Project report
on

Crop Prediction

A Dissertation submitted in partial fulfillment of the academic requirements for the award of the degree.

Bachelor of Technology
In
Computer Science & Engineering

Submitted by

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Under the esteemed guidance of
Mr. B. Sivaiah
(Associate Professor)

Department of Computer Science and Engineering

CMR College of Engineering & Technology

(An Autonomous Institution under UGC & JNTUH, Approved by AICTE, Permanently Affiliated to JNTUH, Accredited by NBA.)
KANDLAKOYA, MEDCHAL ROAD, HYDERABAD - 501401.

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CMR COLLEGE OF ENGINEERING & TECHNOLOGY

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DEPARTMENT OF COMPUTER SCIENCE AND ENGINEERING

CERTIFICATE

This is to certify that the Mini Project-1 report entitled **"Crop Prediction"** being submitted by A.Sowmya(19H51A0501), B.Greeshma Reddy(19H51A0504), Shabana Khan(19H51A0524) in partial fulfillment for the award of **Bachelor of Technology in Computer Science and Engineering** is a record of bonafide work carried out his/her under my guidance and supervision.

The results embody in this project report have not been submitted to any other University or Institute for the award of any Degree.

Mr. B. Sivaiah
Associate Professor
Dept. of CSE

Dr. S. Siva Skanda
Associate Professor and HOD
Dept. of CSE

ACKNOWLEDGEMENT

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ABSTRACT

Agriculture is the science and art of producing crops and livestock for economic purpose. Farmer is the one who will raise crops to market for consumption, medical use, animal food production and the growing herbal industry. Crop selection plays a vital role in crop production. Usually crop cultivation was undertaken on the basis of farmers hands-on expertise. Farmers are unable to choose the right crop based on soil, season and water level availability, and the process of manually predicting the choice of the right crop of land has, more often than not, resulted in failure. Accurate crop selection results in increased crop production. So, the project's aim is to develop an platform i.e. website where farmers can select a suitable crop for his land in an effortless manner.

CHAPTER 1
INTRODUCTION

In agriculture, crop prediction is the key factor. Usually, farmers select their crop based on their knowledge or other farmers advice, which may result in failure of suitable crop selection for their land. So, in order to help farmers in crop prediction, we as a team came up with effortless crop selection website where farmers can select the appropriate crop for their land.

1.1 AIM

Prediction takes time and selecting the most suitable crop/s is a complex task in agriculture. Manual prediction has largely failed, owing to complex task in agriculture. Manual prediction has largely failed, owing to climatic changes and environmental factors that affect crop cultivation. Accurate predictions of suitable crops for cultivation improves production levels. Our aim is to develop a website which makes easy to select the crops based on the key factors such as pH, soil type, season and water level availability.

1.2 SCOPE

Our project covers two basic operations:

- Farmer can know which crop will be suitable to grow in his land based on pH of his land, soil type, water level (low, medium, high) availability in his area and season (kharif, rabi, zaid).
- Farmer can know the requirements such pH, soil type, water level, season needed to grow any particular crop.

Since farmers are illiterate website includes Telugu, Hindi, English languages and also helpline services are also included.

1.2.2 LIMITATIONS

The proposed website contains only three languages such as Telugu, Hindi, English.

CHAPTER 2
BACKGROUND WORK

2.1 INTRODUCTION

This section discusses findings and observations done by some research works on web-based Crop Predict (Effortless Crop Selection for Farmers).

2.2 EXISTING SOLUTIONS

- ***BharatAgri: Smart Kisaan App***

  It is one of the apps which helps the farmers to get the complete information related to any crop under the cultivation methods section.

  GAPS:

  - In order to access all features of app farmers have to pay amount.
  - There is no option in app where farmers can select the crop by some criteria (pH, season, water, soil type).

  LINK: https://www.bharatagri.com/

Fig 1: BharatAgri app

- ***FOSHOLI: Best Agricultural App***

  The app, named Fosholi which means productivity, provides information on growth suitability, the stages of growth, pest and disease risks and lastly profit & loss of (rice) plantations, Weather Forecast.

  GAPS:

  - This app is available only in Bengali (Bangla) language. So, the people who don't understand Bengali language can't use this app.
  - It doesn't mention any information regarding which crop will be suitable to grow based on some criteria such as pH, soil type, water level, season.

  LINK:

  https://play.google.com/store/apps/details?id=com.aci.idss&hl=en_IN&gl=US

Fig 2. Fosholi App

- ***Vyavasayam Telugu Farmers App***

  Vyavasayam app provides information on "how to grow Crops" in Telugu.

  GAPS:

  - There is no option to select a language, the app opens with the Telugu language by default.
  - The farmers can't choose the crops based on some criteria such as pH, season, water, soil type.
  - No customer services are available.

  LINK:

  https://play.google.com/store/apps/details?id=com.saiuniversalbookstore.vyavasayam&hl=en_IN&gl=US

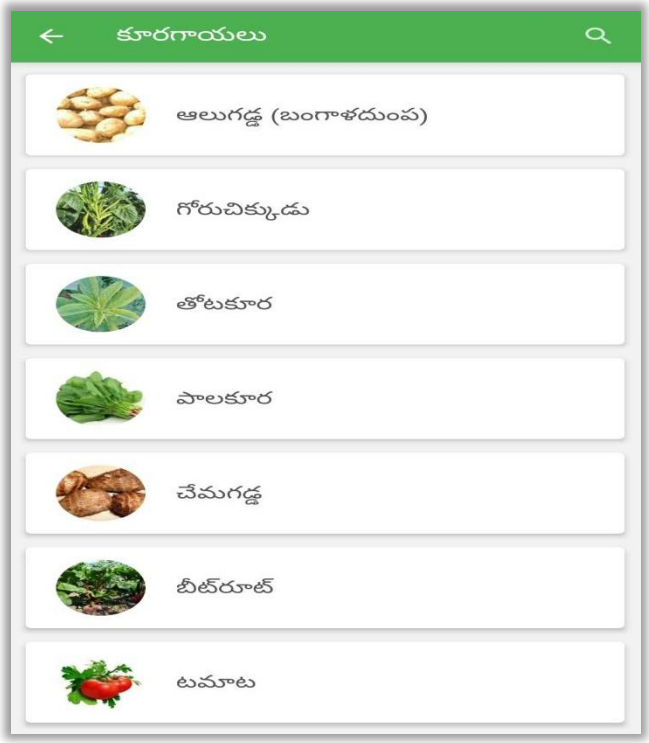

Fig 3: Vyavasayam app

CHAPTER 3
PROPOSED SYSTEM

3.1 INTRODUCTION

This section presents the research methodology used in the study, the research design, and the data collection process.

3.2 SYSTEM DESIGN

The main goal of proposed system is to optimize the crop selection process. Before starting the process of cultivation, the farmer has to choose which crop will be more suitable for his land (or) if a farmer wants to grow a particular crop in his land, the first thing is he has to check whether he has all the requirements for growing that crop or not. In order to make the crop selection process easy, we came up with an idea to develop a website for farmers. By using this farmer can choose the crop by two methods.

One method is, farmers can enter few details regarding their land like type of soil, pH of the soil, water level and the type of season. By entering these details, the crops which can be grown in the mentioned criteria will be displayed.

The second method is, if the farmer enters the crop name, the conditions required for cultivating it will be displayed and accordingly the farmers can check whether he can meet those conditions or not.

By these two methods a farmer can select the crop for cultivating it in his land. We are even providing helpline numbers so that they can directly call to the numbers and get the required information from them. Review section is provided so that we will be able to understand how the website is useful for the users and in future what changes we can make to that. Website is available in three languages i.e. Telugu, Hindi, English.

Fig 4. Model

The above figure illustrated how the proposed model works.

3.3 REQUIREMENT ANALYSIS

3.3.1 Hardware Requirements

- Desktop/Laptop
- Internet

3.3.2 Software Requirements

- *Sublime Text*

  Sublime Text is a commercial source code editor. It natively supports many programming languages and markup languages.

Fig 5. Sublime Text

- *XAMPP*

  XAMPP is an abbreviation for cross-platform, Apache, MySQL, PHP and Perl, and it allows you to build WordPress site offline, on a local web server on your computer.

Fig 6. XAMPP

- *Front End languages*
  - *HTML*

    HTML (HyperText Markup Language) is the most basic building block of the Web. It defines the meaning and structure of web content.
  - *CSS*

    Cascading Style Sheets, fondly referred to as CSS, is a simple design language intended to simplify the process of making web pages presentable.
  - *JavaScript*

    JavaScript is a text-based programming language used both on the client-side and server-side that allows you to make web pages interactive.
- *Back End languages*
  - *PHP*

    The PHP Hypertext Preprocessor (PHP) is a programming language that allows web developers to create dynamic content that interacts with databases.

- *MySQL*

  MySQL is a relational database management system based on SQL – Structured Query Language. The most common use for mySQL however, is for the purpose of a web database.

3.4 ADVANTAGES

- Website is available in three different languages i.e. Telugu, Hindi, English.
- Simple and efficient user interface.
- Only admin can store the data into database i.e. the model ensures data security.
- Helpline services are included.
- Since most of the farmers are illiterate and they can't type, so in order to avoid typing dropdowns are provided from which they can select their appropriate option.

CHAPTER 4
DESIGNING

4.1 PRELIMINARY DESIGN

Tools, which assist in preliminary design process, are UML Diagrams and ER diagrams.

4.1.1 UML Diagrams

- *Activity Diagram:*

  The Activity Diagram shows the working of Crop Predict (Effortless Crop Selection for Farmers) website.

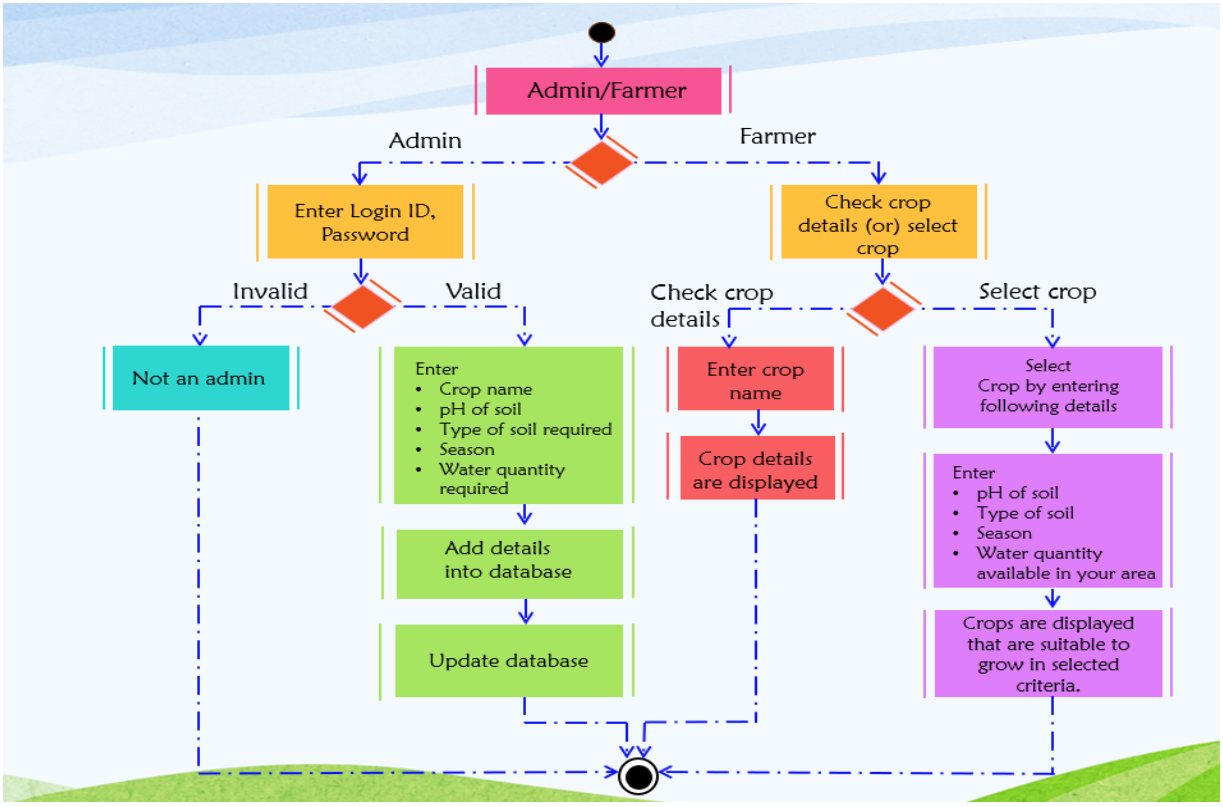

Fig 7. Activity diagram for the system

The system (website) consists of two members i.e. Admin and Farmer.

Admin: The job of admin is to store the details of requirements needed to grow a particular crop into the database.

Farmer: Farmer is the user of the website. Farmers are provided with two options:

- Select Crop: Farmer can predict which crop is suitable to grow on his land by entering his soil pH, soil type (red, black, sandy, alluvial, loamy, clayey), season (kharif, rabi, zaid) and water level (low, medium, high) availability in his area.
- Crop Details: If a farmer wants to know the requirements needed to grow a particular crop, then he can check those requirements by selecting the crop name.

4.1.2 ER Diagram

The entity-relationship diagram of this system shows all the visual instrument of database tables and the relations between admin, database and farmer. The main entities of the system are Admin, Database, Farmer, Crop predict and Crop details.

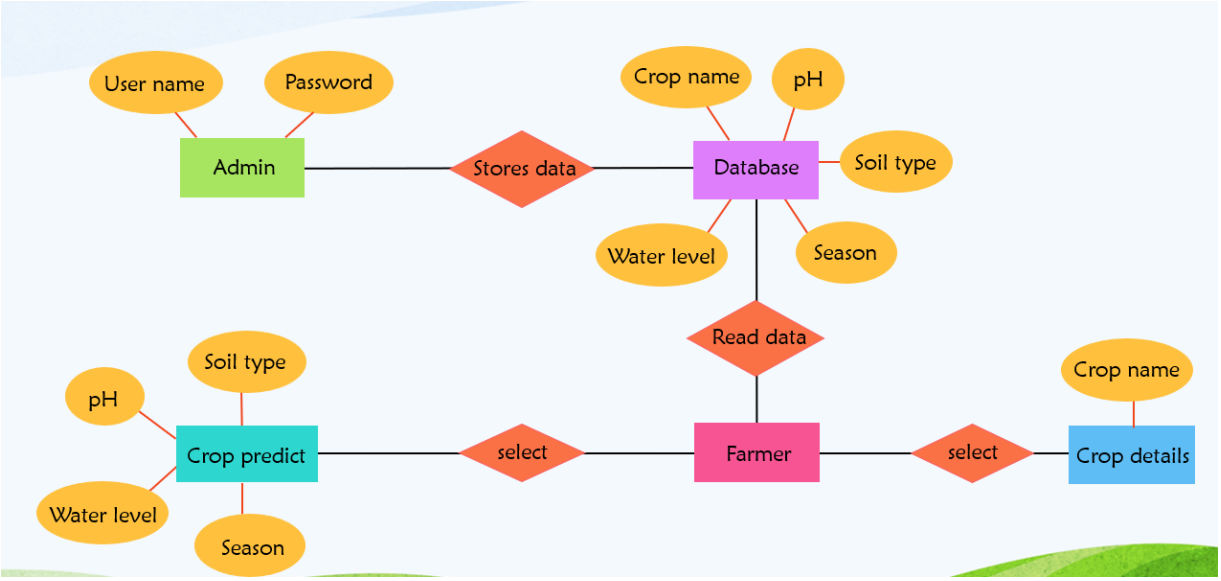

Fig 8. ER diagram for the system

4.2 DATABASE DESIGN

The database tables used in this system are:

i. *Admin login:*

Used for the admin to login into website in order to store the crop name and its requirements into database.

Field Name	Field Type	Field Length
adminname	varchar	255
password	varchar	255

Table 1. Admin login entity

ii. Crop requirements:

Used to store the crop name and its requirements needed to cultivate.

Field Name	Field Type	Field Length
crop_name	varchar	255
pH	int	11
soil_type	varchar	255
water_level	varchar	255
season	varchar	255

Table 2. Crop details entity

iii. Review:

Used to store the review rating and comments given by users i.e. farmers.

Field Name	Field Type	Field Length
user_name	varchar	255
rating	varchar	255
review	varchar	255

Table 3. Review entity

CHAPTER 5
RESULTS AND DISCUSSION

5.1 IMPLEMENTATION

```
crop.php | index.php | review.php

<body>
    <div class="blackbox">
      <div class="container" >
          <div class="navbar">
            <img src="images/logo1.png" class="logo" style="width: 160px;height:70px ;">
            <nav style="margin-top: -30px;">
              <ul id="menuList">
                  <li><a href="admin.php">Admin/అడ్మిన్/व्यवस्थापक</a></li>
                  <li><a href="farmer.php">Farmer/రైతు/किसान</a></li>
                  <li><a href="review.php">Review/సమీక్ష/समीक्षा</a></li>
              </ul>
            </nav>
            <img src="images/menu-icon.png" class="menu_icon" onclick="togglemenu()">

          </div>


          <div class="row">
              <div  class="col-1">
                  <h style="font-size: 38px;">CROP:</h><br><h style="font-size: 35px;">
                      The cultivated produce of the ground.</h>
                  <h3>Let's select good crop and detect the good yield.</h3>
                  <p>Hope this helps you😃!</p>
                  <h4>Contact us at:</h4>
                  <button type="button" class="button button1">Call/కాల్ చేయండి/बुलाना : 180 300 900</button>
              </div>
              <div class="col-2">
                  <img src="images/cplogo.png" class="crops-logo" style="width: 400px;height:400px ;">


              </div>
          </div>

      </div>
```

Fig 9. Home page

```
crop.php | admin.php | review.php

<div class="container">
    <div class="img">
        <img src="images/bg.png">
    </div>
    <div class="login-content">
        <form action="validate.php" method="POST">
            <img src="images/avatar.png">
            <h2 class="title">Welcome</h2>
            <div class="input-div one">
                <div class="i">
                    <i class="fas fa-user"></i>
                </div>
                <div class="div">
                    <h5>Username</h5>
                    <input name="adminname" type="text" class="input">
                </div>
            </div>
            <div class="input-div pass">
                <div class="i">
                    <i class="fas fa-lock"></i>
                </div>
                <div class="div">
                    <h5>Password</h5>
                    <input name="password" type="password" class="input">
                </div>
            </div>

            <input type="submit" name="login" class="btn" value="Login">
        </form>
    </div>
</div>
```

Fig 10. Admin login page

```
<div class="container">
      <br>
      <h1 class="text-white bg-dark text-center" style="background-color: black; color: white">ENTER CROP
      DETAILS</h1>
      <div class="col-lg-12 m-auto d-block">
      <form method="post">

        <div class="form-group">
          <label for="user">CROPNAME : </label>
          <input type="text" name="cropname" id="user" class="form-control" required="CROPNAME">
        </div>

        <div class="form-group">
          <label for="user">pH : </label>
          <input type="text" name="ph" id="user" class="form-control" required="pH">
        </div>

        <div class="form-group">
          <label for="user">SOIL TYPE  : </label>
          <input type="text" name="soiltype" id="user" class="form-control" required>
        </div>

        <div class="form-group">
          <label for="user">WATER LEVEL : </label>
          <input type="text" name="waterlevel" id="user" class="form-control" required="">
        </div>

        <div class="form-group">
          <label for="user">SEASON : </label>
          <input type="text" name="season" id="user" class="form-control" required="">
        </div>
```

Fig 11. Storing crop details data into database page

```
<div class="blankbox">
    <div class="container">

        <img src="images/farmerimage.png" style="width: 40%;height:55%;opacity: 7.1;">

            <div>
               <table  class="center">
                 <tr>
                 <td style="" class="buttons"><a href="crop.php"><button class="button1">Select Crop/
                 పంటను ఎంచుకోండి/फसल चुनें</button></a></td>
                 <td style="width: 20px;"></td>
                 <td style="" class="buttons"><a href="details.php"><button class="button1">Crop Details
                 /పంట వివరాలు/फसल विवरण</button></a></td>
                 </tr>
                </table>
            </div>


    </div>
</div>
```

Fig 12. Farmer home page

```
crop.php | admin.php | upload.php | review.php

    </div>
  </nav>

<div class="container-fluid">
    <br>
    <h1 class="text-white bg-dark text-center" style="background-color: black; color: white">ENTER DETAILS AND PREDICT THE CROP</h1>
    <div class="col-lg-12 m-auto d-block">
    <form method="GET">

        <div class="form-group">
            <label for="user">pH /  నేల యొక్క pH /  मिट्टी का ph : </label>
            <input type="text" name="ph" id="user" class="form-control" required>
        </div>

        <div class="form-group">
            <label for="user">SOIL TYPE /  నేల రకం /  मिट्टी के प्रकार : </label>
            <select name="soiltype" class="form-control">
                        <option>Select / ఎంచుకోండి / चुनते हैं</option>
                        <option value="red/ఎర్ర నేల/लाल मिट्टी">red/ఎర్ర నేల/लाल मिट्टी</option>
                        <option value="black/నల్ల నేల/काली मिट्टी">black/నల్ల నేల/काली मिट्टी</option>
                        <option value="loamy/లోమీ నేల/बलुई मिट्टी">loamy/లోమీ నేల/बलुई मिट्टी</option>
                        <option value="sandy loam/ఇసుక మట్టి/बलुई दोमट मिट्टी">sandy loam/ఇసుక మట్టి/बलुई दोमट मिट्टी</option>
                        <option value="alluvial/ఒండ్రు నేల/जलोढ़ मिट्टी">alluvial/ఒండ్రు నేల/जलोढ़ मिट्टी</option>
                        <option value="clayey/బంకమట్టి నేల/चिकनी मिट्टी">clayey/బంకమట్టి నేల/चिकनी मिट्टी</option>
                        <option value="sandy/ఇసుక నేల/रेत भरी मिट्टी">sandy/ఇసుక నేల/रेत भरी मिट्टी</option>
            </select>
        </div>

        <div class="form-group">
            <label for="user">WATER LEVEL /  నీటి పరిమాణం /  पानी की मात्रा  : </label>
            <select name="waterlevel" class="form-control">
                        <option>Select / ఎంచుకోండి / चुनते हैं</option>
                        <option value="high/అధిక/उच्च">high/అధిక/उच्च</option>
                        <option value="medium/మధ్యస్థ/मध्यम">medium/మధ్యస్థ/मध्यम</option>
                        <option value="low/తక్కువ/कम">low/తక్కువ/कम</option>
            </select>
        </div>

        <div class="form-group">
            <label for="user">SEASON /  ఋతువు /  मौसम : </label>
            <select name="season" class="form-control">
                        <option>Select / ఎంచుకోండి / चुनते हैं</option>
                        <option value="kharif/ఖరీఫ్/खरीफ">kharif/ఖరీఫ్/खरीफ</option>
                        <option value="rabi/రబీ/रबी">rabi/రబీ/रबी</option>
                        <option value="zaid/జైద్/ज़ैद">zaid/జైద్/ज़ैद</option>
            </select>
        </div>
```

Fig 13. Crop predict page

```
crop.php | details.php | admin.php | upload.php | review.php

<div class="container-fluid">
<table  id="tabledata" class=" table table-striped table-hover table-bordered">

 <tr class="bg-dark text-white text-center" style="background-color: black;color: white;">
 <th style="text-align: center;"> CROP NAME /  పంట పేరు /  फसल का नाम </th>
 <th style="text-align: center;"> PH VALUE </th>
 <th style="text-align: center;"> SOIL TYPE /  నేల రకం /  मिट्टी के प्रकार </th>
 <th style="text-align: center;"> WATER LEVEL /  నీటి పరిమాణం /  पानी की मात्रा </th>
 <th style="text-align: center;"> SEASON /  ఋతువు /  मौसम </th>

 </tr >

 <?php
 while($res = mysqli_fetch_array($result)){
 ?>
 <tr class="text-center">
    <td> <b><?php echo $res['cropname'];  ?></b> </td>
 <td> <b><?php echo $res['ph'];  ?></b> </td>
 <td> <b><?php echo $res['soiltype'];  ?></b> </td>
 <td> <b><?php echo $res['waterlevel'];  ?></b> </td>
 <td> <b><?php echo $res['season'];  ?></b> </td>

 </tr>

 <?php
 }
  ?>
 </table>
```

Fig 14. Crop details page

crop.php | details.php | admin.php | upload.php | review.php

```
<div id="review_modal" class="modal" tabindex="-1" role="dialog">
    <div class="modal-dialog" role="document">
        <div class="modal-content">
            <div class="modal-header">
                <h5 class="modal-title">Submit Review</h5>
                <button type="button" class="close" data-dismiss="modal" aria-label="Close">
                    <span aria-hidden="true">&times;</span>
                </button>
            </div>
            <div class="modal-body">
                <h4 class="text-center mt-2 mb-4">
                    <i class="fas fa-star star-light submit_star mr-1" id="submit_star_1" data-rating="1"></i>
                    <i class="fas fa-star star-light submit_star mr-1" id="submit_star_2" data-rating="2"></i>
                    <i class="fas fa-star star-light submit_star mr-1" id="submit_star_3" data-rating="3"></i>
                    <i class="fas fa-star star-light submit_star mr-1" id="submit_star_4" data-rating="4"></i>
                    <i class="fas fa-star star-light submit_star mr-1" id="submit_star_5" data-rating="5"></i>
                </h4>
                <div class="form-group">
                    <input type="text" name="user_name" id="user_name" class="form-control" placeholder="Enter
                    Your Name" />
                </div>
                <div class="form-group">
                    <textarea name="user_review" id="user_review" class="form-control" placeholder="Type Review
                    Here"></textarea>
                </div>
                <div class="form-group text-center mt-4">
                    <button type="button" class="btn btn-primary" id="save_review">Submit</button>
                </div>
            </div>
        </div>
    </div>
</div>
```

Fig 15. Review page

5.2 RESULT

Fig 16. Home page

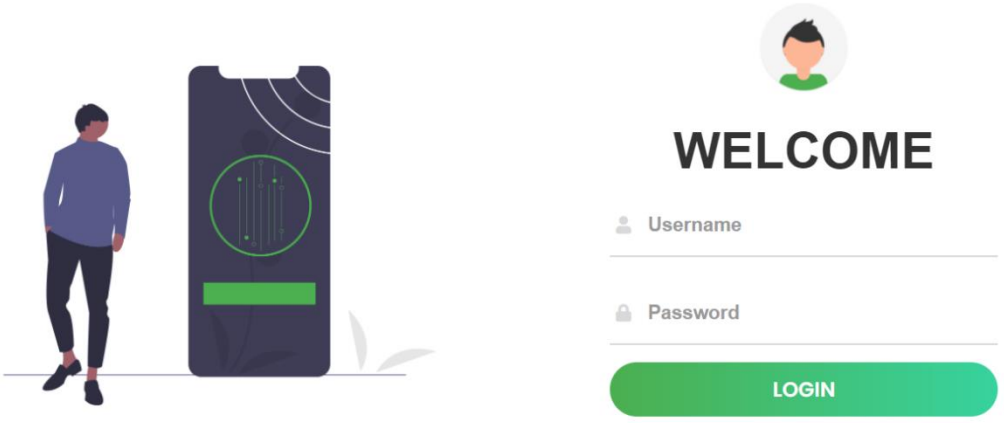

Fig 17. Admin login page

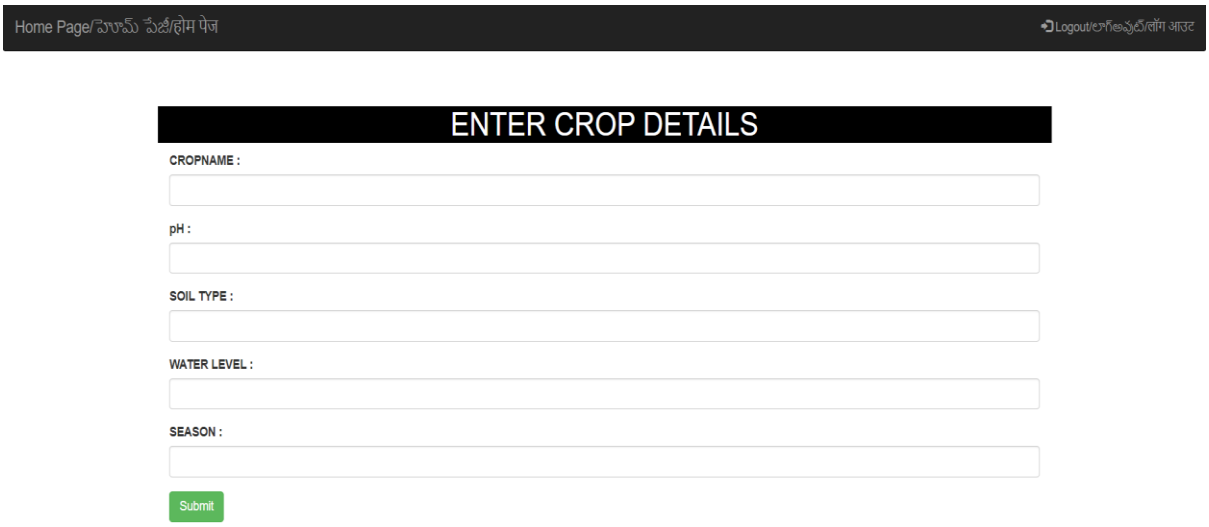

Fig 18. Storing crop name and its requirements to grow into database

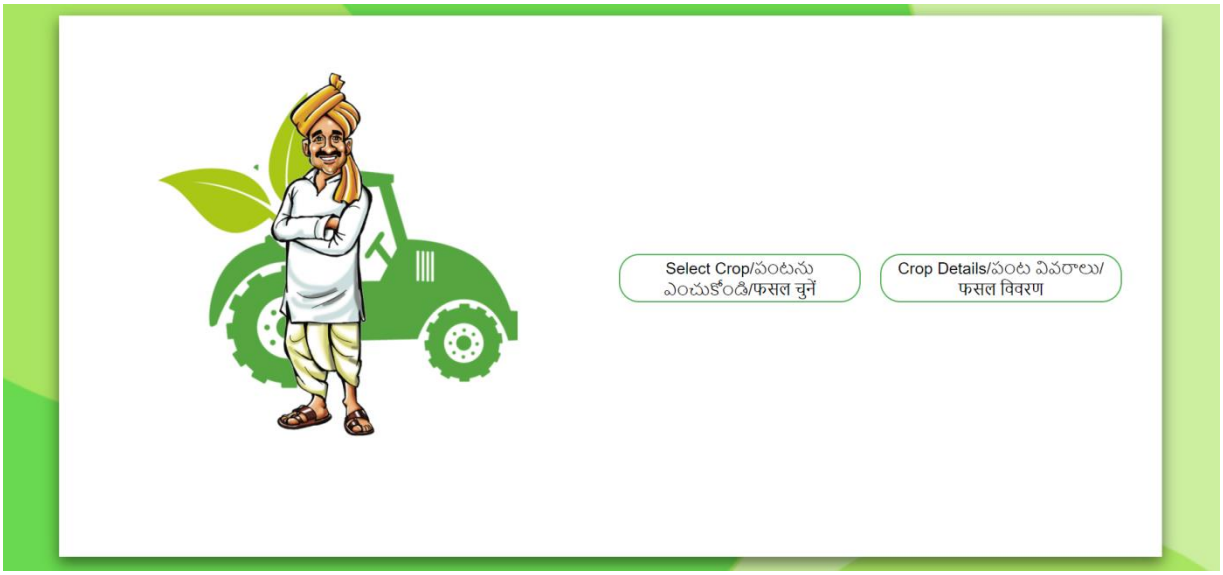

Fig 19. Farmer home page

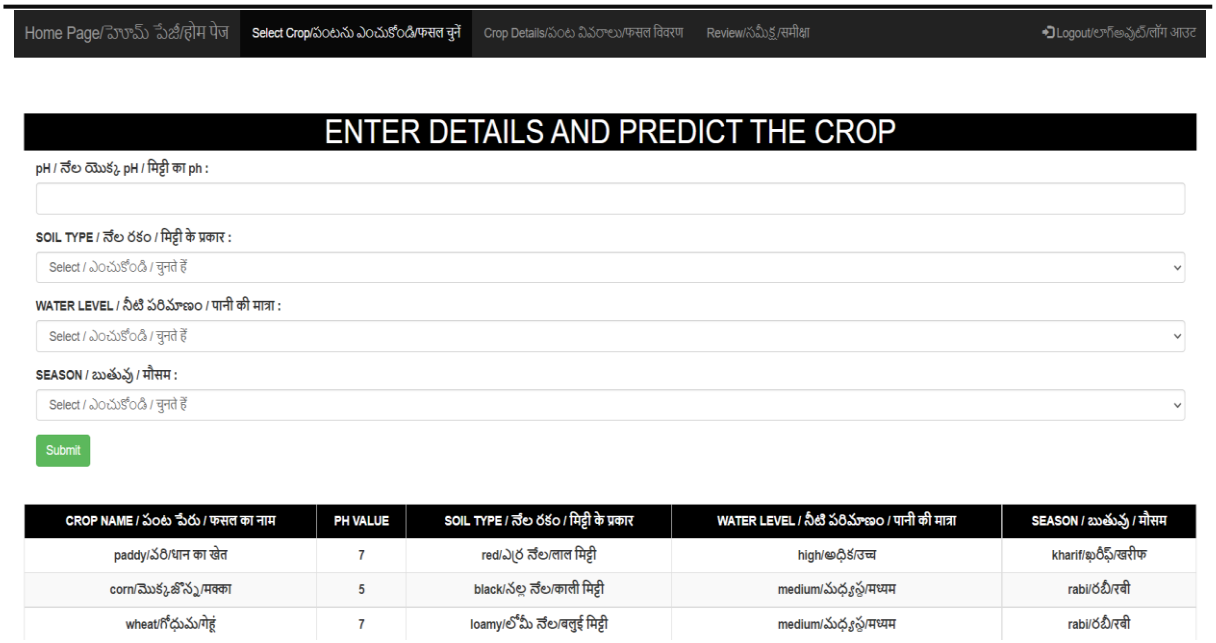

Fig 20. Crop predict Page

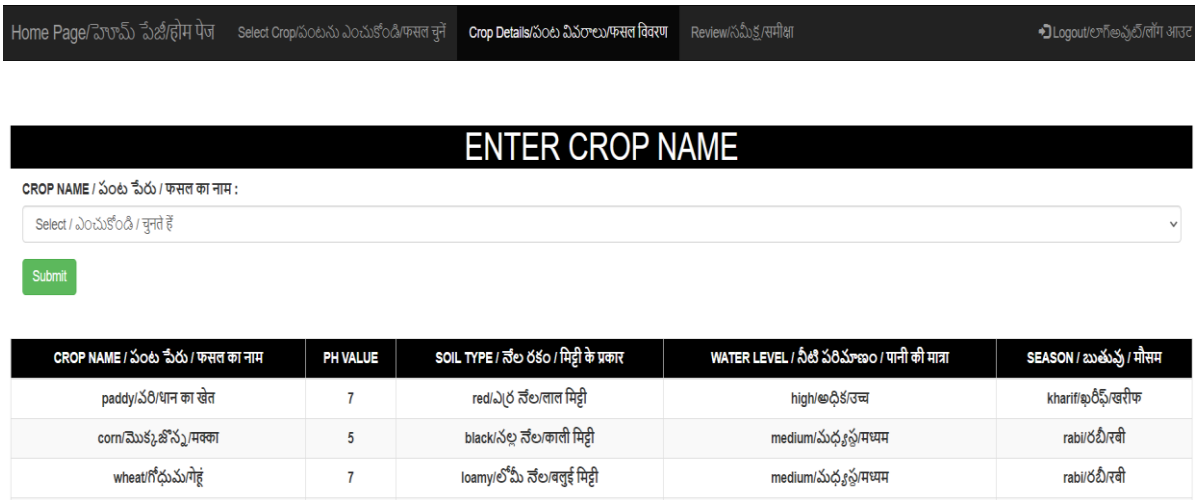

Fig 21. If farmer select crop name it displays that crop requirements

CHAPTER 6
CONCLUSION AND FUTURE WORK

6.1 CONCLUSION

This website helps farmers who are unable to choose a good crop. Usually, farmers take well-wishers suggestions and start cultivation. This may or may not result in a good yield. Many farmers are facing problems because of failure in selecting crops for their land. Confusion or no knowledge about crop yield can be met with this platform.

6.2 FUTURE WORKS

- This website can be converted into app.
- Many new varieties of crops are coming into market, so when admin enter the requirements of new varieties into database then we can add a notification of newly added crop details so that farmers can know about new varieties of crops and their requirements.

REFERENCES

[1]. https://www.downtoearth.org.in/blog/agriculture/state-of-india-s-environment-why-farmers-kill-themselves-75648

[2]. https://www.bharatagri.com/

[3]. https://play.google.com/store/apps/details?id=com.aci.idss&hl=en_IN&gl=US

[4].https://play.google.com/store/apps/details?id=com.saiuniversalbookstore.vyavasayam&hl=en_IN&gl=US

[5].https://harvesttotable.com/vegetable-crop-soil-ph-tolerances/

[6].https://krishijagran.com/agripedia/7-major-soil-types-in-india-know-which-soil-type-is-perfect-for-which-crops/

[7].https://www.agrifarming.in/soil-types-suitable-crops-india