Software Requirements Specification

For

Farmer Empowerment through Digital Agricultural Solutions

Web-Based System(FEDAS)

(Empowering farmers with knowledge)

Version 1.0

April 01,2024

System Analysis & Design - IS2106

Prepared by

Team AgroSquad

Group Number:28

Index No.	Name with Initials	Emails	Mobile No.
21CIS0072	HRNAR Senarath	hrnarsenarath@std.foc.sab.ac.lk	+94 761809612
21CIS0067	AVPDD Nipunika	avpddnipunika@std.foc.sab.ac.lk	+94 781762363
21CIS0121	GK Malinda	gkmalinda@std.foc.sab.ac.lk	+94 703904450

Table of Contents

1.Introduction

The agricultural sector is vital for global food security and economic stability. However, smallholder farmers often lack access to essential information and resources, hindering their productivity and resilience. In response, leveraging technology through an online platform offers a solution to disseminate agricultural knowledge, promote best practices, and enhance productivity. This document outlines the requirements for developing such a platform, aimed at empowering farmers, fostering climate resilience, and meeting market demands for sustainable agriculture.

2. Purpose

The purpose of this Software Requirements Specification (SRS) document is to provide a comprehensive guide for the development of an online agricultural platform. This platform aims to address the critical challenges faced by farmers worldwide by serving as a centralized hub for disseminating agricultural information, promoting sustainable farming practices, and enhancing agricultural productivity and resilience.

Through this platform, farmers will gain easy access to a wealth of agricultural resources, including expert advice, best practices, and market insights. By leveraging technology, the platform aims to empower farmers to make informed decisions about their farming techniques, optimize resource utilization, and adapt to changing environmental conditions, thereby contributing to their long-term success and the sustainability of global agriculture.

The SRS document outlines the functional and non-functional requirements necessary to realize the vision of the online agricultural platform. It serves as a roadmap for stakeholders, developers, agricultural experts, and end-users involved in the development, implementation, and utilization of the platform. By adhering to the requirements outlined in this document, the platform can effectively meet the needs of its intended users and fulfill its mission of revolutionizing agricultural practices for the betterment of farmers and the agricultural industry as a whole.

3. Problems in current situation

Limited Access to Information

Many farmers in Sri Lanka face challenges in accessing comprehensive agricultural information and resources. This includes guidance on modern farming techniques, crop varieties, pest and disease management strategies, and market trends.

Lack of Awareness of Best Practices

There is often a lack of awareness among farmers about modern and sustainable agricultural practices. This results in suboptimal farming methods, lower yields, and reduced profitability.

Climate Change Impact

Sri Lanka's agriculture sector is vulnerable to the impacts of climate change, including irregular rainfall patterns, droughts, floods, and increased pest infestations. Farmers need access to resources and information on climate-smart agricultural practices to adapt to these challenges.

Limited Market Access

Many smallholder farmers struggle to access markets for their produce, leading to price volatility and income instability. Improved access to market information and value chain support can help farmers identify market opportunities and improve their bargaining power.

Inefficient Use of Inputs

Inefficient use of fertilizers, pesticides, and water can lead to environmental degradation, soil erosion, and water pollution. Farmers need guidance on sustainable input management practices to minimize negative impacts on the environment while maximizing productivity.

Limited Extension Services

Extension services in rural areas are often inadequate, with a shortage of agricultural experts and advisors. An online platform could supplement existing extension services by providing virtual access to expert advice and support.

Limited Digital Literacy

While there is increasing internet penetration in Sri Lanka, many farmers, especially in rural areas, may lack digital literacy skills to effectively utilize online resources. The platform should be designed with user-friendly interfaces and provide support for users with varying levels of digital literacy.

4. Advantages in current system

Rich Agricultural Diversity

Sri Lanka boasts a diverse range of agricultural products, including rice, tea, spices, fruits, and vegetables. This diversity provides opportunities for farmers to cultivate a variety of crops and cater to diverse market demands.

Strong Traditional Farming Practices

Sri Lanka has a rich heritage of traditional farming practices that have been passed down through generations. These practices often emphasize sustainability, organic farming methods, and natural resource conservation, providing a foundation for promoting environmentally friendly agriculture.

Government Support for Agriculture

The Sri Lankan government has implemented various policies and programs to support the agriculture sector, including subsidies for inputs, infrastructure development, and extension services. Leveraging government support can enhance the effectiveness and reach of the proposed online platform.

Emerging Technologies Adoption

While digital literacy levels vary, there is increasing adoption of digital technologies, including mobile phones and internet access, especially among younger generations and in urban areas.

This presents an opportunity to leverage digital platforms for disseminating agricultural information and engaging with farmers.

Strong Community Networks

Rural communities in Sri Lanka often have strong social networks and cooperative structures that facilitate knowledge sharing and collaboration among farmers. The online platform could harness these community networks to promote peer learning, mentorship, and collective action for agricultural development.

5. Intended Audience

Farmers

The primary audience, who seek guidance, information, and support for various aspects of farming such as crop management, pest control, soil health, irrigation techniques, and post-harvest practices.

Agricultural Workers

Including farm laborers, managers, and other personnel involved in day-to-day operations on farms.

Agricultural Entrepreneurs

Individuals interested in starting or expanding agricultural businesses, who may require assistance with business planning, market analysis, and access to resources such as loans and grants.

Agribusinesses

Including suppliers of agricultural inputs (seeds, fertilizers, pesticides, etc.), buyers of agricultural products (processors, wholesalers, retailers), and service providers (equipment manufacturers, consultants, etc.).

Government Agencies

Such as agricultural extension services, departments of agriculture, and rural development agencies, which collaborate with Agricultural Service Centers to disseminate information, implement programs, and provide support to farmers.

Educational Institutions

Including agricultural colleges, universities, and vocational training centers, which may partner with Agricultural Service Centers to conduct research, provide training, and offer educational programs.

Non-Governmental Organizations (NGOs)

Involved in agricultural development, sustainable farming practices, and rural livelihood improvement, which often collaborate with Agricultural Service Centers to implement projects and provide support to marginalized farming communities.

Research Institutions

Engaged in agricultural research and innovation, which may collaborate with Agricultural Service Centers to transfer technology, conduct field trials, and disseminate research findings to farmers and stakeholders.

Community Organizations

Such as farmer cooperatives, self-help groups, and grassroots organizations, which may seek support from Agricultural Service Centers for capacity building, networking, and accessing resources.

Consumers

While not directly served by Agricultural Service Centers, consumers indirectly benefit from their activities through improved agricultural practices, increased food availability, and enhanced food safety and quality.

6. Project Scope

The online platform aimed at disseminating agricultural information and promoting farming best practices will encompass a wide range of features and functionalities to meet the diverse needs of farmers and agricultural stakeholders.

7. Functional Requirements

7.1 User Management

User registration functionality allows farmers and other users to create personalized accounts on the platform, granting them access to its features. Through the registration process, users can provide necessary information and set up login credentials for future access.

Authentication ensures the security of user accounts by implementing secure mechanisms to verify users' identities during login. By requiring authentication, the platform can prevent unauthorized access and protect users' sensitive information from potential security threats.

7.2 Agricultural Information Repository

The platform's goal is to disseminate agricultural information effectively to users, encompassing a variety of features to enhance accessibility and usability

Comprehensive Database

The platform will host a vast repository of agricultural information covering various crops, livestock, and farming techniques.

Categorization and Tagging

Information will be organized into categories and tagged with relevant keywords to facilitate easy navigation and searchability.

Multimedia Content

Information will be presented in diverse formats, including text articles, images, videos, and interactive tools to cater to different learning preferences.

7.3 Farming Best Practices

Guidance and Recommendations

A dedicated section of the platform will offer guidance on farming best practices, including crop cultivation techniques, pest and disease management strategies, soil health improvement, and irrigation methods.

Expert Insights

Expert agronomists and agricultural researchers will contribute their insights and recommendations to ensure the accuracy and relevance of the content.

7.4 Climate Resilience and Sustainable Agriculture

Resilience Resources

Resources for building climate resilience in agriculture will be provided, offering information on climate-smart farming practices, drought-resistant crops, water conservation methods, and weather forecasting tools.

Sustainability Guidelines

The platform will emphasize sustainable agriculture principles, promoting practices that minimize environmental impact, conserve natural resources, and promote biodiversity.

7.5 Fertilizer and Pesticide Guidance

Recommendation System

A recommendation system for fertilizers and pesticides will be implemented, offering tailored advice based on crop type, soil conditions, pest prevalence, and environmental factors.

Market Demand Analysis

Insights into market demand for agricultural products will be provided, guiding farmers in making informed decisions about crop selection and production planning.

7.6 Market Demand Analysis Tools

Market insights

Tools for analyzing market demand for agricultural products will be available, providing farmers with insights into pricing trends, consumer preferences, and market opportunities.

Data visualization

Market demand data will be presented in interactive charts and graphs to facilitate data interpretation and decision-making.

7.7 User Interaction and Engagement

Interactive Features

Interactive features such as discussion forums, live Q&A sessions, and community groups will facilitate user interaction and knowledge sharing among farmers and experts.

Feedback Mechanisms

Feedback mechanisms will be integrated to allow users to provide input on the platform's content, usability, and functionality, ensuring continuous improvement and relevance.

7.8 Mobile Compatibility

Mobile-Friendly Design

The platform will be designed with mobile responsiveness in mind, ensuring that users can access and interact with its features seamlessly on smartphones and tablets.

Native Mobile Apps

Consideration will be given to developing native mobile applications for iOS and Android platforms to provide an optimized user experience on mobile devices.

8. Non-functional Requirements

8.1 Performance

The platform should seamlessly accommodate a substantial volume of concurrent users without experiencing notable performance deterioration, while also ensuring that response times for search queries and data retrieval remain minimal.

8.2 Security

User data should be encrypted and securely stored to prevent unauthorized access, and all communications should utilize secure connections (HTTPS) to ensure the confidentiality and integrity of data transmitted over the platform.

8.3 Usability

The platform should feature an intuitive user interface, facilitating easy navigation for all users, coupled with the implementation of accessibility features to ensure usability for individuals with disabilities.

9. References

- WM Asanka Bandara

  Regional Agricultural Development Officer

  Agricultural Service Centre

  Pabahinna

- B Gunasiri

  Farmer regulator

  Agricultural Service Centre

  Rammala, Warapitiya

- Department of Agrarian development - https://www.agrariandept.gov.lk/web/index.php?lang=en

- Department of Agriculture Sri Lanka https://doa.gov.lk/

10. System Analysis & Design Introduction

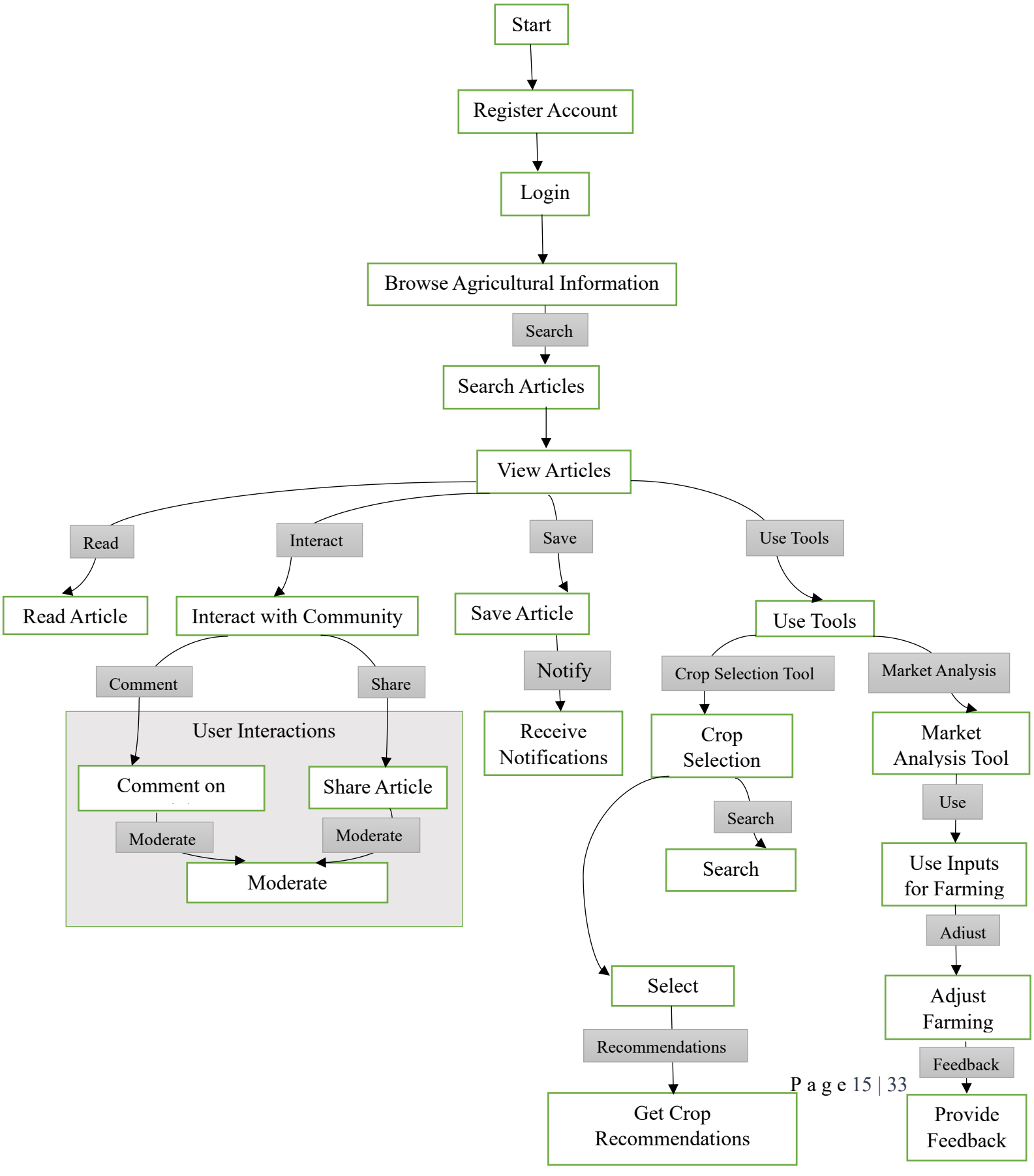
- This is System Analysis (SRS - V2), including the UML Diagram , Login Activity Diagram, Data Flow Diagrams and ER diagram.

- Studying these diagrams shows how the relationship between the customer base and the Agricultural Service Department flows through the system we are introducing.

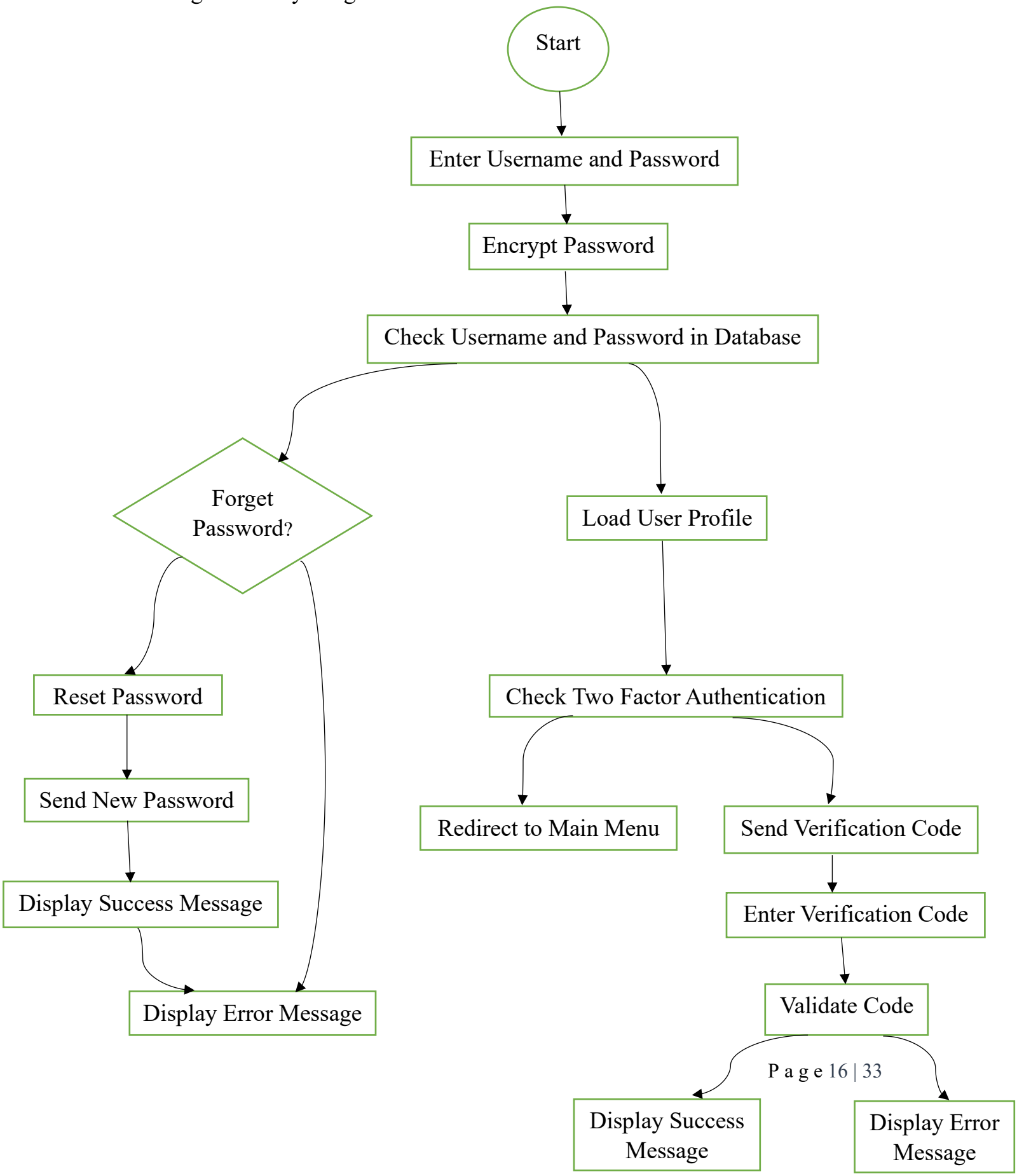
- To avail this service, customers must register through the FEDAS System.

- You can log into the system using the username and password provided by the FEDAS System and solve your problem from home.

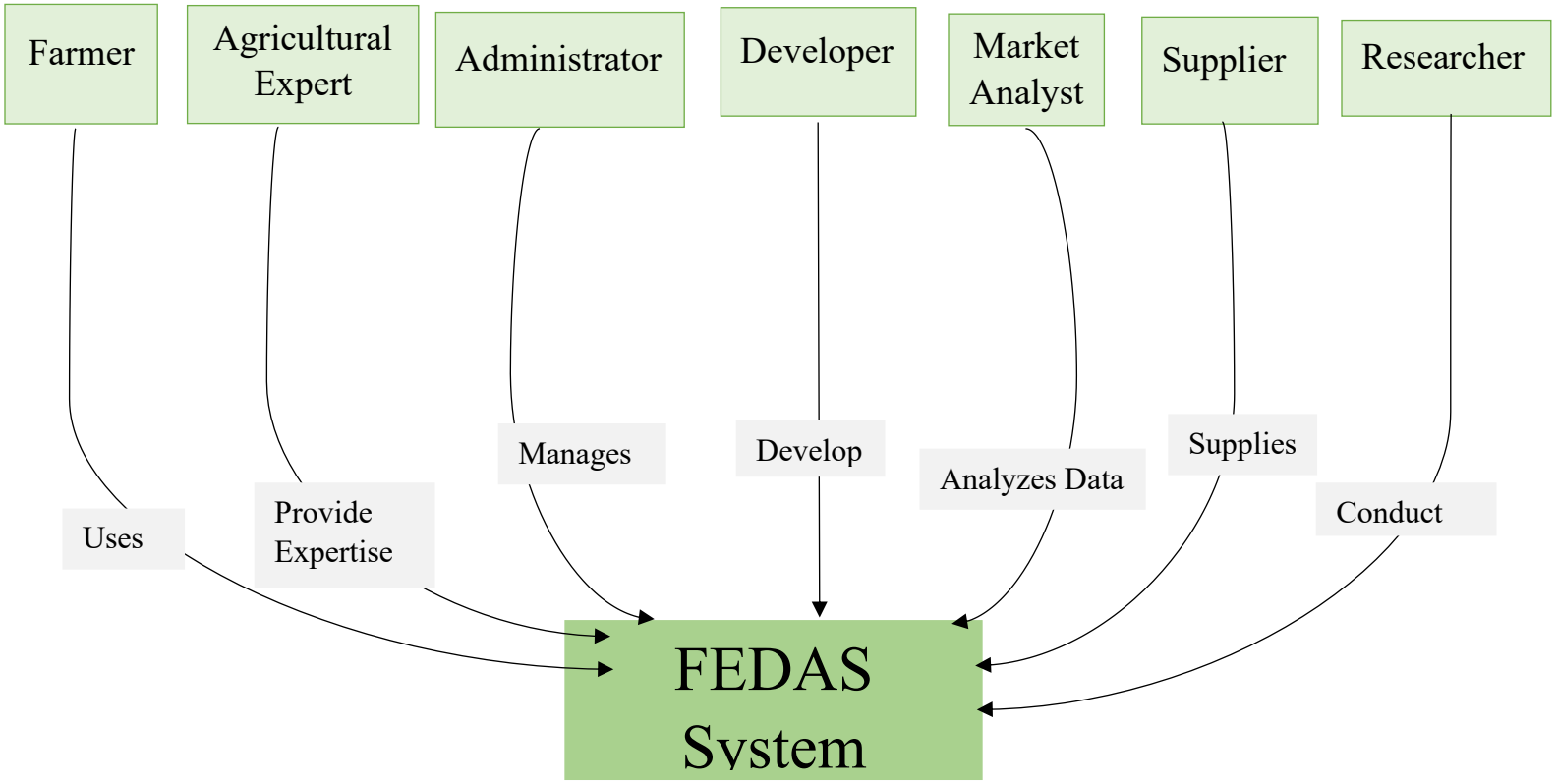
10.1. UML Diagram



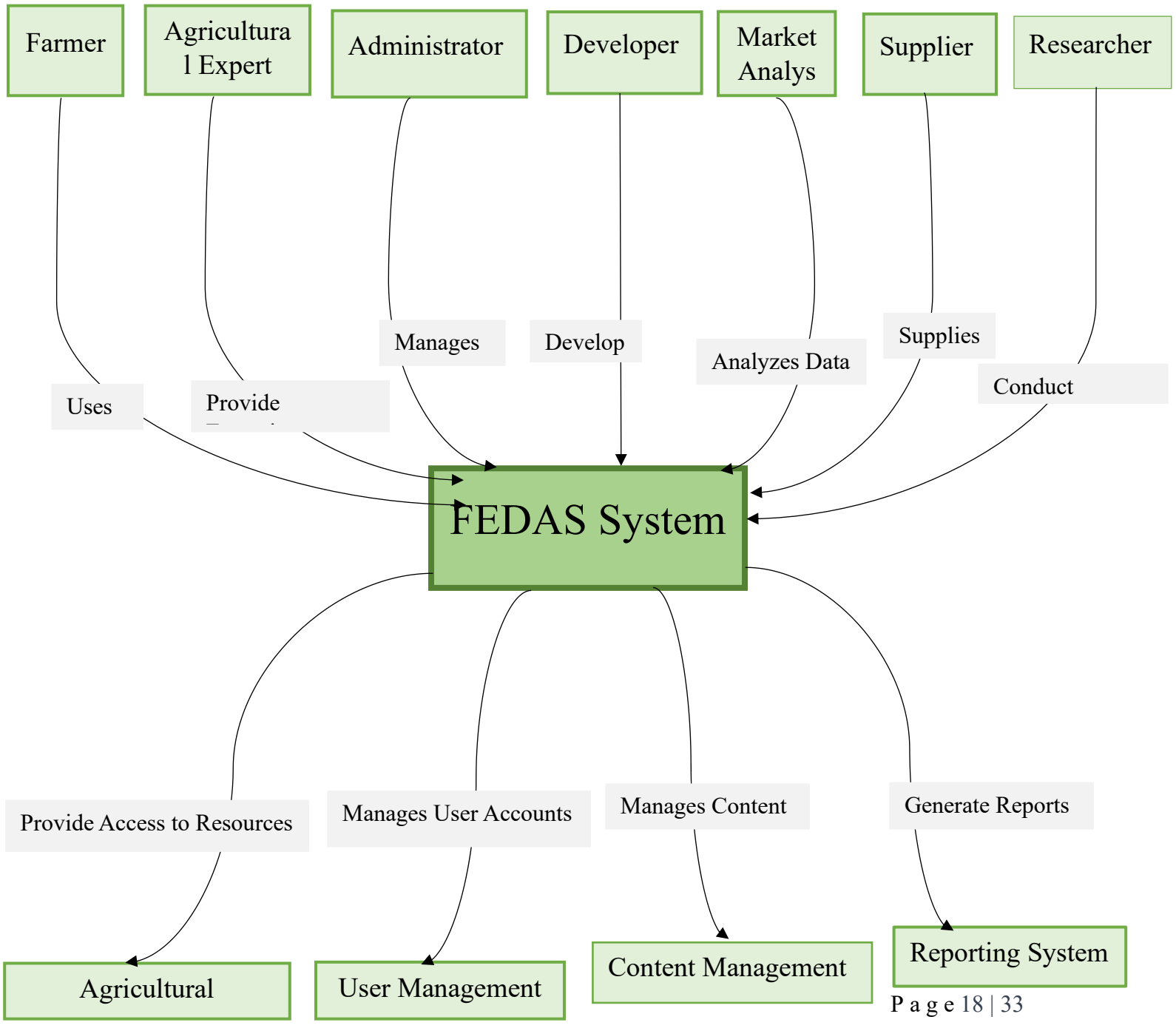
10.2. Login Activity Diagram



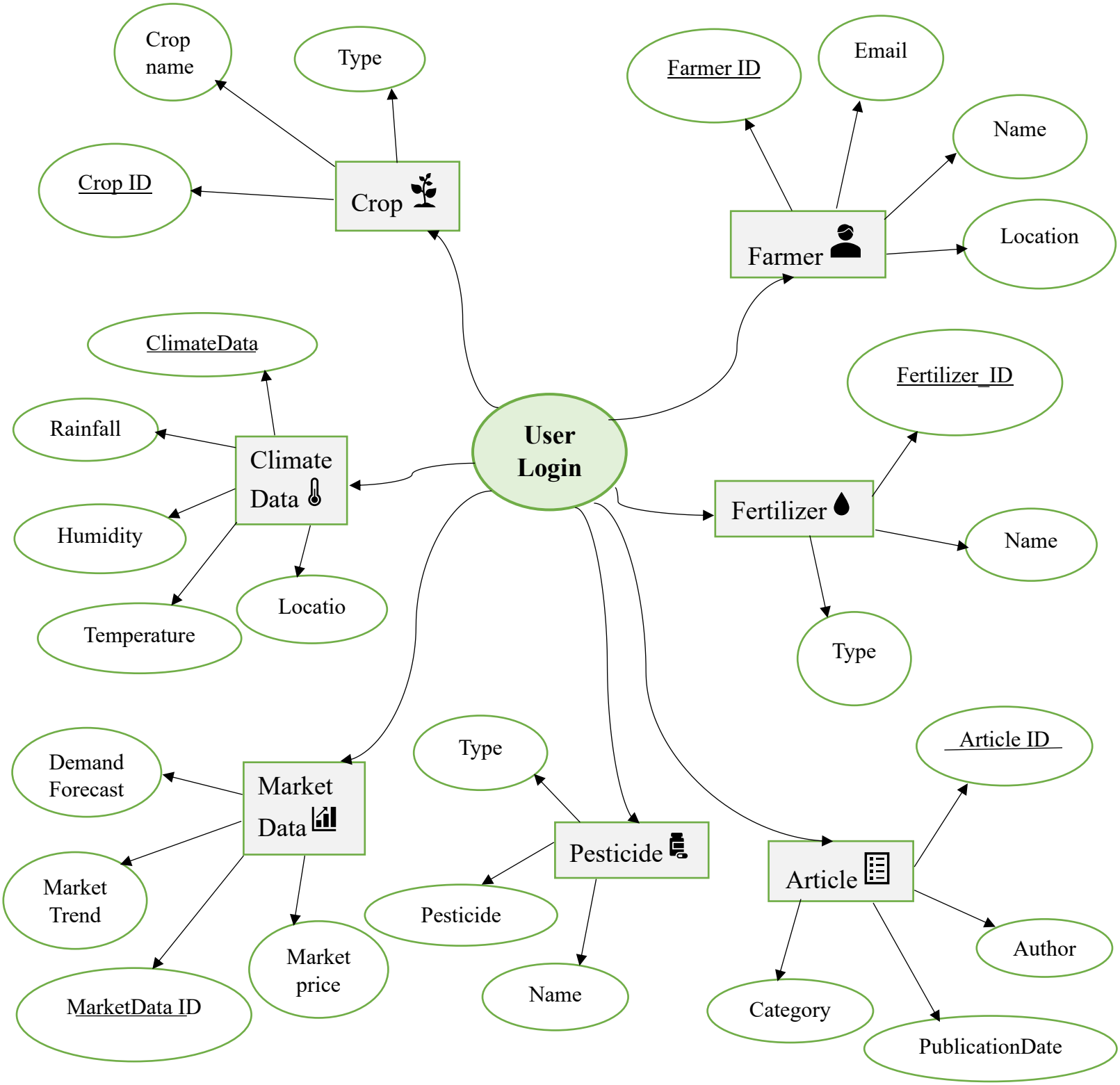
10.3. Zero Level Data Flow Diagram (DFD Level 0)



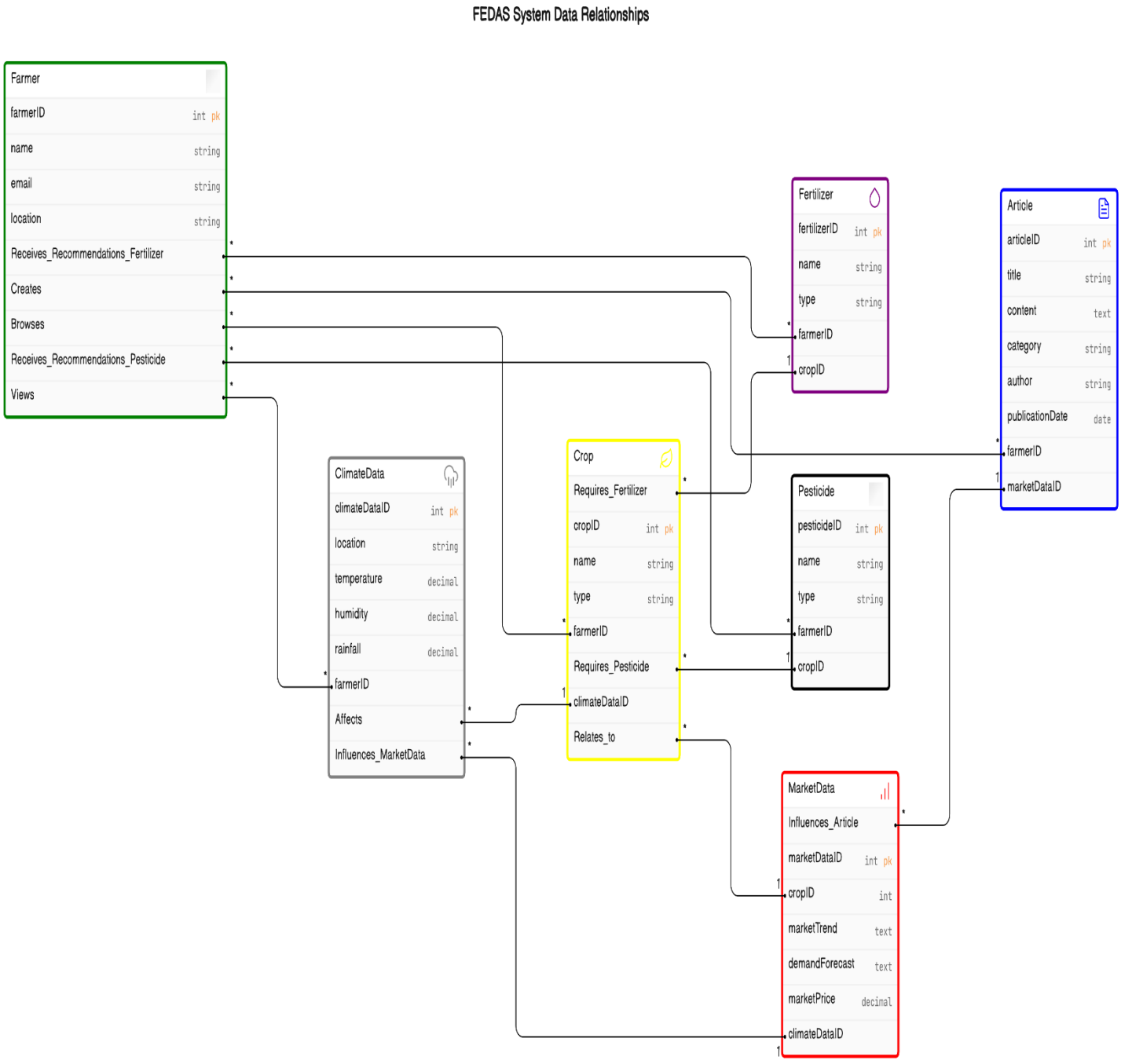
10.4. First Level Data Flow Diagram (DFD Level 1)



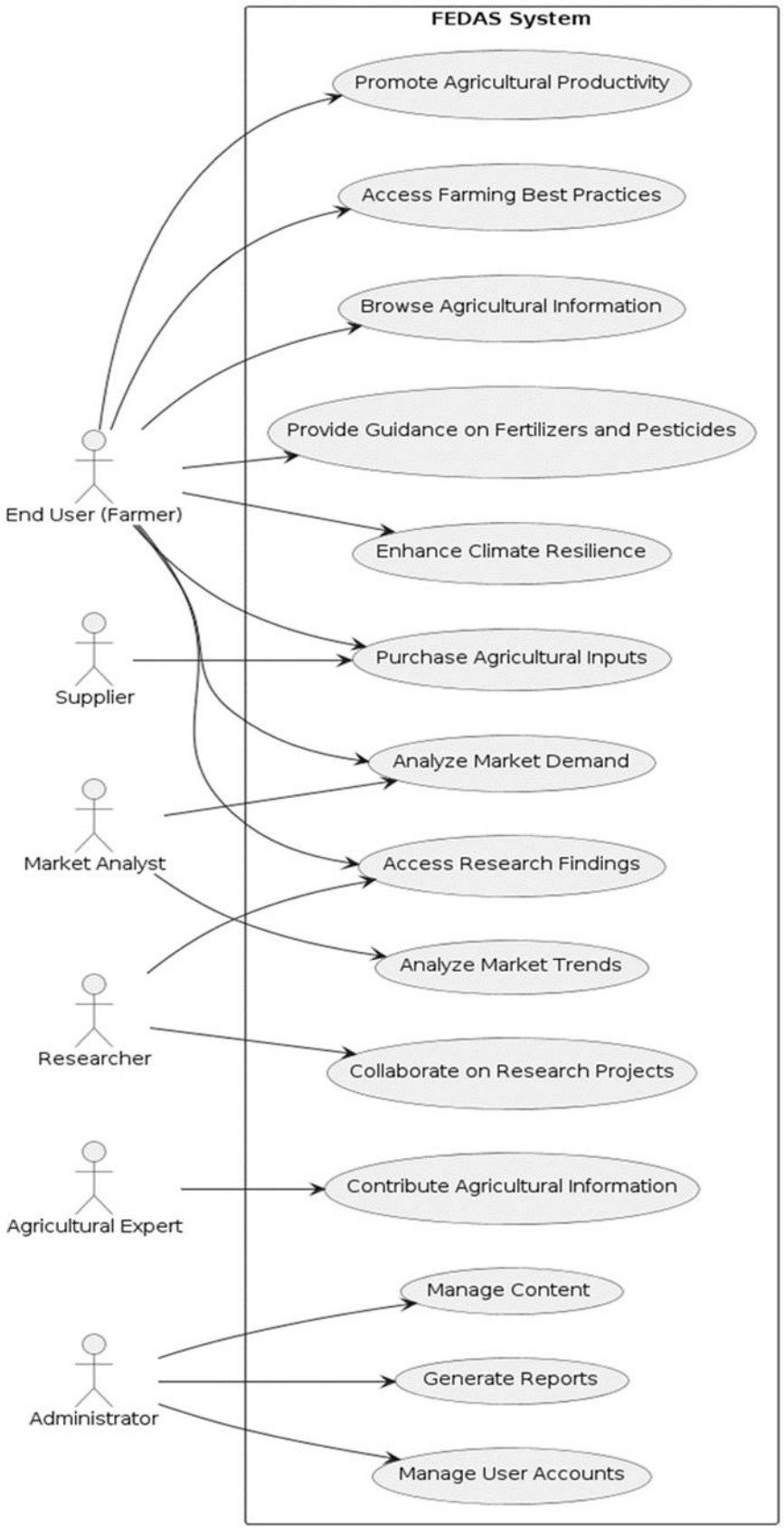
10.5. Entity Relationship Diagram (ER Diagram)



10.6. Data Flow Diagram

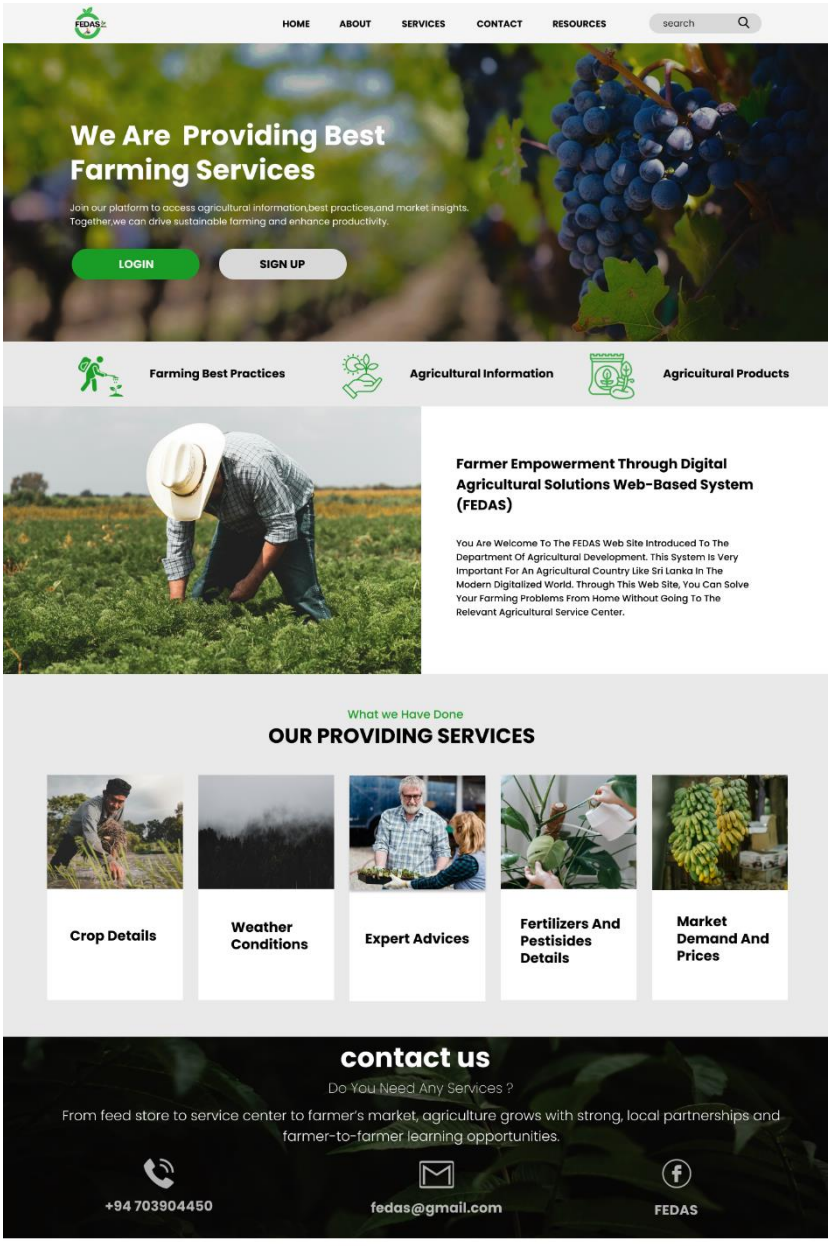


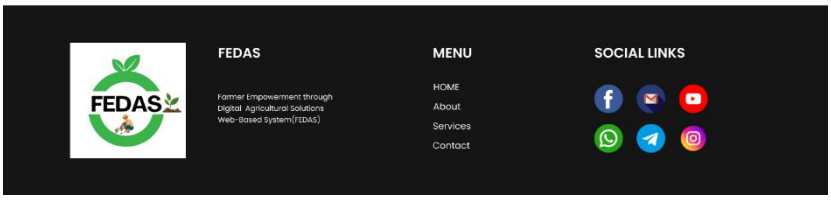
10.7. Use Case Diagram

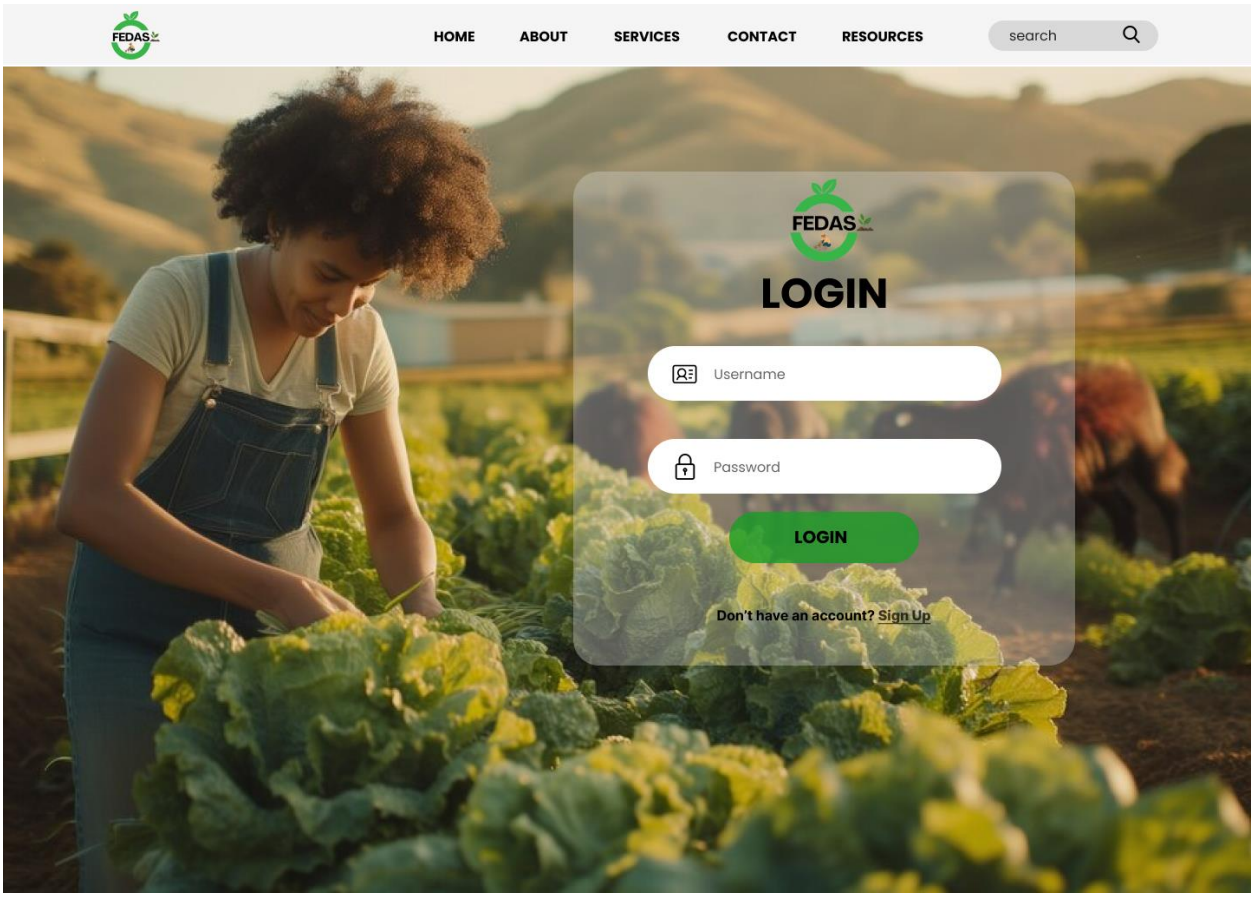


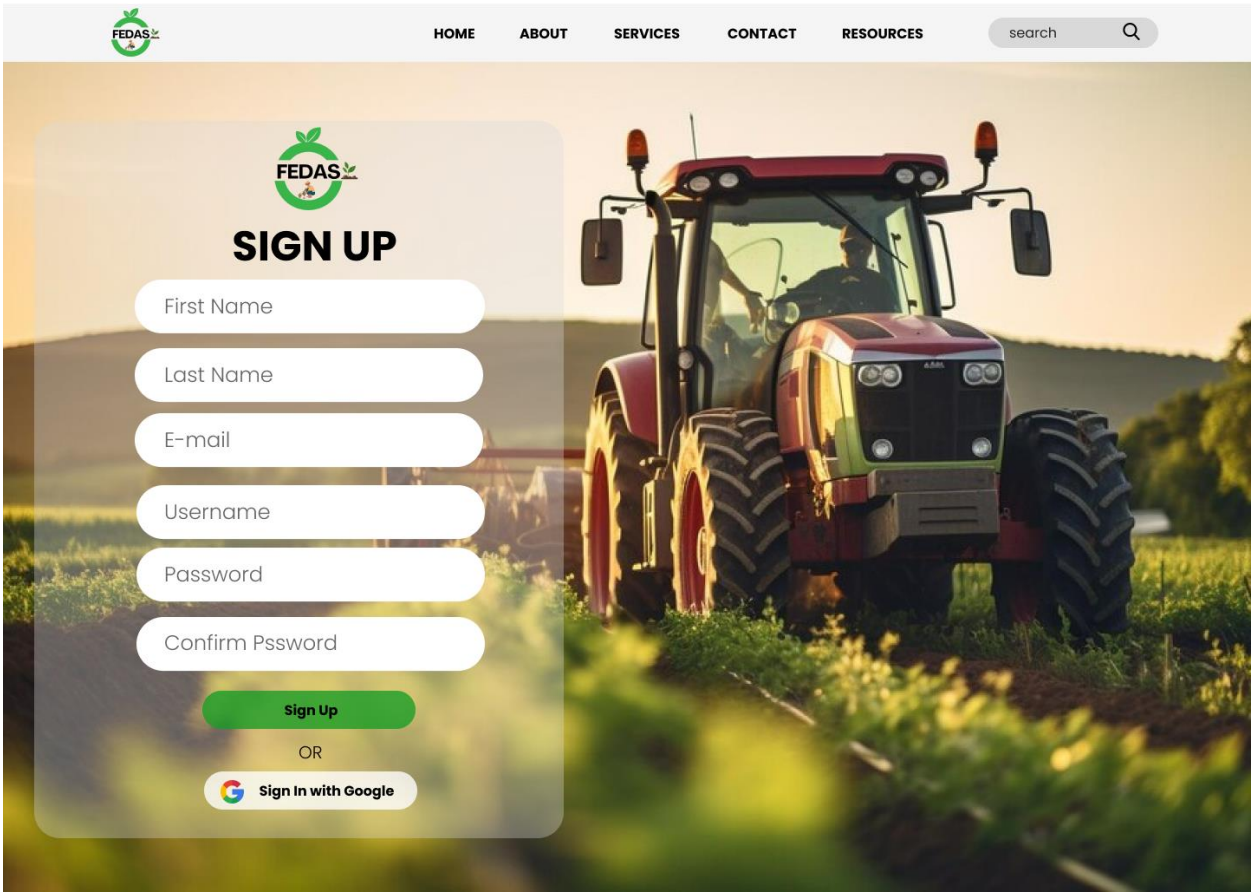
11. UI / UX DESIGN

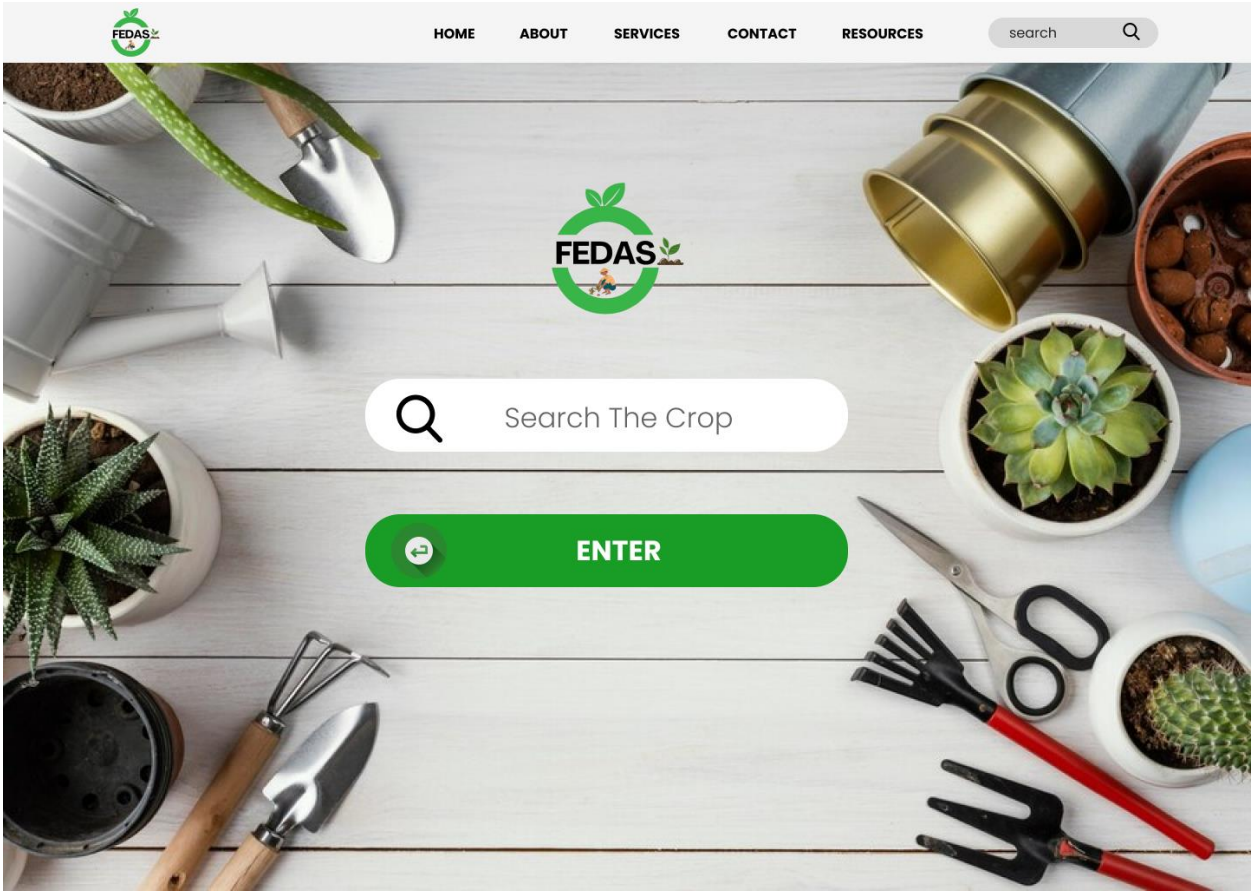
UI / UX (USER PAGES)

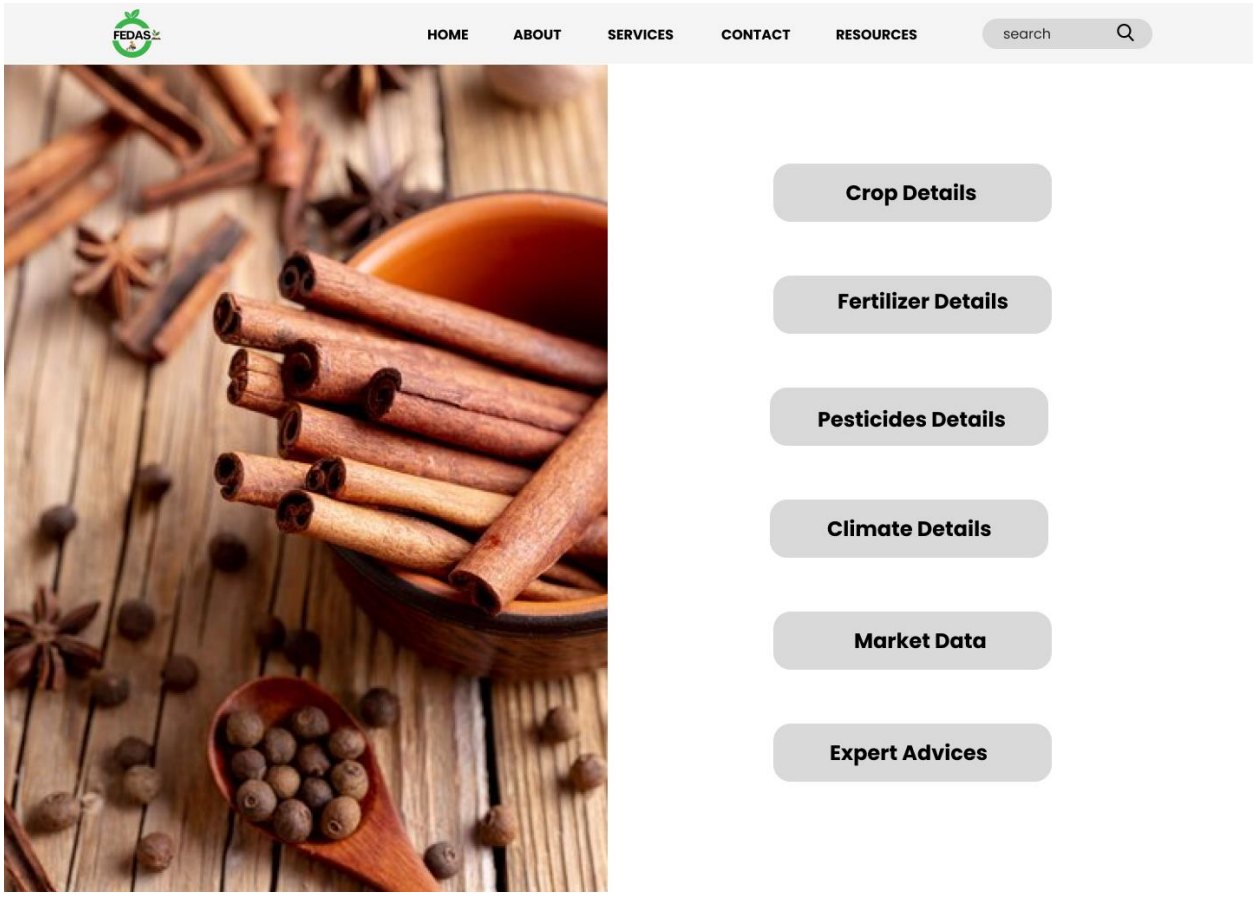


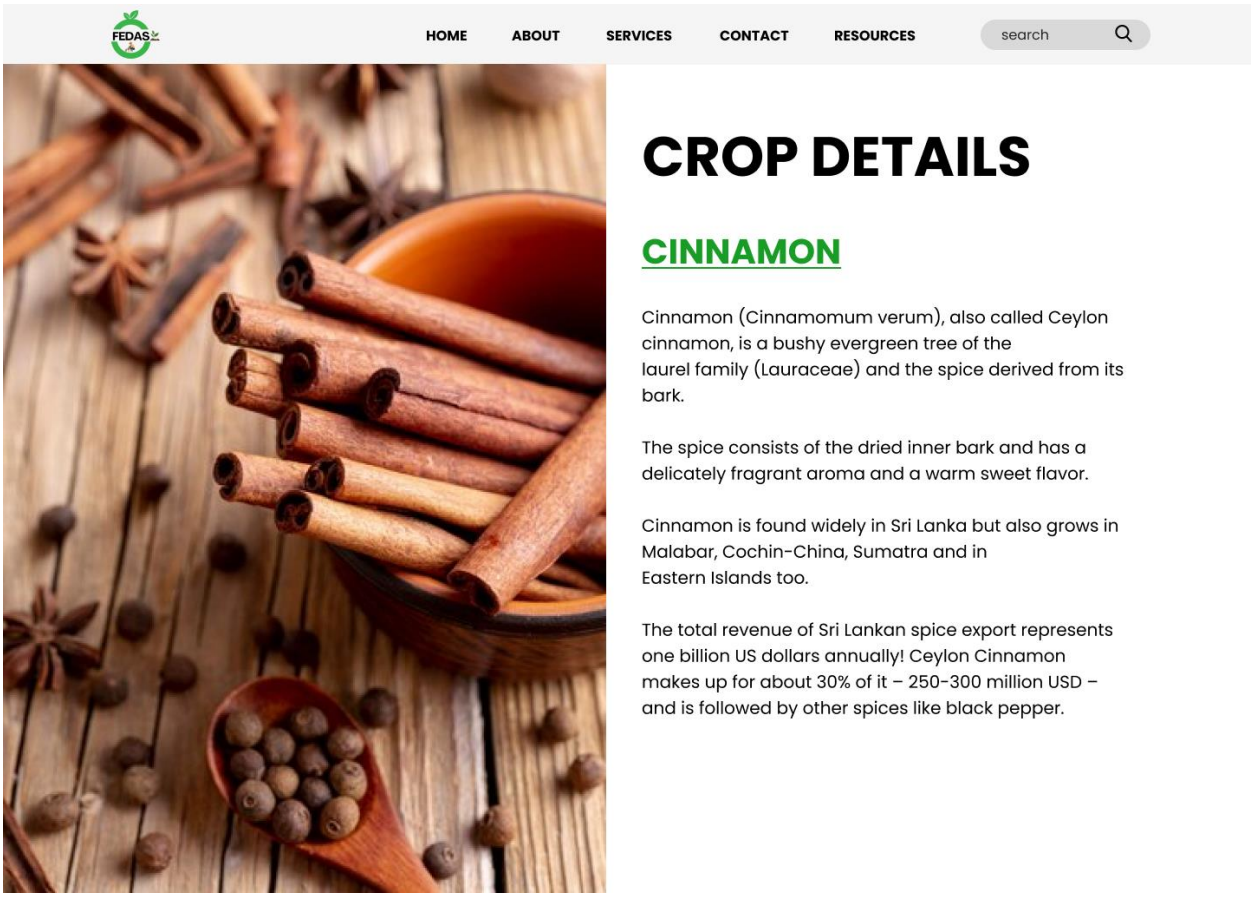


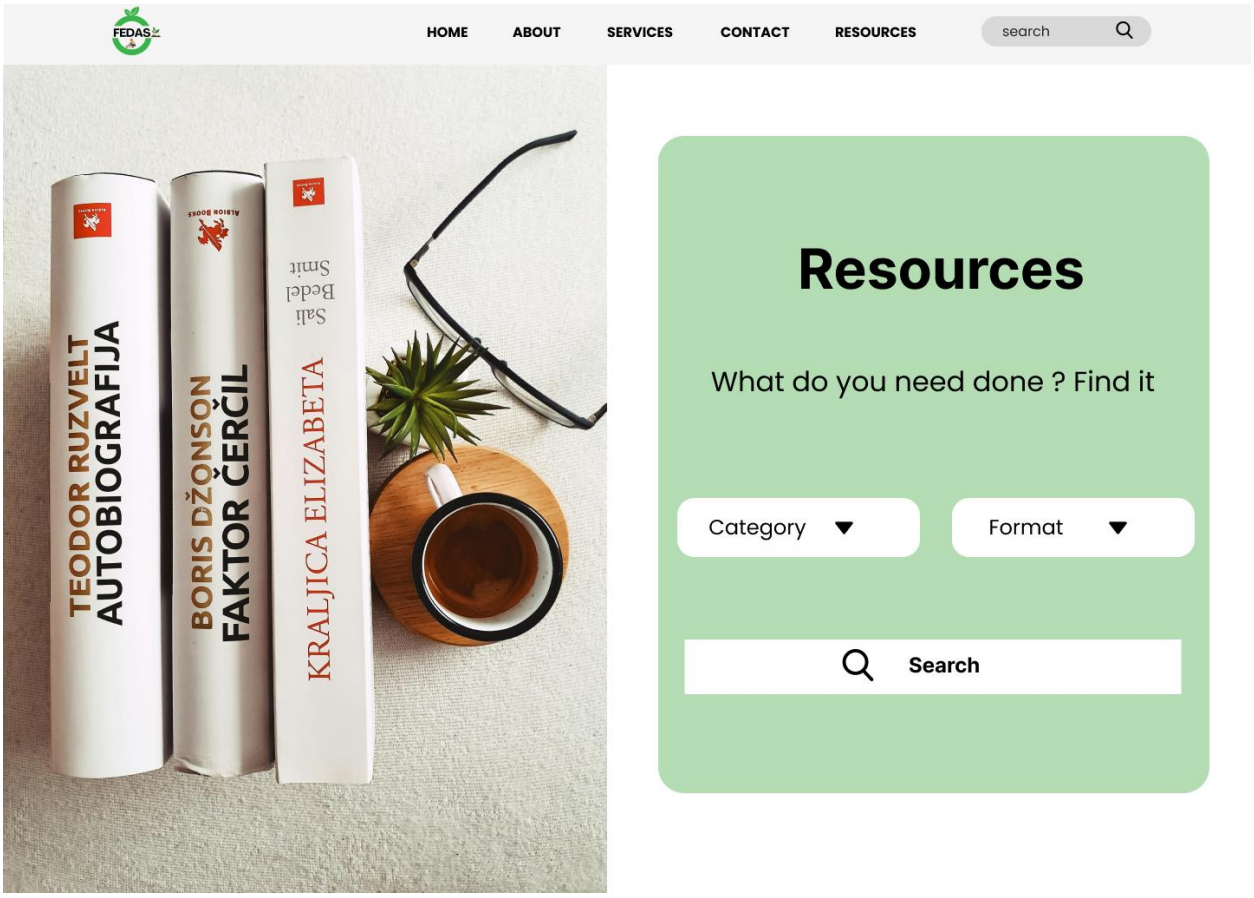

FEDAS
HOME
ABOUT
SERVICES
CONTACT
RESOURCES
search
FEDAS
LOGIN
Username
Password
LOGIN
Don't have an account? Sign Up

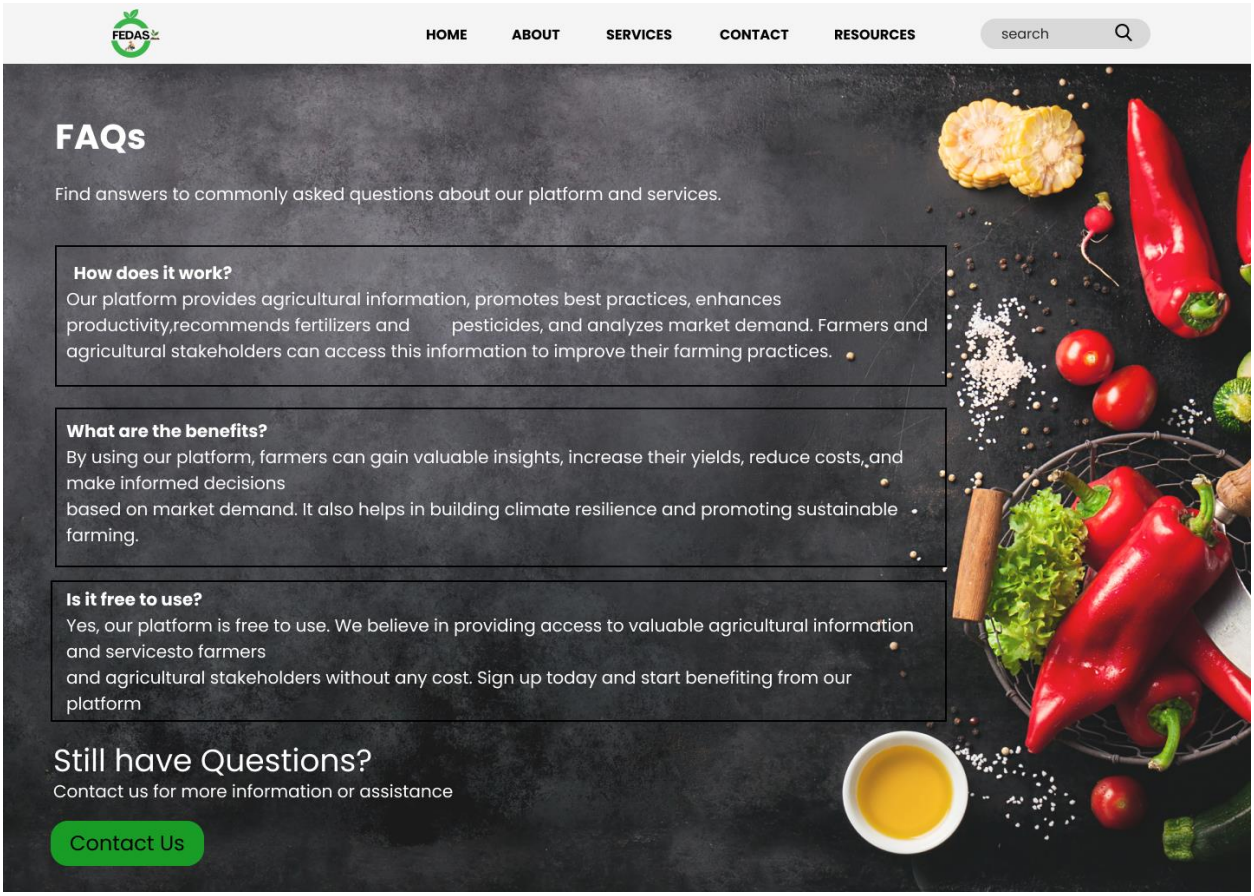

FEDAS
HOME
ABOUT
SERVICES
CONTACT
RESOURCES
search
FEDAS
SIGN UP
First Name
Last Name
E-mail
Username
Password
Confirm Pssword
Sign Up
OR
Sign In with Google


FEDAS
HOME
ABOUT
SERVICES
CONTACT
RESOURCES
search
FEDAS
Search The Crop
ENTER

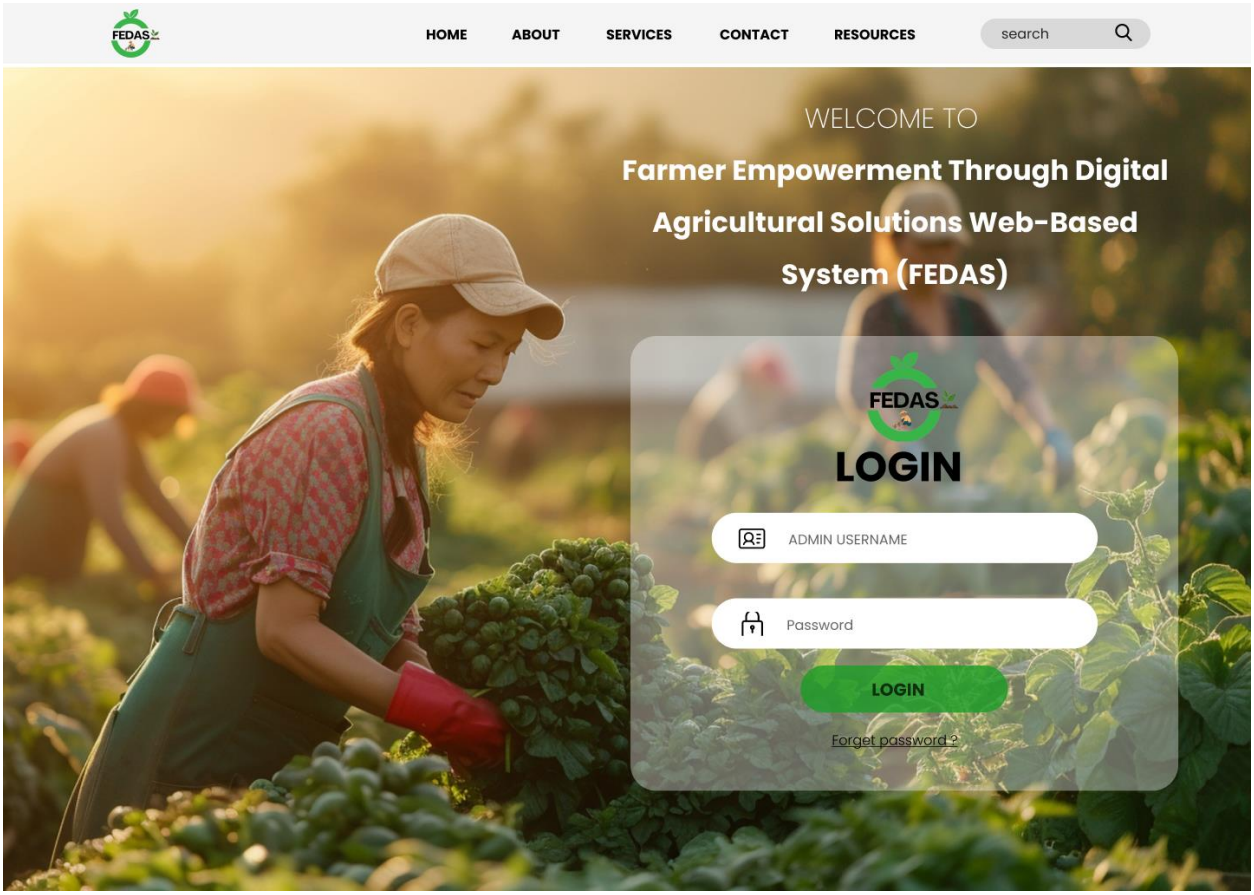

FEDAS
HOME
ABOUT
SERVICES
CONTACT
RESOURCES
search
Crop Details
Fertilizer Details
Pesticides Details
Climate Details
Market Data
Expert Advices

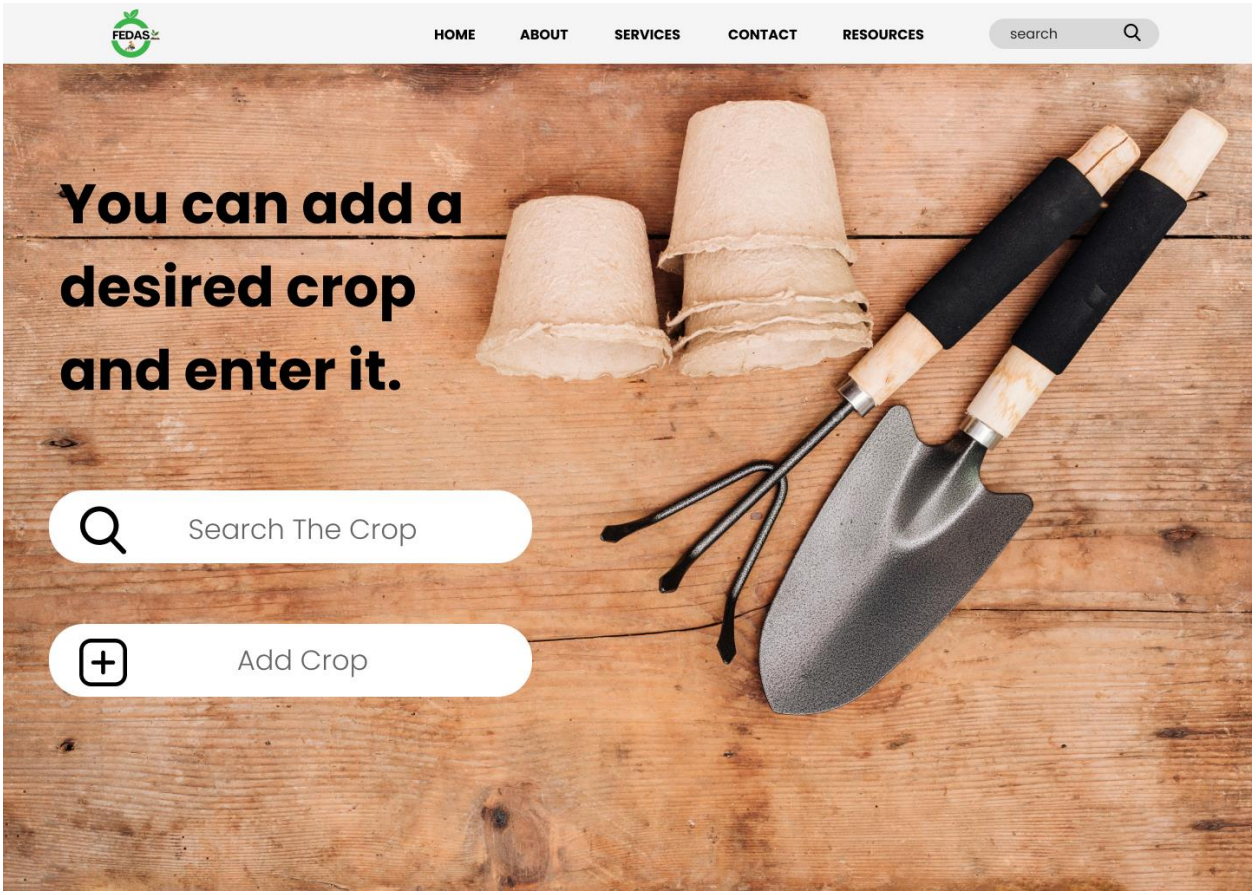

FEDAS
HOME
ABOUT
SERVICES
CONTACT
RESOURCES
search
CROP DETAILS
CINNAMON
Cinnamon (Cinnamomum verum), also called Ceylon cinnamon, is a bushy evergreen tree of the laurel family (Lauraceae) and the spice derived from its bark.
The spice consists of the dried inner bark and has a delicately fragrant aroma and a warm sweet flavor.
Cinnamon is found widely in Sri Lanka but also grows in Malabar, Cochin-China, Sumatra and in Eastern Islands too.
The total revenue of Sri Lankan spice export represents one billion US dollars annually! Ceylon Cinnamon makes up for about 30% of it – 250-300 million USD – and is followed by other spices like black pepper.

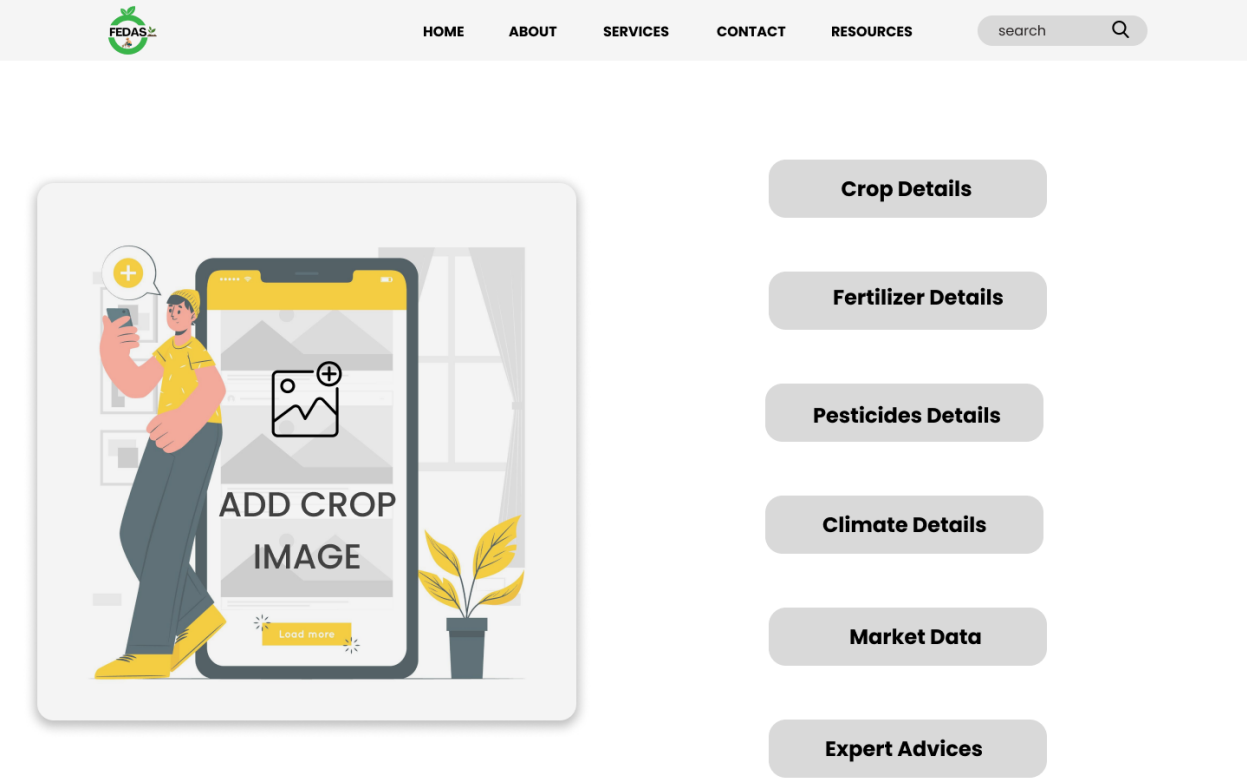

FEDAS
HOME
ABOUT
SERVICES
CONTACT
RESOURCES
search
TEODOR RUZVELT
AUTOBIOGRAFIJA
BORIS DŽONSON
FAKTOR ČERČIL
KRALJICA ELIZABETA
Sali Bedel Smit
Resources
What do you need done ? Find it
Category
Format
Search

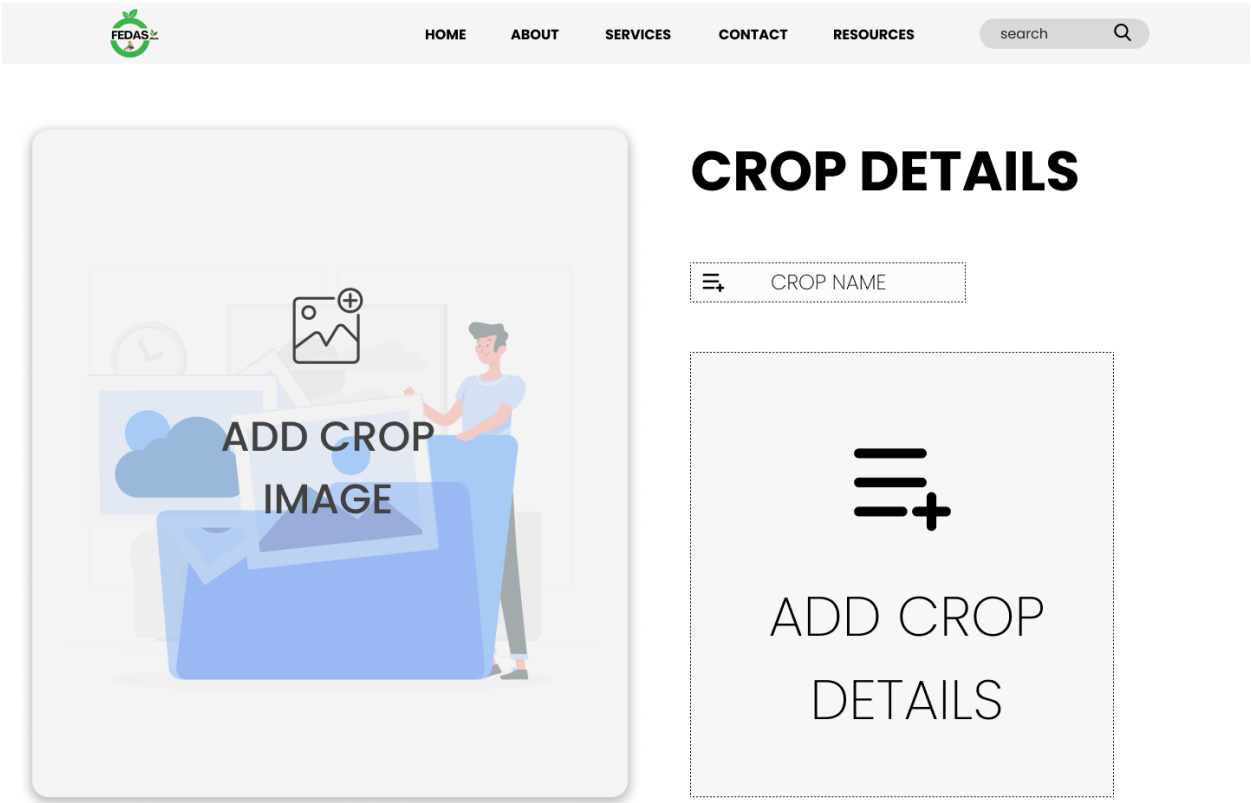

FEDAS
HOME
ABOUT
SERVICES
CONTACT
RESOURCES
search
FAQs
Find answers to commonly asked questions about our platform and services.
How does it work?
Our platform provides agricultural information, promotes best practices, enhances productivity,recommends fertilizers and pesticides, and analyzes market demand. Farmers and agricultural stakeholders can access this information to improve their farming practices.
What are the benefits?
By using our platform, farmers can gain valuable insights, increase their yields, reduce costs, and make informed decisions
based on market demand. It also helps in building climate resilience and promoting sustainable farming.
Is it free to use?
Yes, our platform is free to use. We believe in providing access to valuable agricultural information and servicesto farmers
and agricultural stakeholders without any cost. Sign up today and start benefiting from our platform
Still have Questions?
Contact us for more information or assistance
Contact Us

UI/UX (ADMIN PAGES)




FEDAS
HOME
ABOUT
SERVICES
CONTACT
RESOURCES
search
You can add a desired crop and enter it.
Search The Crop
Add Crop


FEDAS
HOME
ABOUT
SERVICES
CONTACT
RESOURCES
search
ADD CROP IMAGE
Load more
Crop Details
Fertilizer Details
Pesticides Details
Climate Details
Market Data
Expert Advices



FIGMA LINK :-
https://www.figma.com/file/bF4wrtr7VvAZK2JNdPvbXS/Untitled?type=design&node-id=0%3A1&mode=design&t=M9phOrhRCFot2qLi-1