AGRIMART E-COMMERCE PLATFORM FOR AGRICULTURAL PRODUCTS

A PROJECT REPORT

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BONAFIDE CERTIFICATE

Certified that the project report "**AGRIMART E-COMMERCE PLATFORM FOR AGRICULTURAL PRODUCTS"** is the bonafide work **of "M.MALATHI (920422205058) & R.POOJA (920422205077) & K.PRIYAJAYAM (920422205080)"** who carried out the project work under my supervision.

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ABSTRACT

Agrimart is an innovative e-commerce platform tailored for the agricultural sector, focusing on the sale of pre-harvest products such as seeds, fertilizers, pesticides, saplings, and tools. The platform connects farmers and suppliers through a seamless online marketplace, offering easy product search, detailed descriptions to aid purchasing decisions. With a user-friendly cart system, Agrimart simplifies product selection, applies discounts, and ensures a smooth checkout experience. In addition to this, Agrimart leverages personalized recommendations to help users discover products that best match their needs. This project is built using **AngularJS** for the front end, **Node.js** with **Express.js** for the back end, and **MongoDB** for data storage, the platform ensures fast, efficient performance and scalability. **Agrimart** aims to revolutionize the way agricultural products are bought and sold, enhancing convenience, accessibility, and overall efficiency for the agricultural community.

ACKNOWLEDGEMENT

I would like to take this opportunity to express my heartfelt gratitude to all those who contributed to the successful completion of my project, **Agrimart E-Commerce Platform for Agricultural Products**.

First, I am deeply thankful to **Dr. R. Arthy**, Assistant Professor, Department of Information Technology, for her constant guidance and encouragement throughout the development of this project. Her expertise, thoughtful feedback, and insightful suggestions were crucial in overcoming challenges and improving the overall quality of the platform. Her unwavering support kept me focused and motivated, and I am truly grateful for her mentorship.

Lastly, I acknowledge the contributions of various online resources and the open-source community, which greatly assisted me in understanding and implementing key aspects of the **MEAN Stack** technologies used in this project.

Thank you all for your support and guidance.

TABLE OF CONTENTS

CHAPTER NO.	TITLE	PAGE NO.
	ABSTRACT	**iii**
	ACKNOWLEDGEMENT	**iv**
	LIST OF FIGURES	**vi**
1	**INTRODUCTION**	**1**
	1.1 HTML	1
	1.2 CSS	2
	1.3 JavaScript	3
	1.4 MEAN Stack	4
2	**METHODOLOGY**	**7**
	2.1 Objective	7
	2.2 Problem Statement	7
	2.3 Block Diagram	8
	2.4 Module Explanation	9
3	**RESULTS AND DISCUSSION**	**13**
4	**CONCLUSION**	**27**
5	**REFERENCE**	**28**

LIST OF FIGURES

FIGURE NO.	TITLE	PAGE NO.
2.1	Block diagram	8
3.1	SignUp page	14
3.2	SignUp page with validations	14
3.3	Account page	15
3.4	Account page with validations	15
3.5	Home Page	16
3.6	About Us Page	17
3.7	Seeds Page	18
3.8	Seeds page with carting functions	18
3.9	Seeds page with ordering functions	19
3.10	Saplings Page	19
3.11	Fertilizers Page	20
3.12	Pesticides Page	20
3.13	Tools Page	21

3.14	MyCarts Page	21
3.15	MyCarts page with uncarting functions	22
3.16	MyCarts page with ordering functions	22
3.17	MyCarts page with bill summary and place order functions	23
3.18	MyCarts page with bill summary and place order functions	23
3.19	MyOrders Page	24
3.20	My Orders page with cancel order functions	24
3.21	Me (My Account) Page	25
3.22	Agrimart Database	25
3.23	Accounts Schema	26
3.24	Carts Schema	26
3.25	Orders Schema	26

CHAPTER 1

INTRODUCTION

1.1. HTML

HyperText Markup Language (HTML) is the core language for structuring and presenting content on the web. It's not a programming language but a markup language, which means it is used to "mark up" text and other content in a way that browsers can interpret and display. HTML uses a system of elements, or "tags," to define different types of content, such as headings (<h1> to <h6>), paragraphs (<p>), images (<img>), links (<a>), and more. These tags are nested within one another to form the structure of the web page, enabling users to organize content hierarchically.

The simplicity of HTML lies in its open and flexible syntax, which allows even beginners to create basic web pages. Advanced developers, however, can leverage more complex HTML5 features such as audio and video embedding (<audio>, <video>), interactive forms, and the use of semantic elements like <article>, <section>, and <nav> to improve accessibility and SEO (Search Engine Optimization).

A crucial aspect of HTML is that it works in conjunction with other technologies. While HTML structures the content, CSS (Cascading Style Sheets) handles the visual presentation, and JavaScript manages interactivity. This trio forms the foundation of front-end web development. HTML has evolved significantly over the years, with the latest version, HTML5, offering enhanced support for multimedia, graphics, and mobile-friendly web design, making it indispensable for modern web development.

1.2 CSS

Cascading Style Sheets (CSS) is the styling language of the web, responsible for the look and feel of a web page. Where HTML provides the structure, CSS takes over by applying visual styles like colors, fonts, spacing, and layout adjustments. CSS allows web developers to control the design of multiple pages through a single stylesheet, ensuring consistency and making it easy to apply widespread changes.

CSS operates through rules applied to HTML elements. Each rule consists of a selector, which identifies the HTML element to be styled, and a declaration block, which contains one or more declarations defining the style properties (e.g., color, font-size, margin) and their values. The "cascading" aspect of CSS refers to how styles are applied based on priority, from the most general to the most specific.

CSS enables advanced layout techniques, such as grid and flexbox, which make it easier to design responsive websites that adapt to different screen sizes and devices. Media queries, a powerful feature of CSS, allow developers to specify different styles for different device characteristics, such as screen width. This is essential for designing websites that are mobile-friendly and look good on any device, whether it's a phone, tablet, or desktop monitor.

CSS also plays a key role in web animations and transitions, allowing elements to move, change colors, or gradually transform in a visually engaging manner. Additionally, the latest version, CSS3, introduces features such as rounded corners, shadows, and gradients, which previously required complex workarounds or images. Today, CSS is an essential tool for creating modern, visually appealing, and responsive web pages.

1.3 JAVASCRIPT

JavaScript is a high-level, dynamic programming language that plays a central role in web development, enabling interactivity and dynamic behavior on websites. Unlike HTML and CSS, which define structure and style, JavaScript brings a web page to life by allowing it to respond to user actions, manipulate data, and update content without needing to reload the entire page.

JavaScript runs directly in the browser, making it accessible to virtually any user with a web-enabled device. It can be used for a wide variety of tasks, such as form validation creating animations, and dynamically updating content. For example, JavaScript allows content to be fetched from a server and displayed on a page without requiring a full reload, a technique commonly known as AJAX (Asynchronous JavaScript and XML).

The language also supports object-oriented, imperative, and functional programming paradigms, making it highly versatile for developers. JavaScript's popularity has skyrocketed with the advent of powerful frameworks and libraries like React, Angular, and Vue, which make it easier to build complex, large-scale applications. It also extends beyond the browser, thanks to Node.js, which allows developers to use JavaScript for server-side programming, enabling full-stack development with a single language.

In recent years, JavaScript has been continuously evolving with the introduction of ES6 (ECMAScript 6) and later versions, bringing new syntax features such as arrow functions, classes, modules, and async/await, making the language more powerful and developer-friendly.

1.4 MEAN STACK

MEAN is a powerful full-stack JavaScript framework designed for developing web applications. The acronym **MEAN** stands for **MongoDB, Express.js, AngularJS, and Node.js**, which are the four core technologies that make up this stack. Together, they provide a robust and efficient environment for building modern, dynamic web applications.

1.4.1 MONGODB

- MongoDB is a NoSQL database that stores data in flexible, JSON-like documents rather than traditional table structures. This document-oriented approach allows for the storage of complex data types and relationships easily.
- It is schema-less, meaning you can store documents with different structures in the same collection, providing flexibility in data modeling.
- MongoDB supports horizontal scaling, making it easy to handle large volumes of data and traffic by distributing data across multiple servers.

1.4.2 EXPRESS JS

- Express.js is a lightweight web application framework for Node.js, designed to simplify the process of building web applications and APIs.
- It provides a set of features for web and mobile applications, including routing, middleware support, and template engines.
- With Express, developers can handle HTTP requests, set up middleware to process requests, and manage routes easily, allowing for a streamlined development process.

1.4.3 ANGULAR JS

- AngularJS is a front-end web application framework developed by Google. It allows developers to create dynamic single-page applications (SPAs) with a rich user interface.
- It uses a Model-View-Controller (MVC) architecture, separating the application's logic, data, and presentation. This structure makes it easier to manage and maintain complex applications.
- AngularJS features two-way data binding, which automatically synchronizes data between the model and view, reducing the amount of boilerplate code and improving user experience.
- It also provides a modular approach to building applications, allowing developers to create reusable components.

1.4.4 NODE JS

- Node.js is a JavaScript runtime built on Chrome's V8 JavaScript engine. It enables developers to execute JavaScript on the server side, allowing for the use of a single language (JavaScript) throughout the entire application stack.
- Node.js is known for its non-blocking, event-driven architecture, making it highly efficient for handling concurrent connections. This is particularly beneficial for real-time applications, such as chat applications or live updates.
- It has a rich ecosystem of libraries and frameworks available through npm (Node Package Manager), which simplifies the process of adding new features and functionalities.

1.4.5 USECASES

The MEAN stack is ideal for building various types of applications, including:

- **Single-page Applications (SPAs)**: Applications that load a single HTML page and dynamically update content as the user interacts with the app.
- **Real-time Applications**: Chat applications, collaborative tools, and other apps that require real-time data exchange.
- **RESTful APIs**: Backend services that provide data to frontend applications, allowing for a clear separation of concerns.

CHAPTER 2

METHODOLOGY

2.1 OBJECTIVE

The objective of the **Agrimart E-Commerce Platform** is to create a user-friendly online marketplace that connects farmers and consumers for buying and selling agricultural products, promoting accessibility and supporting local agriculture.

2.2 PROBLEM STATEMENT

The agricultural sector has difficulty helping farmers easily buy essential pre-harvest products, resulting in inefficiencies and higher costs. Current platforms often do not offer a wide variety of these items, making it hard for users to find what they need. Farmers and suppliers need a simpler buying experience with personalized recommendations. The **Agrimart E-Commerce Platform** seeks to solve these problems by providing a central marketplace for pre-harvest agricultural products, improving accessibility and efficiency in agricultural operations.

2.3 BLOCK DIAGRAM

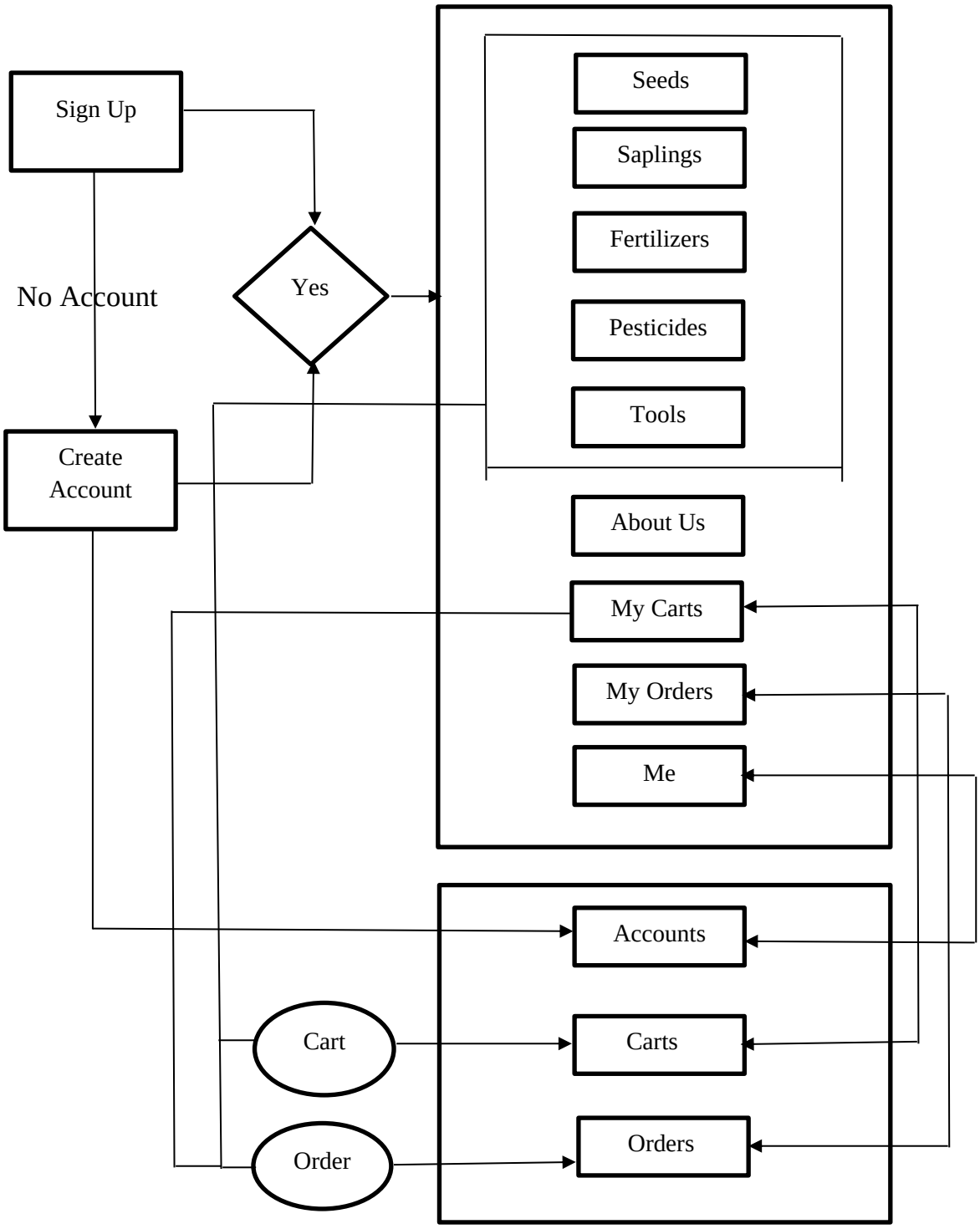

Figure. 2.1 Block Diagram

Figure 2.1 shows the block diagram for agrimart e-commerce platform

2.4 MODULE EXPLANATION

2.4.1 Front-End (HTML,CSS,ANGULAR JS)

The front-end of Agrimart is built using HTML, CSS, and AngularJS to create an intuitive and responsive user interface. This setup allows users to interact seamlessly with the platform, navigate through various product categories, and manage their accounts effectively. AngularJS is used to enhance the dynamic capabilities of the site, such as the real-time display of product listings, dynamic price calculations based on user input, and the management of cart functionality.

Signup Page:

Users can create or sign into accounts. For new users, validation checks ensure proper email format, unique email verification, and complete form submission. Existing users are redirected to the Home Page upon successful login.

Account Page:

Enables account creation with required validation and redirects users to the Home Page once an account is created. Duplicate accounts are avoided by checking existing emails.

Home Page:

The main shopping interface displaying product categories (Seeds, Saplings, Fertilizers, Pesticides, Tools), exclusive offers, and a search bar for efficient product discovery.

Categories Pages:

Display product listings with details (name, description, quantity selection, dynamic price calculations). The "Add to Cart" and "Buy Now" features allow users to manage their selections and make quick purchases.

About Us Page:

Provides information about Agrimart's vision, mission, and management team to build trust with users.

My Carts Page:

Displays carted products and allows users to proceed with purchase or remove items from the cart. The Bill Summary section provides a detailed overview of pricing and discounts.

My Orders Page:

Lists all ordered products with tracking details like order date and expected delivery. Users can cancel orders before delivery or track successful deliveries.

My Account Page:

Displays the user's account details and provides navigation to the My Carts and My Orders pages for efficient account management.

2.4.2 Back-End (NODE JS , EXPRESS JS)

The back-end of Agrimart is developed using Node.js and Express.js, providing a robust server environment for handling API requests, managing user accounts, and performing database operations. Express.js ensures efficient handling of routing and HTTP requests, making the platform scalable and capable of handling multiple user interactions simultaneously. This layer manages business logic such as user authentication, cart management, order processing, and interaction with the database.

- Handles routing between different pages such as Signup, Account, Home, and Categories pages. Manages form submissions, account validation, and session management for signed-in users.

- Implements logic for adding products to carts, placing orders, and managing user information.
- Supports backend operations for product searches and processing "Add to Cart" and "Buy Now" actions.

2.4.3 Server Setup

The server.js file is the core of the server-side setup, orchestrating the flow of the application. It handles incoming requests from the front-end, processes them, and communicates with the database for storing and retrieving data. This file configures essential middleware, routes for various functionalities (such as signup, login, and product management), and ensures that the API endpoints are correctly set up to serve the front-end.

Account Validation:

server.js interacts with the database to validate credentials during signup and login. Ensures user details are correctly stored or retrieved from the Accounts Table.

Cart & Order Management:

Retrieves and stores cart items in the Carts Table, places orders in the Orders Table, and handles cancellations.

Pop-Up Functionality:

server.js powers pop-up windows for the "Buy Now" functionality, showing order details, and capturing shipping address and order dates.

Session Handling:

Manages user sessions to ensure smooth navigation between account, cart, and order pages, ensuring security and proper redirection.

2.4.4 Database

Agrimart uses MongoDB as the primary database to store and manage user data, product details, cart information, and orders. MongoDB is chosen for its flexibility in handling unstructured data and its ability to scale horizontally, allowing the platform to grow with increasing user activity.

Accounts Table:

Stores user information (username, email, mobile number, shipping address) and validates credentials during login or signup.

Carts Table:

Stores carted products with details like product name, price, quantity, user information, and provides retrieval for the My Carts page.

Orders Table:

Logs completed orders, including product details, order date, expected delivery date, and user information. Supports order cancellation and tracking features.

CHAPTER 3

RESULTS AND DISCUSSION

The Agrimart E-Commerce Platform offers a user-friendly experience for farmers and agricultural businesses, facilitating easy access to essential pre-harvest products like seeds, fertilizers, pesticides, saplings, and tools. Users can efficiently search and filter products, with detailed listings providing descriptions, prices, and discounts to aid informed purchasing decisions.

The seamless cart and order system enhances usability, allowing users to add items, apply discounts, and checkout with ease. All order details are securely stored, enabling users to track past purchases and expected delivery dates. Built on AngularJS for the frontend, Node.js and Express.js for the backend, and MongoDB for data storage, the platform ensures efficient data handling and reliable performance.

Agrimart addresses the challenge of fragmented agricultural supply chains by centralizing products in one place, reducing the time and effort needed for procurement. The modern technology stack not only enhances current performance but also allows for scalability to accommodate future growth.

In summary, Agrimart significantly improves access to pre-harvest products, streamlines the buying process, and enhances agricultural operations, providing a valuable tool for farmers and businesses alike.

SCREENSHOTS :

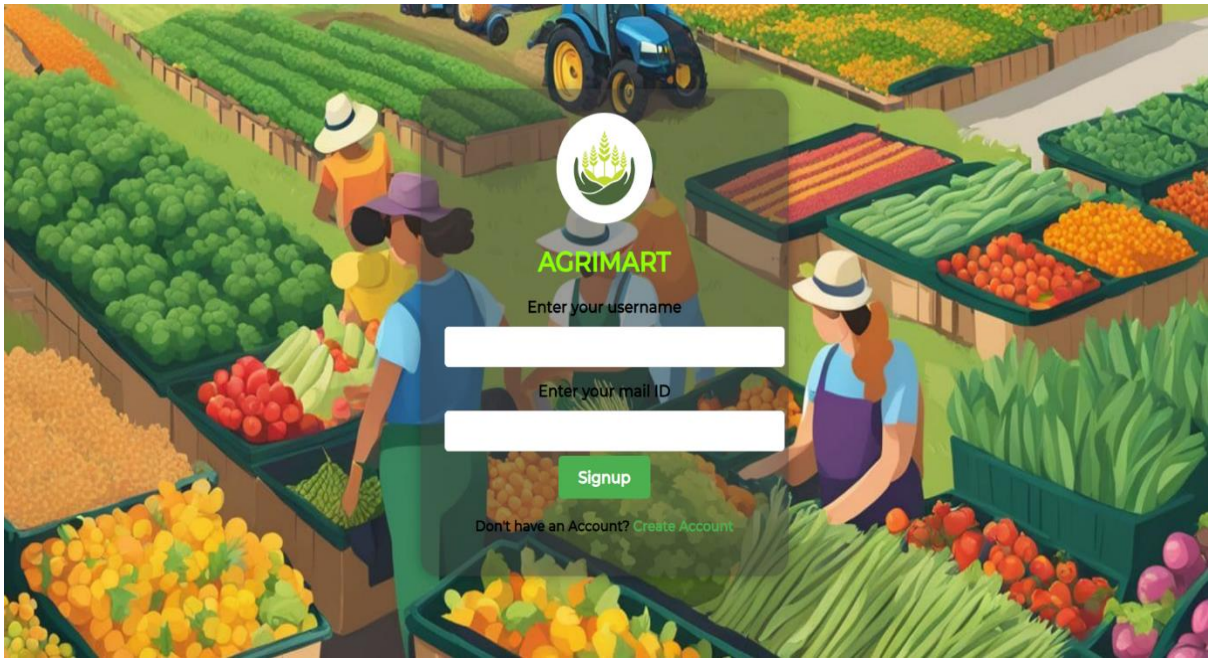

Figure 3.1 Signup Page

The figure 3.1 shows the user signup page where user can sign in to their respective account.

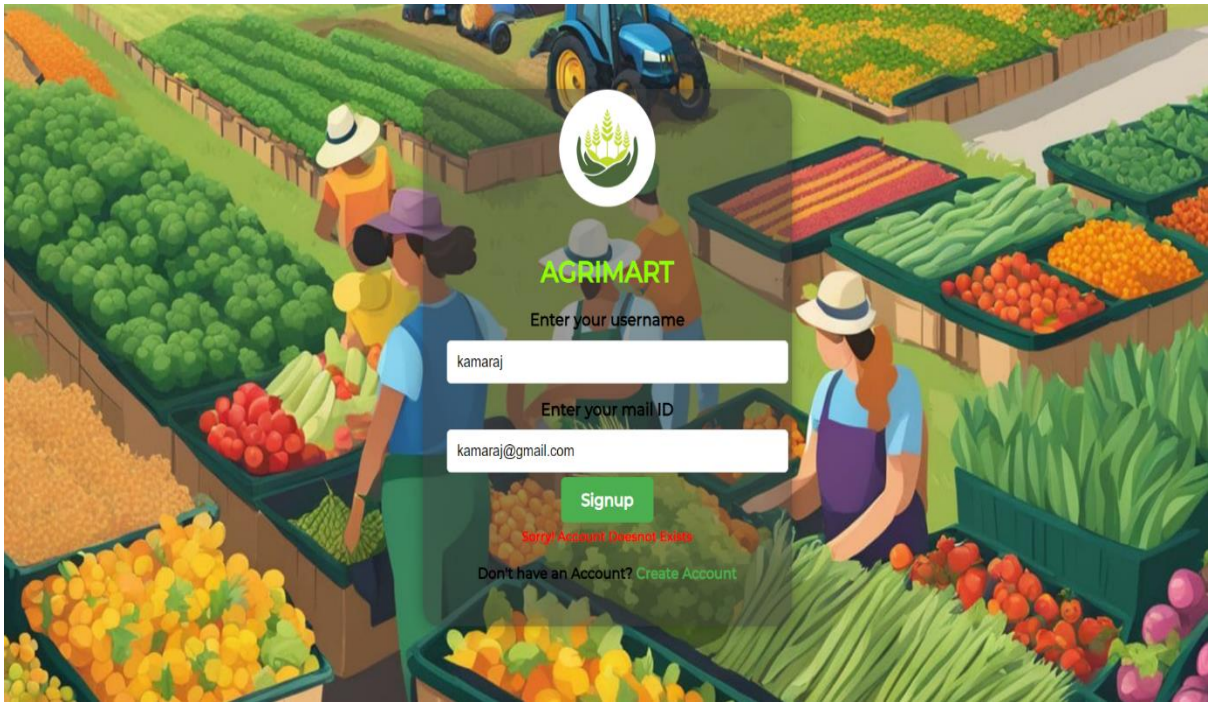

Figure 3.2 Signup page with validations

The figure 3.2 shows the user signup page where Validations are handled while user is signing in.

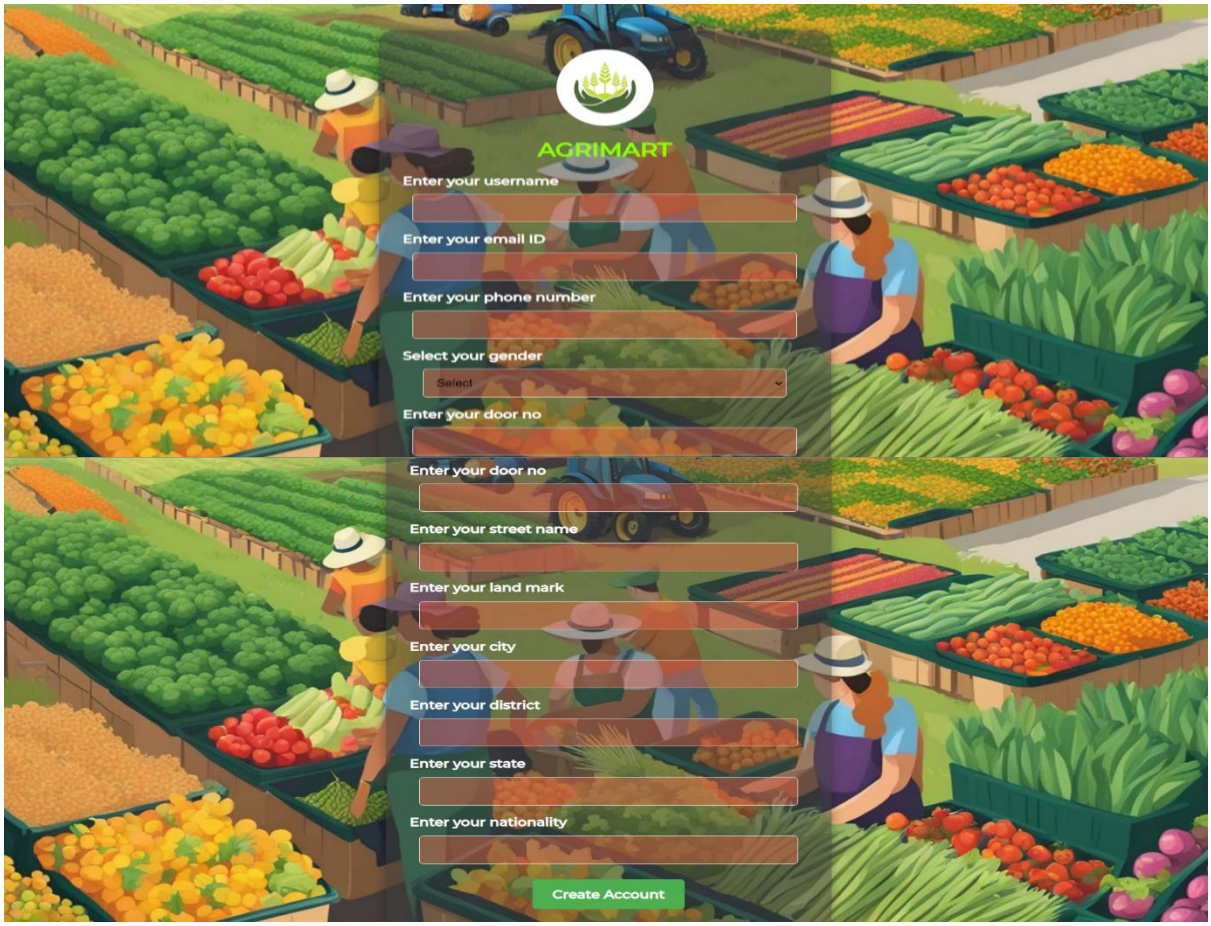

Figure 3.3 Account Page

The figure 3.3 shows the account page where new user can create a new account.

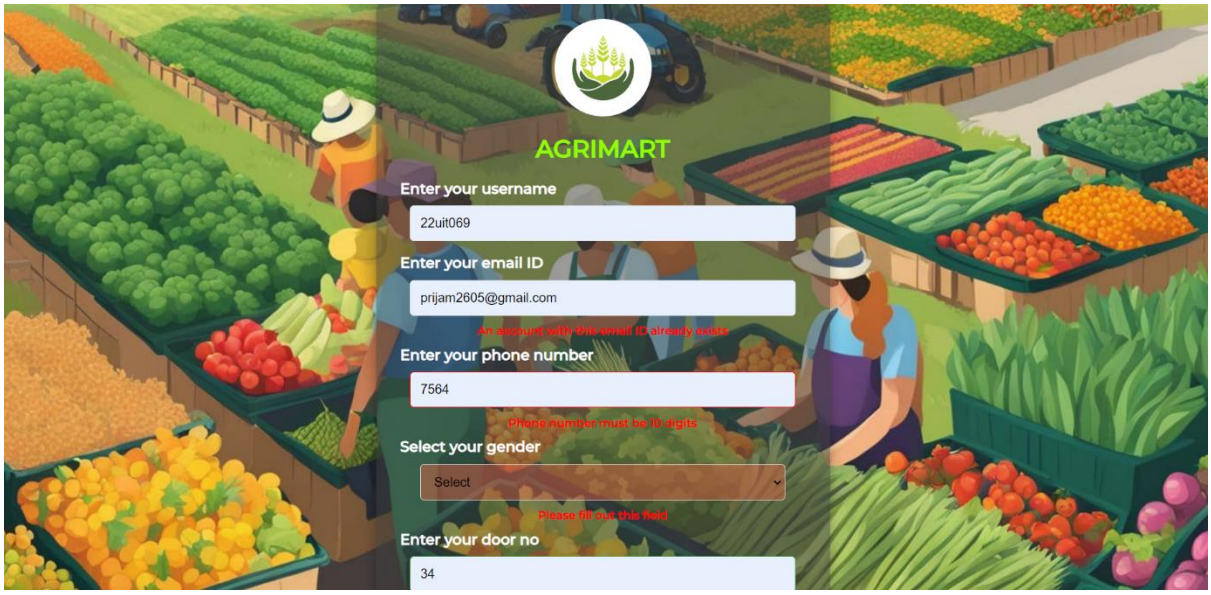

Figure 3.4 Account page with validations

The figure 3.4 shows the account page where validations are handled while creating a new account.

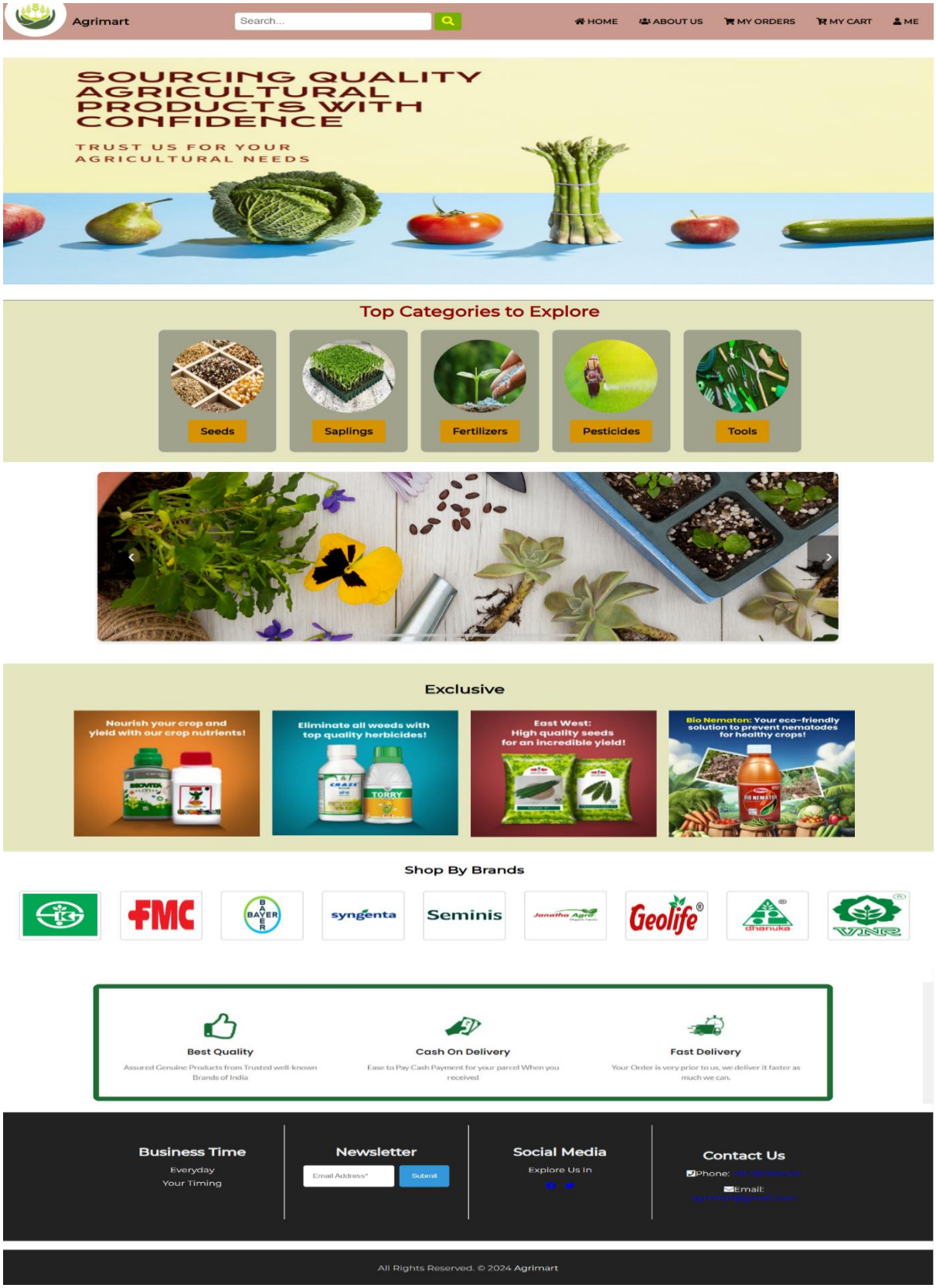

Figure 3.5 Home Page

The figure 3.5 shows the home page where it has categories, offers, brands etc., and user can navigate to any other pages from home page.

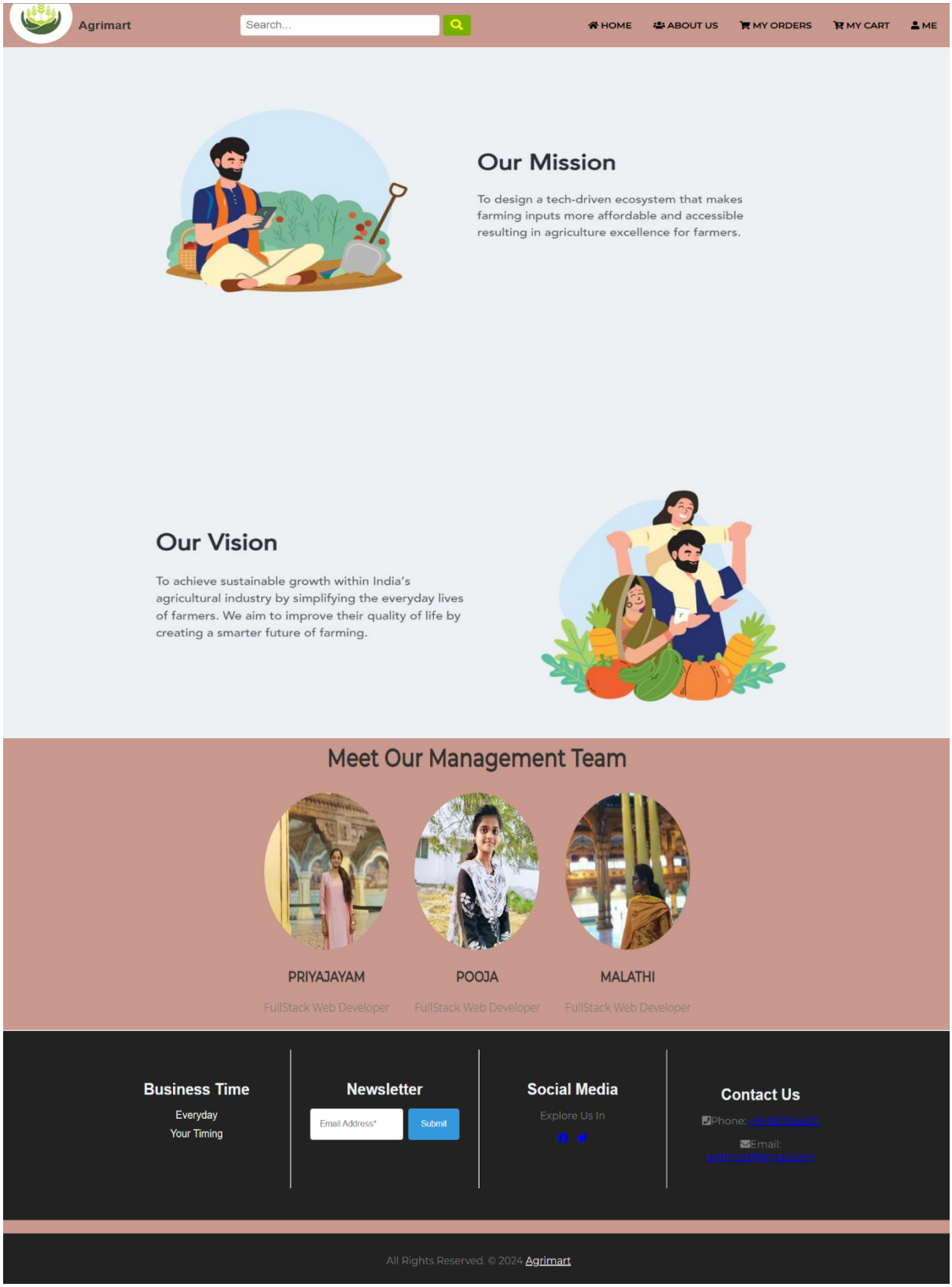

Figure 3.6 About Us Page

The figure 3.6 shows the about us page where it has vision, mission, management team details.

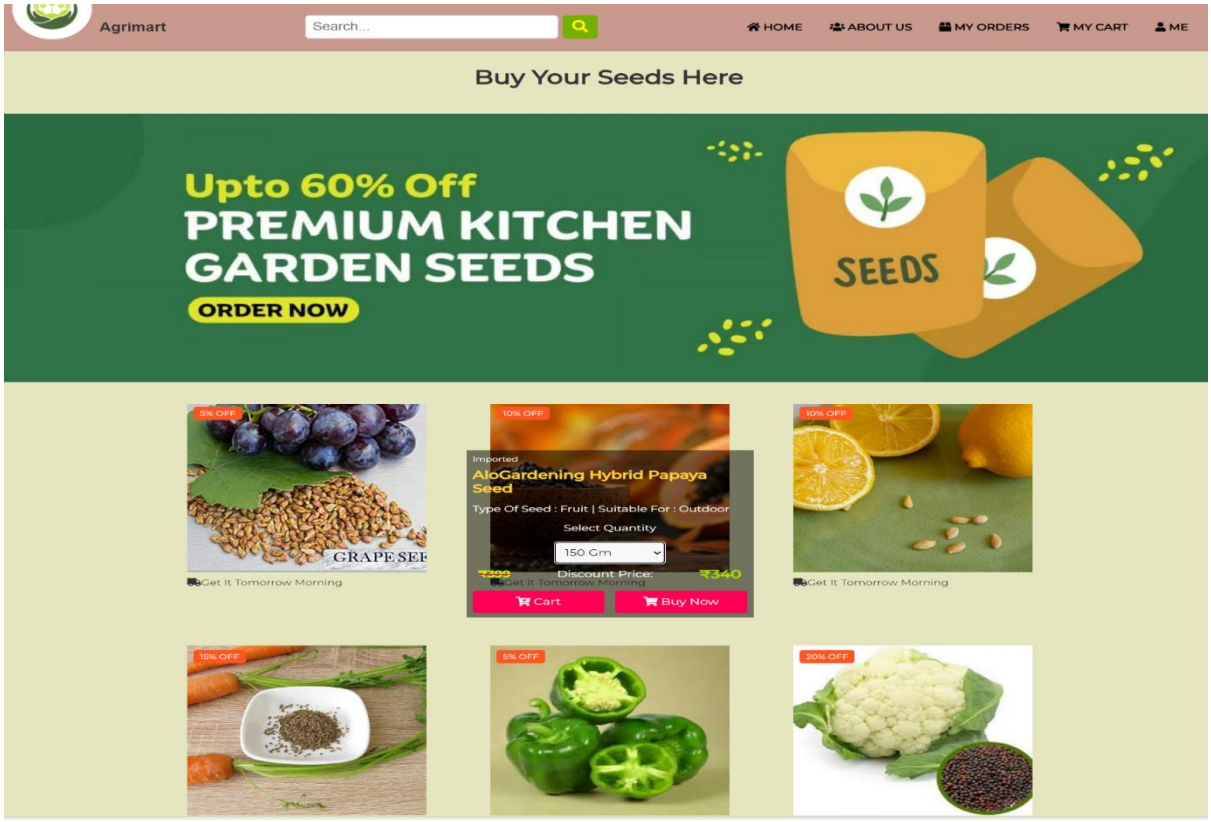

Figure 3.7 Seeds Page

The figure 3.7 shows the seeds page where it has all the “seeds” as products with product image ,description, quantity selection, prices ,cart and buy now button.

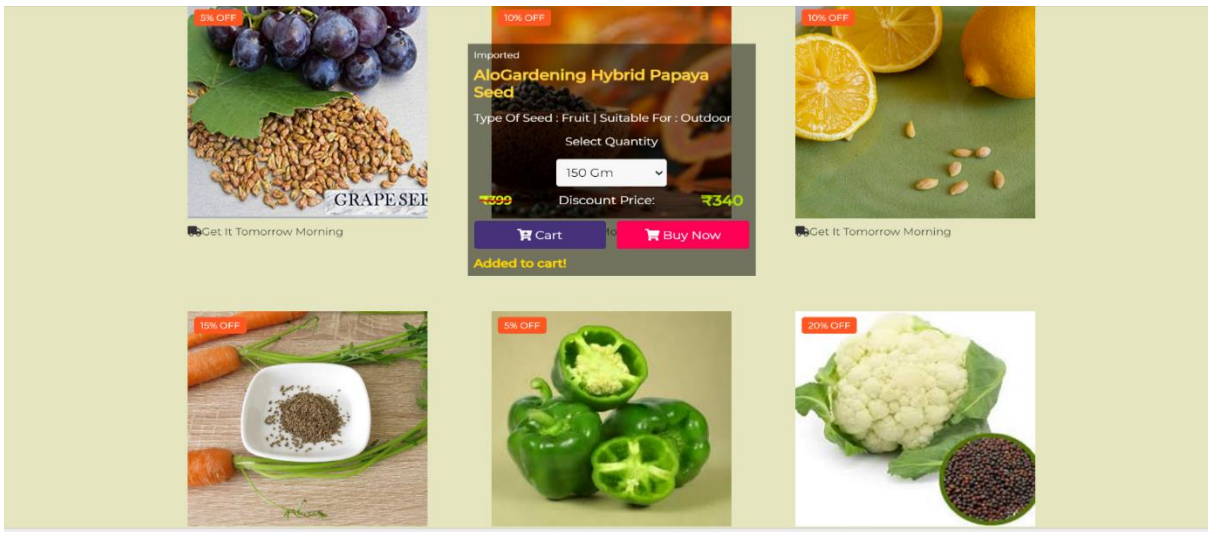

Figure 3.8 Seeds page with carting functions

The figure 3.8 shows the seeds page where a product has been carted using the cart button.

Figure 3.9 Seeds page with ordering functions

The figure 3.9 shows the seeds page where product has been ordered using buy now button

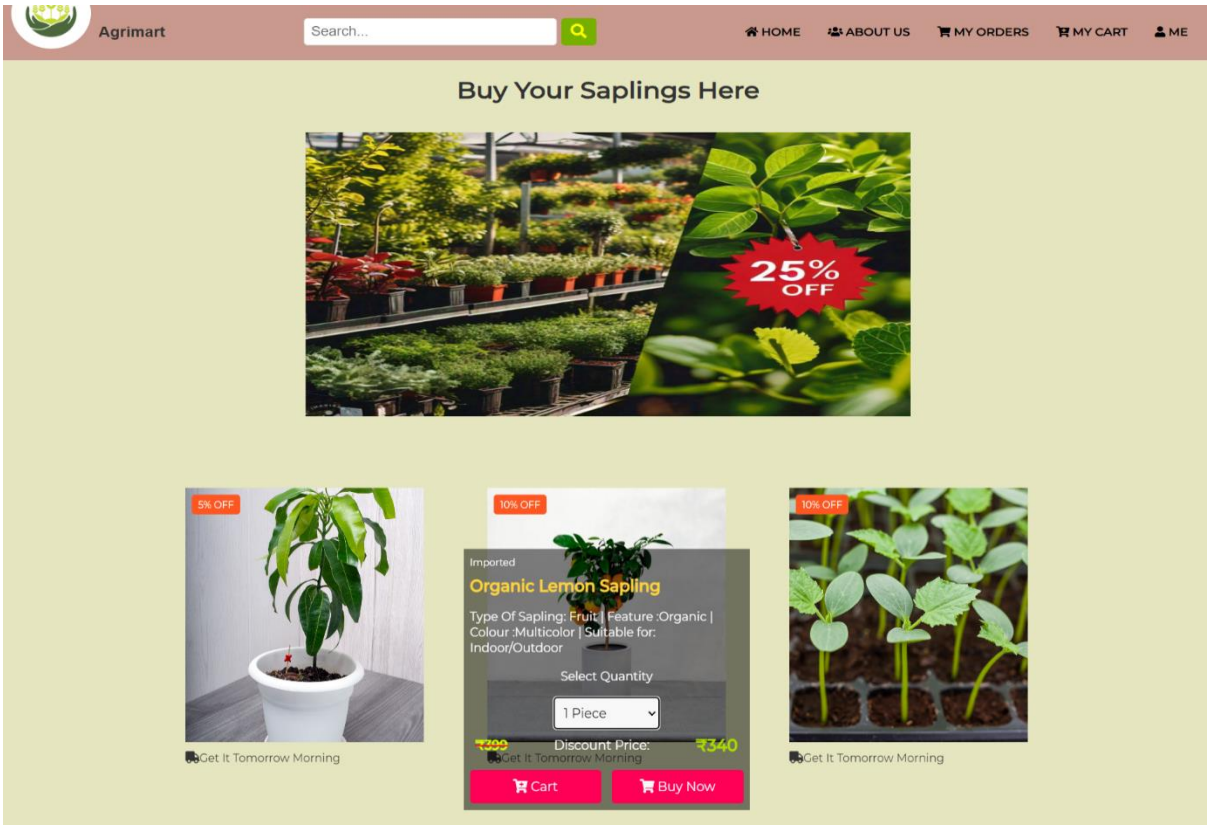

Figure 3.10 Saplings Page

The figure 3.10 shows the saplings page where it has all the “saplings” as products with product image ,description, quantity selection, prices ,cart and buy now button.

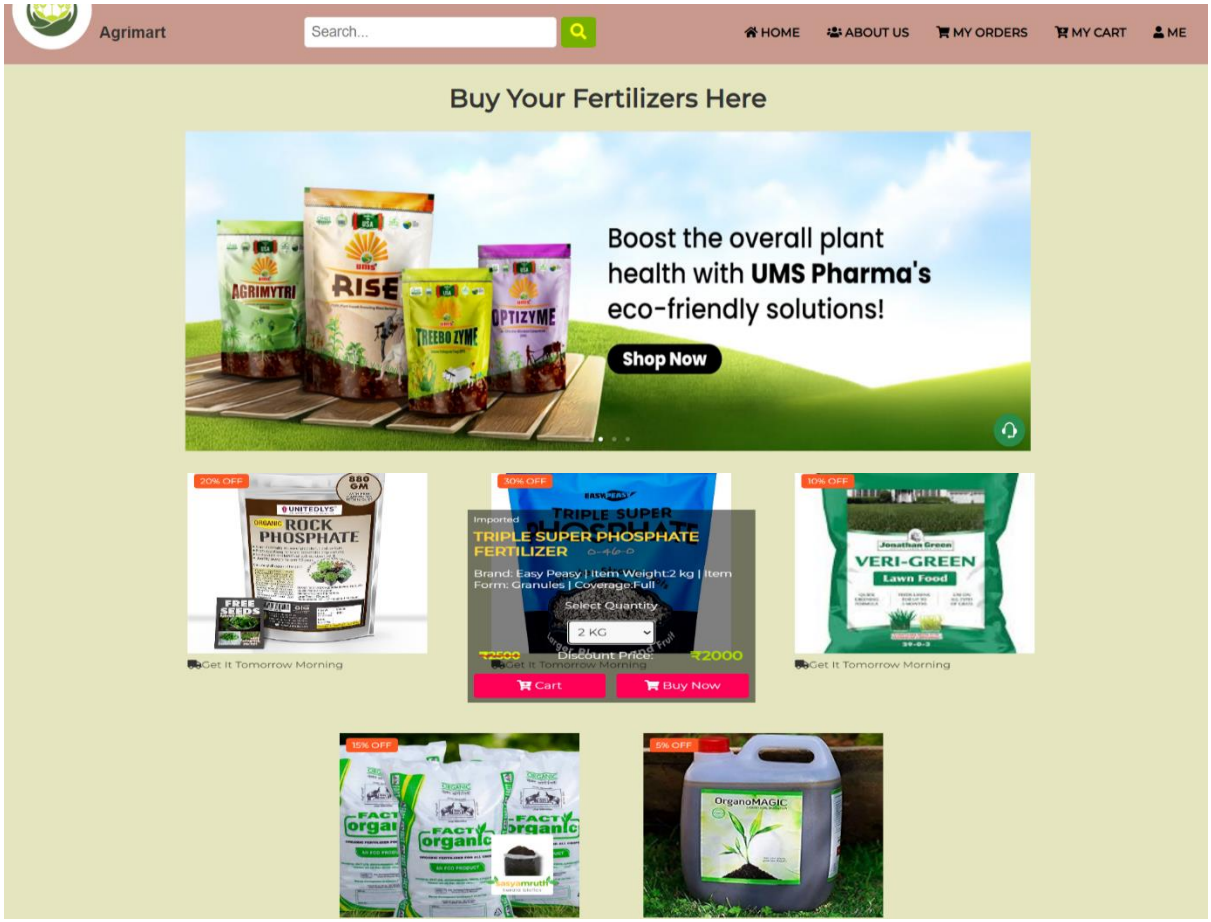

Figure 3.11 Fertilizers Page

The figure 3.11 shows the fertilizers page where it has all the “fertilizers” as products with product image ,description, quantity selection, prices ,cart and buy now button.

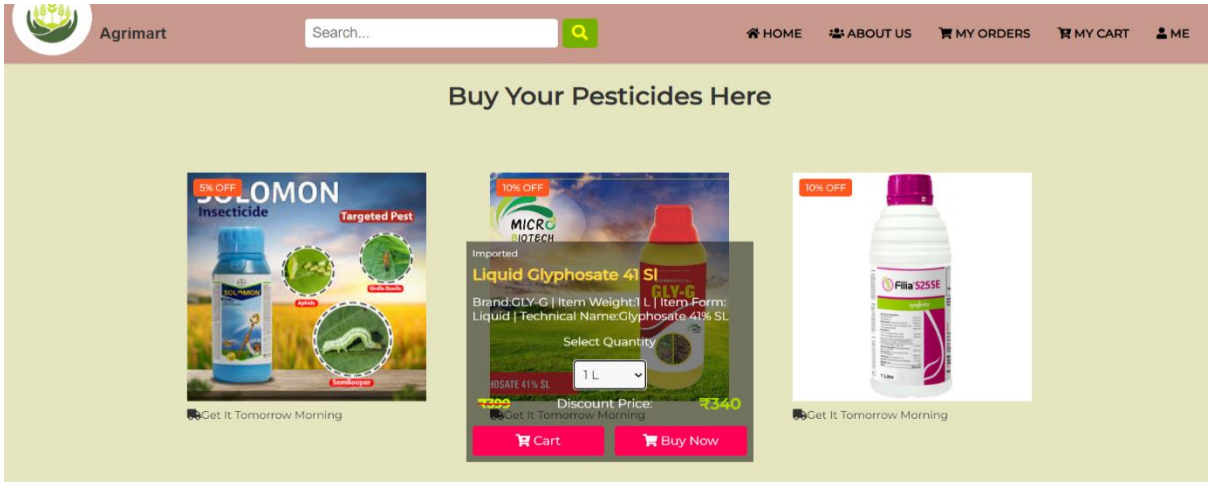

Figure 3.12 Pesticides Page

The figure 3.12 shows the seeds page where it has all the “seeds” as products with product image ,description, quantity selection, prices ,cart and buy now button.

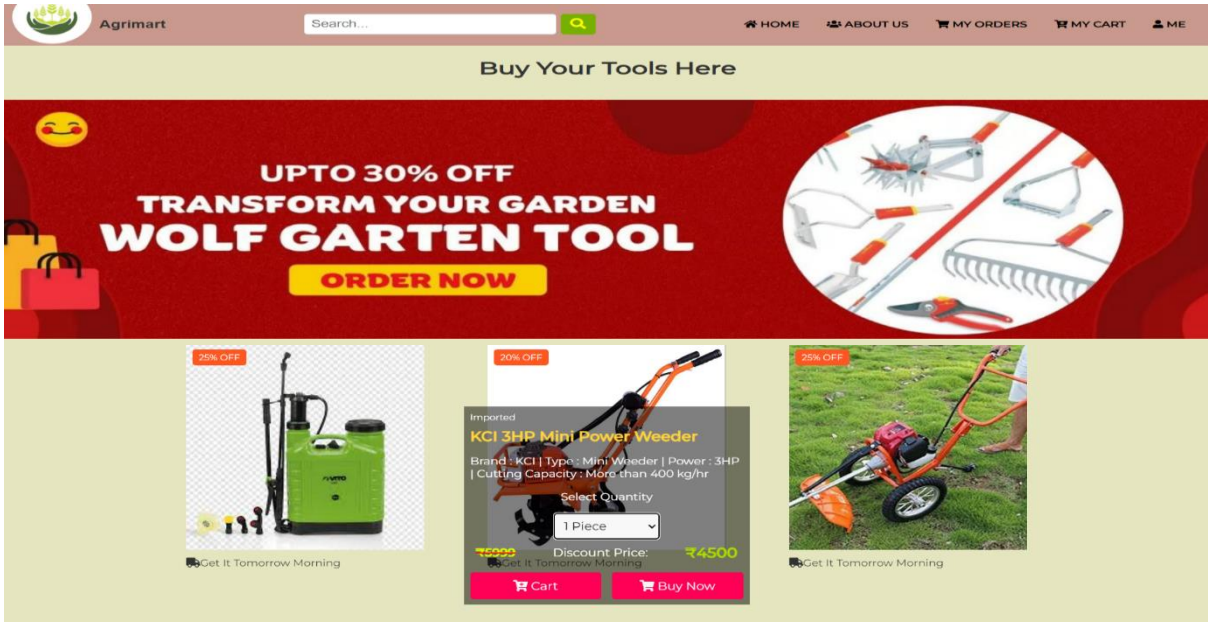

Figure 3.13 Tools Page

The figure 3.13 shows the tools page where it has all the “tools” as products with product image ,description, quantity selection, prices ,cart and buy now button.

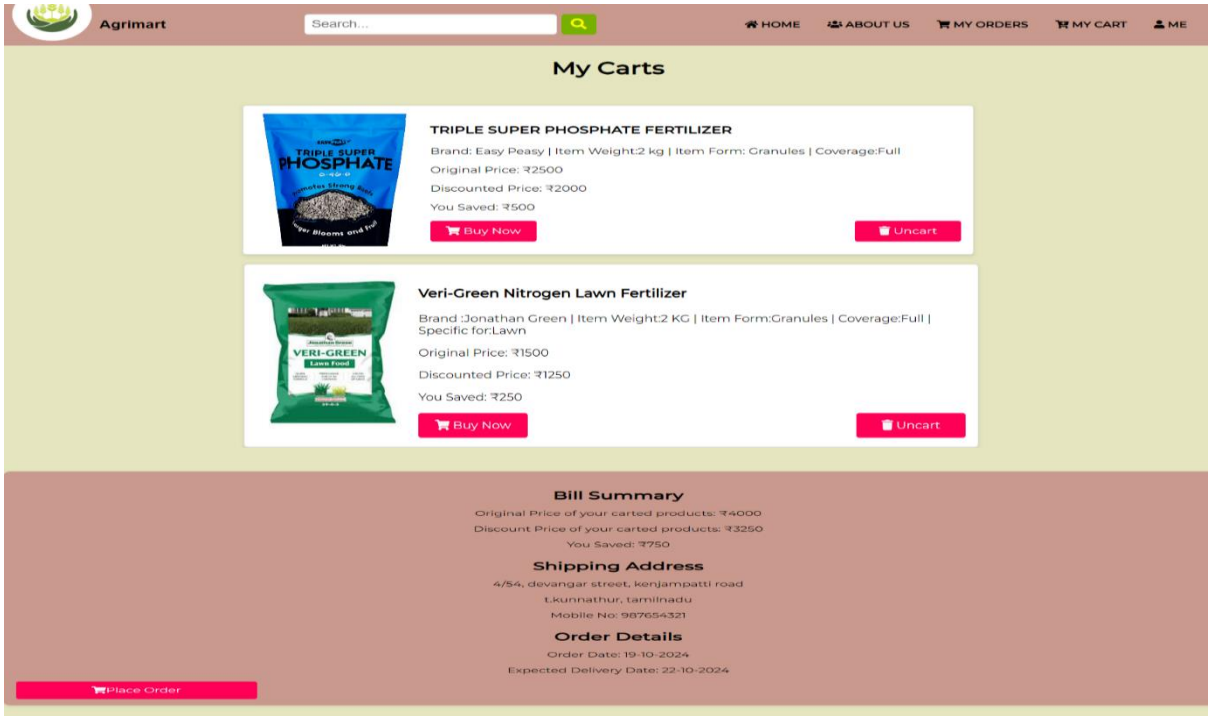

Figure 3.14 MyCarts Page

The figure 3.14 shows the mycarts page where all the carted products of signed in user are displayed here.

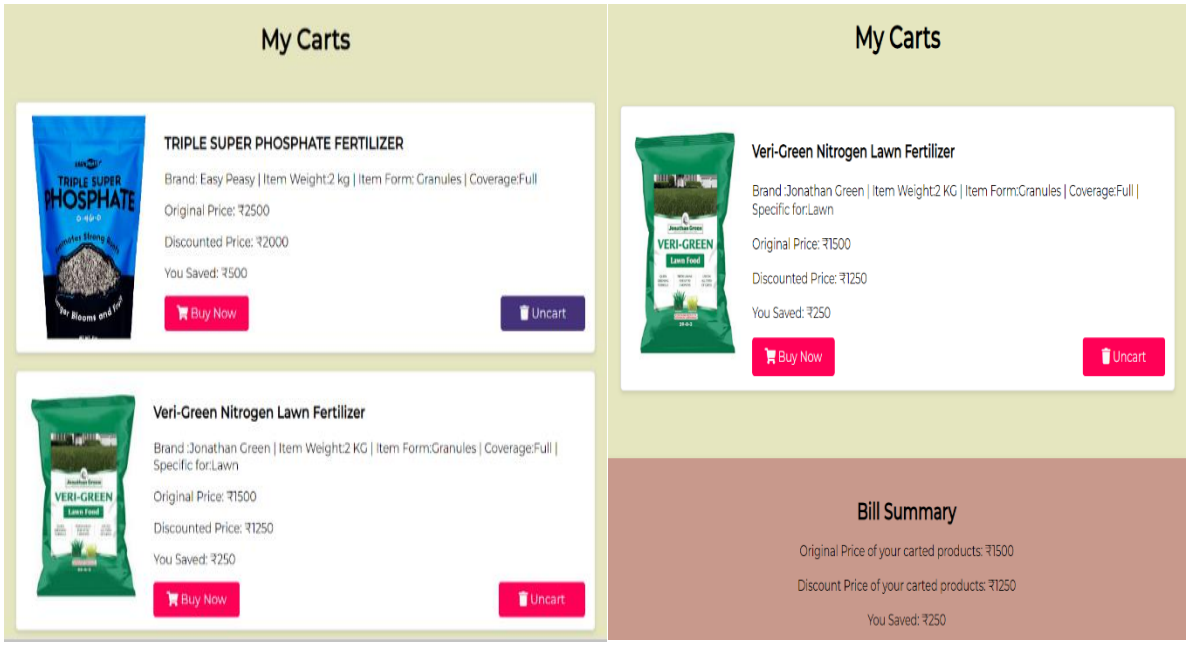

Figure 3.15 MyCarts page with uncarting functions

The figure 3.15 shows the mycarts page where a carted product can be uncarted using uncart button.

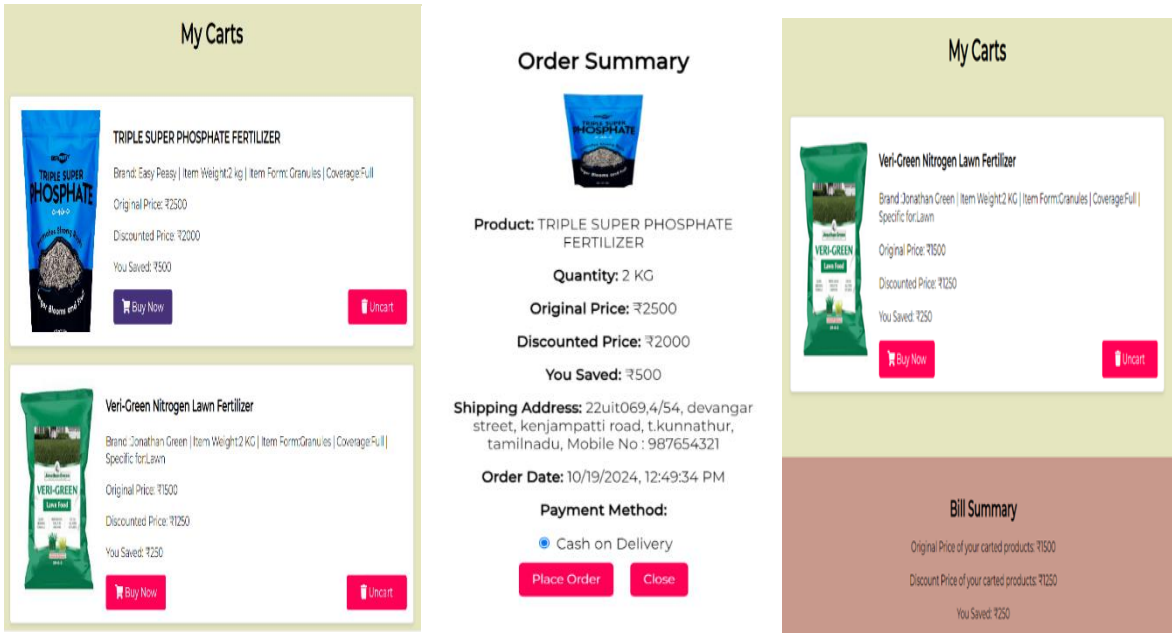

Figure 3.16 MyCarts page with ordering functions

The figure 3.16 shows the mycarts page where a carted product can be ordered using buy now button.

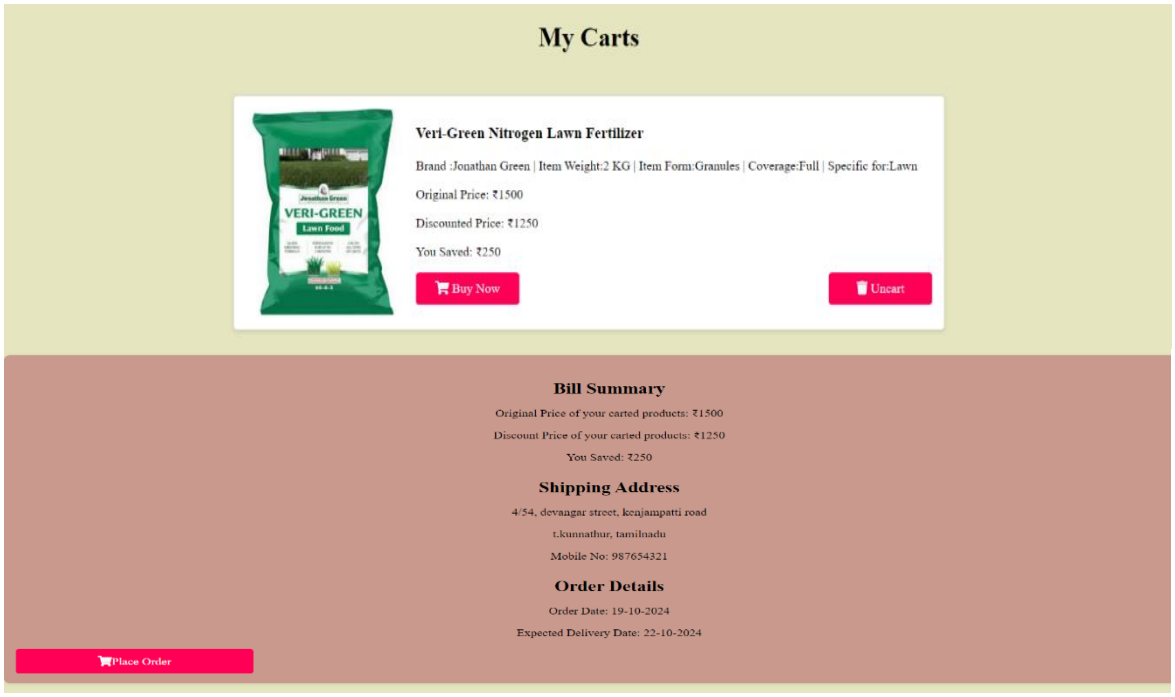

Figure 3.17 MyCarts page with bill summary and place order functions

The figure 3.17 shows the mycarts page where all the carted items can be ordered using place order button.

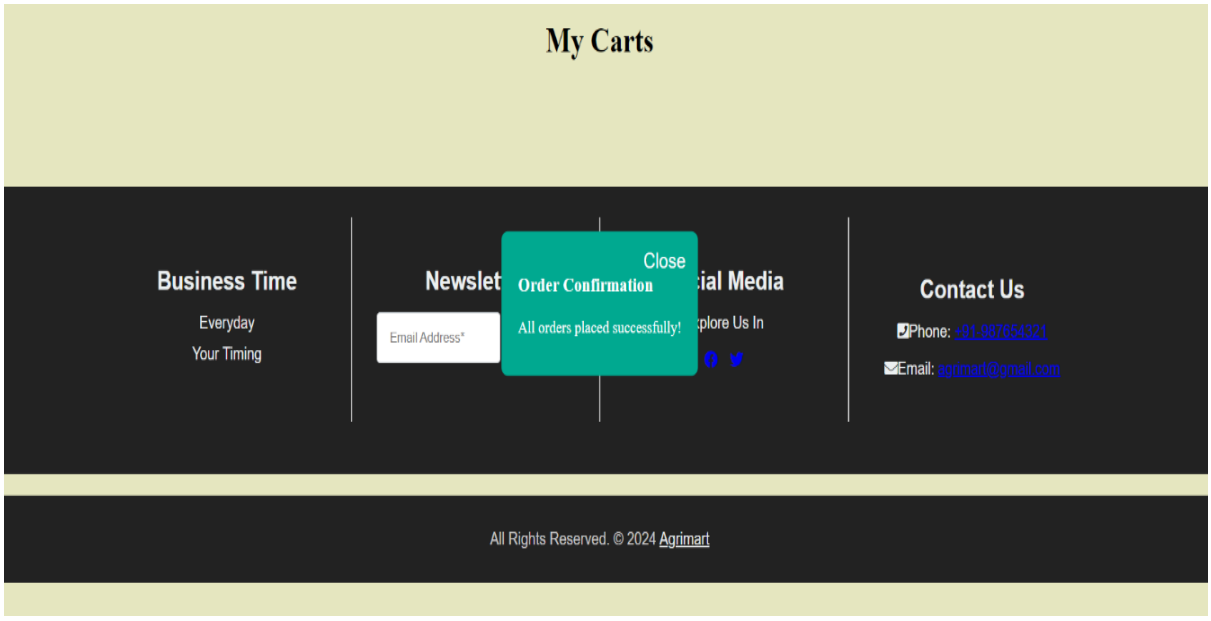

Figure 3.18 MyCarts page with order confirmation message

The figure 3.18 shows the mycarts page where order confirmation has been shown after placing order and mycarts page becomes empty.

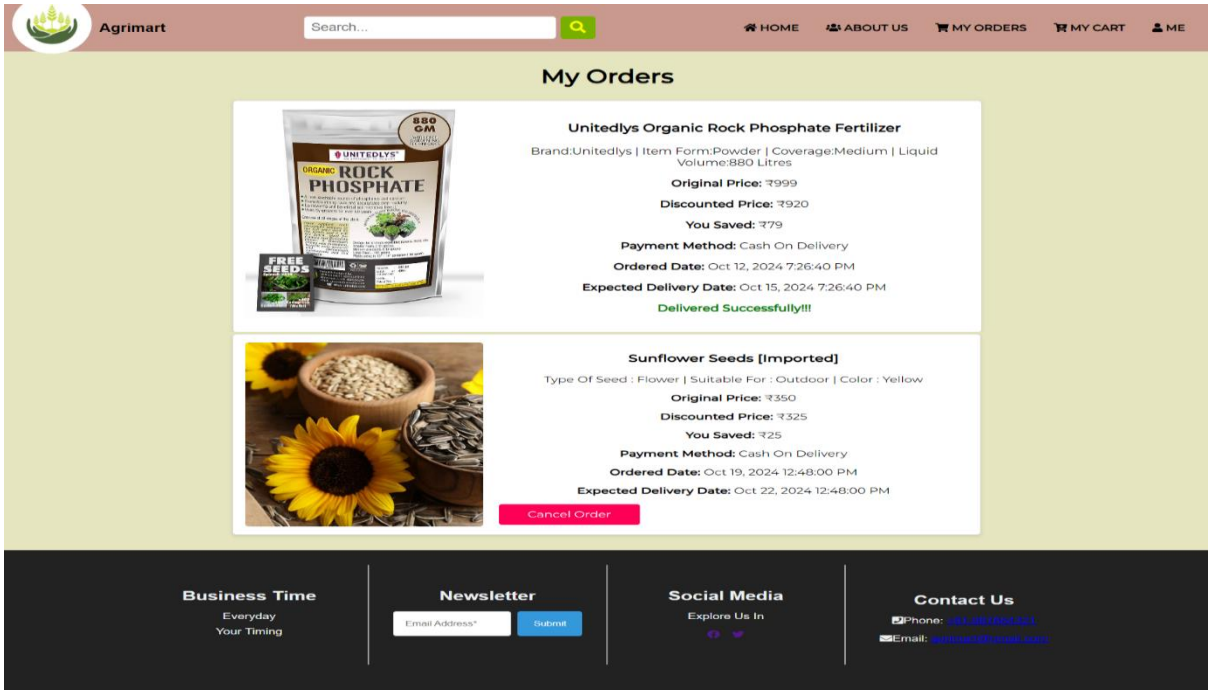

Figure 3.19 My Orders Page

The figure 3.19 shows the myorders page where all the ordered products of signed in user are displayed here.

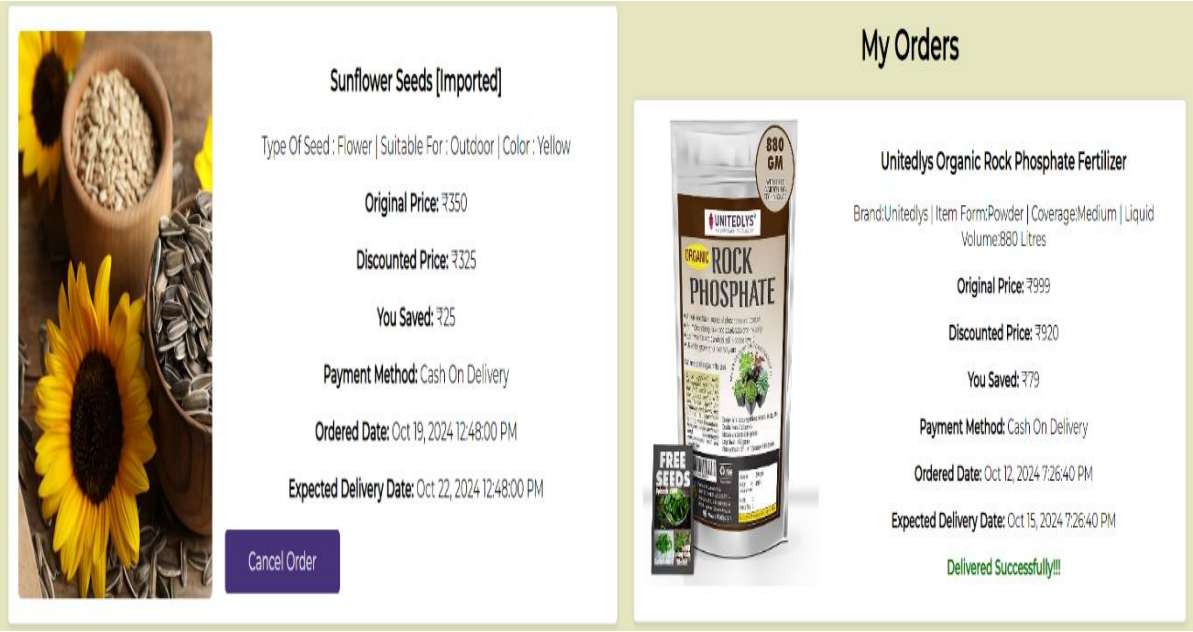

Figure 3.20 My Orders page with cancel order functions

The figure 3.20 shows the mycarts page where ordered product can be canceled using cancel order button.

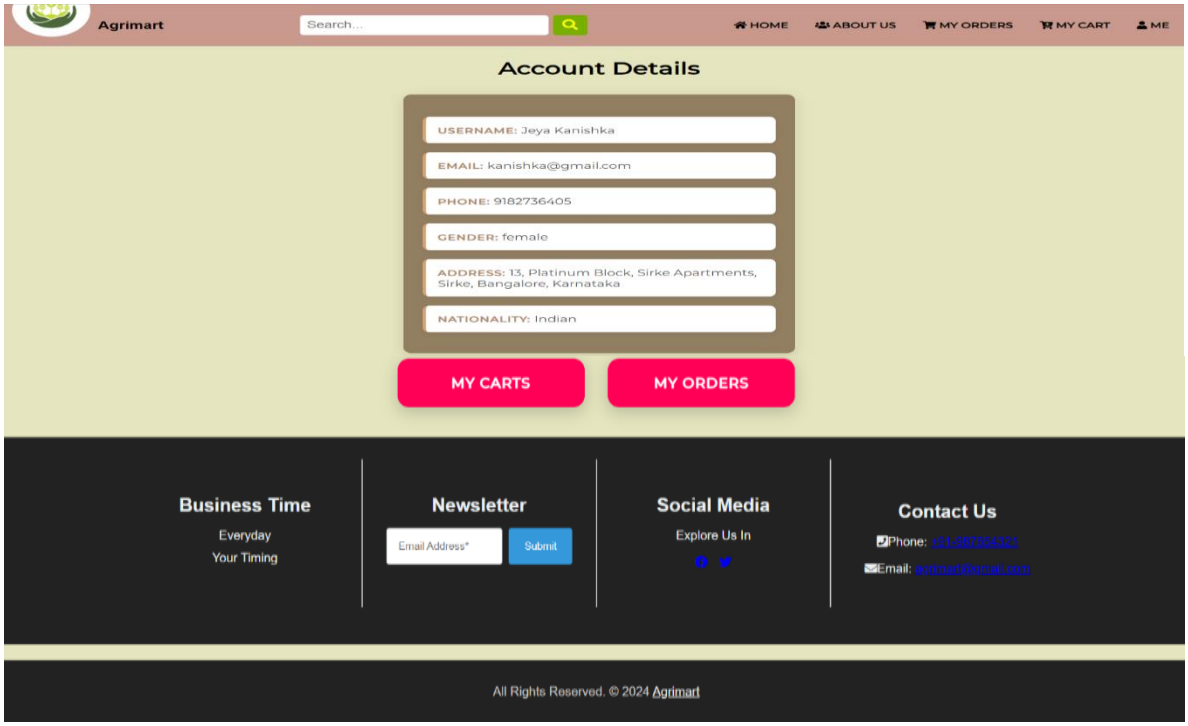

Figure 3.21 Me (My Account) Page

The figure 3.21 shows the myaccount page where Account Details of the signed in user are shown here.

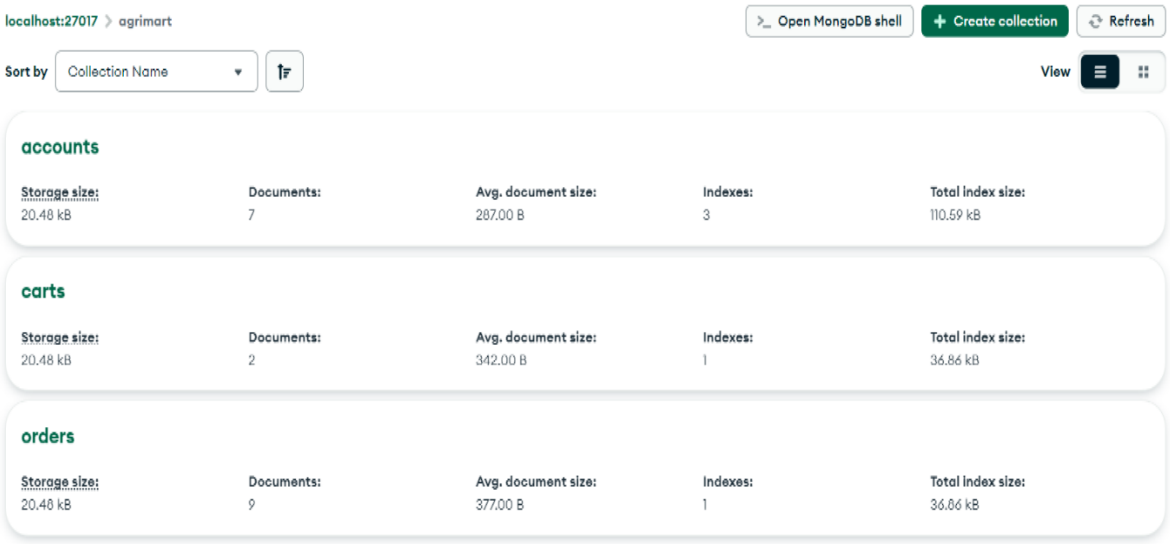

Figure 3.22 Agrimart database

The figure 3.22 shows the agrimart database where storing and retrieval of data can be done.

Figure 3.23 Accounts Schema

The figure 3.23 shows the accounts schema in the database where it manages the account details of the user.

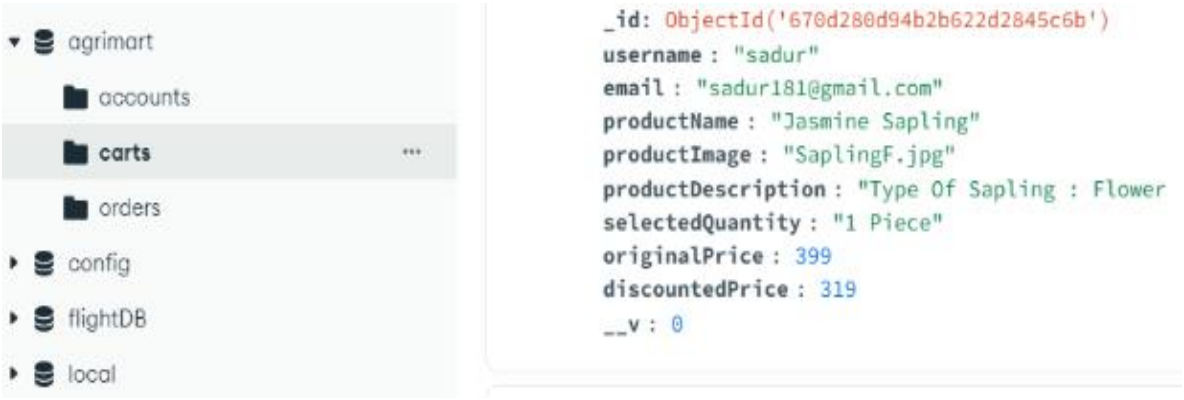

Figure 3.24 Carts Schema

The figure 3.24 shows the carts schema in the database where it manages the carted product's details of the user.

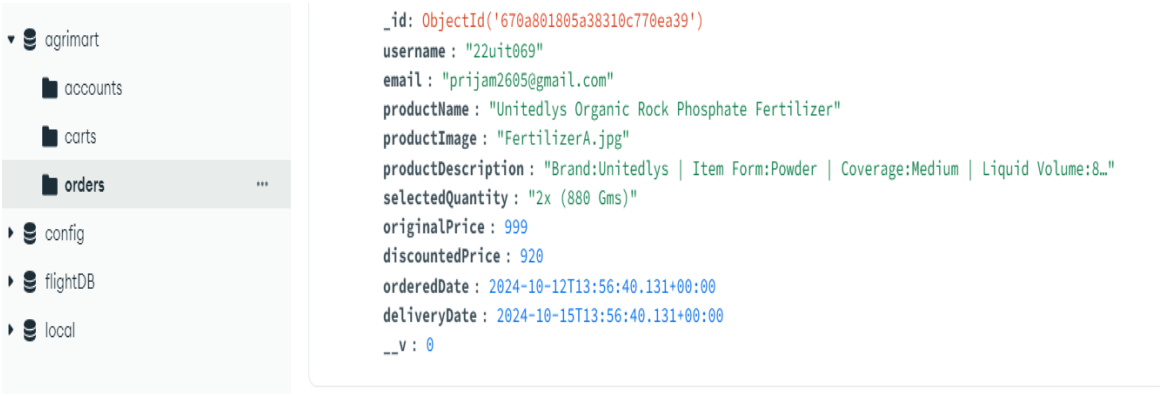

Figure 3.25 Orders Schema

The figure 3.25 shows the orders schema in the database where it manages the ordered product's details of the user.

CHAPTER 4

CONCLUSION

The **Agrimart E-Commerce Platform** successfully addresses the need for a streamlined, user-friendly solution for buying pre-harvest agricultural products. By offering a wide range of items, personalized recommendations, and a smooth order management system, the platform improves access to essential agricultural supplies. It simplifies the buying process for farmers and agricultural businesses, enhancing efficiency and supporting local agriculture. Built with modern technologies like AngularJS, Node.js, and MongoDB, **Agrimart** is scalable and capable of meeting future demands, making it a valuable tool for the agricultural community.

REFERENCE

1. https://agripari.com/

   Agripari: India's largest Agri Inputs Marketplace Platform providing Agricultural Machinery, Agriculture Equipment, Agricultural Products.

2. https://www.bighaat.com/

   Buy Agricultural Products and Machinery Online at BigHaat. We Offering broad range of Seeds, Plant Nutrition, Plant Protection and Agri Implements.

3. https://farmkartgroup.com/

   Farmkart's e-commerce platform offers affordable and accessible agriculture products and services sourced globally.

4. https://www.farmersstop.com/

   Agricultural Equipment, Greenhouse & Nursery Equipment & Supplies,Crop Sprayers. Buy high quality agriculture equipments online at farmersstop.

5. https://agribegri.com/

   We Are a Leading Online Agriculture Shopping Store. Shop Our Range of Products Online. Maximize your farm's productivity with our superior farming tools and supplies.