tools

Fertilizer & pesticides

Tools

Number of tools
as per date

Fertilizer

Select Type of
fertilizer

▼

Kg of fertilizer

Pesticides

Select type of
pesticides

▼

Number of
pesticides packets

Add new menu: In this menu a *Vriksha Sevak* can add the purchased new ingredients in the stocks for distribution.

Add new menu:

- ❖ Select Ingredients
 - ✓ Tools
 - Enter the number
of new tools
 - Enter date
 - ✓ Fertilizer & pesticides
 - Enter the kg of
Fertilizer and date
 - Enter number pesticides
Packets and date.

Add new

Select type of
Ingredients

▼

Tools

Fertilizer

Pesticides

Tools

Enter the number
of new tools

Enter date

Fertilizer

Enter the kg of
new Fertilizer

Enter date

Pesticides

Enter the number of
packets of new
pesticides

Enter date

Distribution menu: In this menu a *Vriksha Sevak* can see the distribution of tools, as well as he/she should be added the new distribution and also seen the required distribution.

Distribution menu:

- Already distributed
 - ❖ Select date
 - Select farmer's name
 - Type and number of Ingredients distributed.
- Add new distribution
 - ❖ Add farmer's name
 - ❖ Add date
 - Select Ingredients types
 - Enter number/Kg of Ingredients
- Required distribution
 - ❖ Select date
 - Select farmer's name
 - Select Ingredients type
 - Number/Kg of Ingredients

Distribution

Already distributed

Add new distribution

Required distribution

Already distributed





Select date

▲

Select farmer's
name

▲

Type and number/Kg
of ingredients
distributed

<p>Add new distribution</p> <p>Add date</p> <p>-----</p> <p>Add farmer's name</p> <p>-----</p> <p>submit</p>	<p>Select Ingredients type</p> <p></p> <p>Tools</p> <p>Fertilizer</p> <p>Pesticides</p>	<p>Enter number/Kg of Ingredients</p> <p>-----</p>
<p>Required Distribution</p> <p>Select date</p> <p></p> <p>Select farmer's name</p> <p></p> <p>Submit</p>	<p>Select Ingredients Type</p> <p></p> <p>Tools</p> <p>Fertilizer</p> <p>pesticides</p>	<p>Number/Kg of Ingredients</p> <p>-----</p>


Farmers book menu: In this menu have a book in which the *Vriksha Sevak* can put the update about health of the fruit tree.

Farmers book menu

- Select address
 - Select farmer's name
 - Previous report
 - Select date
 - Report
 - Add new report
 - Add date
 - Write about today report

Farmers book

Select address



Country

State

District

Block

Post office & Village

Submit

Select farmer's
name



Submit

Previous reports

Add new reports

Previous Reports

Select Date



Reports

Add new reports

Add date

Write about today
report


Fruit Menu: In this menu a *Vriksha Sevak* can see, the fruit collection from farmers for processing and finally marketing. In this menu he/she also be updated the fruit collection report.

Fruit collection menu:

- Select address
 - ❖ Select farmer's name
 - Previous collection
 - ✓ Select date
 - Amount of fruit collection
 - Payment:
 - Due
 - done
 - Add new collection
 - ✓ Add date
 - ✓ Add amount of collection
 - Payment
 - Due
 - Done

Fruit collection

Select address



Country

State

District

Block

Post office & Village

Submit

Select farmer's
name
▼

Select type of
fruit
▼

Submit

Previous
collection

Add new
collection

Previous collection

Select date

Amount of fruit
collection

Payment

Done ☒

Due ☐

Add new collection

Enter date

Enter amount of
fruit collection

Payment

Done

Due

Recorder menu: Use this menu a *Vriksha Sevak* can record all the conversation with farmers and him, and also stored

Maps menu: Use tis menu a *Vriksha Sevak* can see the location of the field where the saplings are planted. It also tracks the truck, which is loaded with saplings and going for distribution.

3.2.3 [Process Flow – Administrative & Management Portal:](#) Use this portal a Administrative person of this company can access all the process. He also controls this and also regulating the marketing of this harvested fruit.

Administrative & Management portal:

- ❖ Saplings
- ❖ Ingredients
- ❖ Fruit
- ❖ Maps

Saplings menu: In this menu a administrative person can see how many stocks of saplings are available, how many new saplings are offloaded and how many saplings are distributed.

✚ Saplings menu:

❖ Stocks menu:

- Total saplings
 - ✓ Type of saplings
 - Number of saplings
- Details of saplings
 - ✓ Arrival date
 - ✓ Saplings name
 - ✓ Nursery name
 - Bed number
 - Total available

<p>Saplings</p> <p>Stocks</p> <p>New Saplings</p> <p>Distribution</p>		<p>Stocks</p> <p>Total saplings</p> <p>Details of saplings</p>	
<p>Total saplings</p> <p>Select saplings type</p> <p>▲</p>	<p>Total number of saplings</p> <p>-----</p>	<p>Details of saplings</p> <p>Select arrival date</p> <p>▲</p> <p>Saplings name</p> <p>▲</p> <p>Nursery name</p> <p>▲</p> <p>Submit</p>	<p>Bed number</p> <p>-----</p> <p>Total number of saplings available</p> <p>-----</p>

❖ New saplings menu:

- Date
- Nursery name
- Saplings name
 - ✓ Healthy saplings
 - ✓ Wastage saplings


<p>New saplings</p> <p>Select date</p> <p>▲</p> <p>Select nursery name</p> <p>▲</p> <p>Select saplings</p> <p>▲</p> <p>Submit</p>	<p>Healthy saplings</p> <p>-----</p> <p>Wastage Saplings</p> <p>-----</p>
---	---

❖ Distribution menu:

- Existing distribution
 - ✓ Select date
 - Select Farmers name
 - Select type of saplings
 - ◆ Number of saplings
 - ◆ Location of planting
- Required to be distribute
 - ✓ Select date
 - ✓ Select farmer's name
 - ✓ Select type of saplings
 - Number of saplings requires
 - Location of planting

<p style="color: green; font-weight: bold;">Distribution</p> <p>Existing distribution</p> <p>Required to be distribute</p>	<p style="color: blue; font-weight: bold;">Existing distribution</p> <p>Select date</p> <div style="text-align: center;">▲</div> <p>Select farmer's name</p> <div style="text-align: center;">▲</div> <p>Select saplings type</p> <div style="text-align: center;">▲</div> <p style="color: red; font-weight: bold;">Submit</p>	<p>Number of saplings</p> <p>-----</p> <p>Location of planting</p> <p>-----</p> <p>-----</p> <p>-----</p>
<p style="color: blue; font-weight: bold;">Required to be distribute</p> <p>Select date</p> <div style="text-align: center;">▲</div> <p>Select farmer's name</p> <div style="text-align: center;">▲</div> <p>Select saplings types</p> <div style="text-align: center;">▲</div> <p style="color: red; font-weight: bold;">Submit</p>	<p>Number of saplings requires</p> <p>-----</p> <p>Location of planting</p> <p>-----</p> <p>-----</p> <p>-----</p>	

Ingredients menu: In this menu an administrative person can see how many ingredients are stock, and distributed.

 Ingredients menu:

- Stock menu
 - Select type of ingredients
 - ➡ Tools
 - Number of tools
 - ➡ Fertilizer & Pesticides
 - Types of fertilizer
 - ✓ Kg of Fertilizer
 - Types of pesticides
 - ✓ Packets of Pesticides


Ingredients

Stocks

Distribution

Stocks

Select Type of ingredients



Tools

Fertilizer

Pesticides

Tools

Number of tools




Fertilizer

Kg of fertilizer

Pesticides

Number of packets of pesticides





- Distribution menu
 - Already distributed
 - ➡ Select date
 - ➡ Select farmer's name
 - Types and number/Kg of ingredients distributed
 - Distribution required
 - ➡ Select date
 - ➡ Select farmer's name
 - Types and number/Kg of Ingredients

<p>Distribution</p> <p>Already distributed</p> <p>Distribution required</p>	<p>Already distributed</p> <p>Select date</p> <p>Select Farmers name</p> <p>Submit</p>	<p>Select type of Ingredients</p> <p></p> <p>Number/Kg of ingredients</p> <p>-----</p>
<p>Distribution required</p> <p>Select date</p> <p></p> <p>Select farmer's name</p> <p></p> <p>Submit</p>	<p>Types and Number/Kg of ingredients</p> <p>-----</p> <p>-----</p> <p>-----</p> <p>-----</p> <p>-----</p>	

Fruit menu: In this menu an administrative person can see, the fruit collection from farmers for processing and finally marketing.

Fruit menu:

- ✚ Select address
- ❖ Select farmer's name
 - Select date
 - Fruit type
 - Amount of fruit collection
 - Payment
 - Due
 - Done

Fruits collection Select address  Country State District Block Post office & Village Submit	Select farmer's name  Select date  Select fruit type  Submit	Amount of fruit collection ----- Payments Done <input type="text"/> Due <input type="text"/>
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Maps menu: Use this menu and administrative persons can see the location of the field where the saplings are planted. It also tracks the truck, which is loaded with saplings and going for distribution.

3.3 Non-functional requirements:

Types of Non-functional Requirement:

1. Scalability
2. Reliability
3. Regulatory
4. Maintainability
5. Serviceability
6. Utility
7. Security
8. Manageability
9. Data integrity
10. Capacity
11. Availability
12. Usability
13. Interoperability
14. Environmental