Agritech: Stubble Aggregation and Disposal

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ABSTRACT: Agriculture, which is one of the primary activity of production , acts as a supporting service for both secondary and tertiary activities.On harvesting, along side the specified crop so produced, tons of residue is additionally generated which can be termed as stubble. Usually farmers don't have enough time to make the fields ready for next crop and hence they prefer the cheap and easy way of disposing stubble, that is burning the stubble which has lot of negative effect in environment and eco-system. But there are also lot of bio-industries which uses these stubble for several purposes. They don't havea easier way to connect with bio industries to dispose the stubble in an eco-friendly way .The main objective of Agritech is to simplify the task of stubble aggregation and disposal. The application provides an effective means of collecting the stubble from the farmers by various bio-industries. The system is flexible to be used and reduces the need bio – industries searching for stubble providers and also reduces the burden of the farmers to find a way disposing the stubble. Hence the system is developed to provide them an easy way for disposing stubble in an eco-friendly and effective way.

I. INTRODUCTION

One of the main problems faced by our surroundings is crop residue burning, also referred to as stubble burning. Due to wide availability of recent tools and technologies for harvesting, a huge amount of residue is generated within the fields. The common practice to urge the fields free from such residue is stubble burning. Such practices pose a good sort of environmental problems. But at recent times, there are lot of industries which are making use of this stubble for various purposes like power generation, to make paper and card board, packing materials, worm farming, Poultry litter etc. But farmers find it difficult to connect with these industries and so they burn the stubble which in turn has huge negative impact on the environment.

This project promotes the buying and selling of stubble in between the bio-industries and farmers. The buyer can post the details of the stubble needed and the seller can post the details of the stubble available. Based on the location, suitable posts are shown to the both the users. The users can request the appropriate buyer or seller and continue the trade when both agreed. This will effectively reducer stubble burning and its impact on the environment. The objective of the project is to help the farmers and the bio-industries to find each other and trade stubble.

II. LITERATURE SURVEY

"Technologies for Stubble Use" by **Dr. S. S. Verma** suggested the alternative uses of the different types of stubble. The study showed the reasons why stubble was considered as waste and how recent industries are overcoming its disadvantages, processing and reusing it in efficient ways. The main disadvantages are difficulty in procurement due to light weight and occupying more volume, low energy density, more water resistance, difficult fodder to digest for animals and time taking to form compost. Now bio-industries came up with several process methodologies to process stubble and make it more efficient. Bio-industries use processed stubble for making pellets, using it as combustion material , generating power, mixing with plastics etc[1].

"Stubble burn area estimation and its impact on ambient air quality of Patiala & Ludhiana district, Punjab, India" by **PratikaChawala , H.A.S. Sandhu** proposed a system which detect and estimate the stubble burn area. Landsat 8 OLI images are wont to detect the stubble burn area for the year 2014-18 for Patiala and Ludhiana, which are major rice producing districts of Punjab. Normalize Burn Ratio (NBR) index have been used to determine the burned area in an image using a statistical threshold technique (2σapproach). The results are validated using available also as collected communication system Points (GCPs) and accuracy assessment has been conducted by generating a mistake matrix. It was estimated that the stubble

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burn area were reduced by 32% and 40% during the study period on Patiala and Ludhiana regions, respectively. The monthly variation on various pollutants that causes air pollution (RSPM, NOx, and SO2) during the study period has been recorded, studied and analyzed. A distinct increase in pollutant levels was been observed during each stubble burning period[2].

"An approach to Detect Stubble Burned Areas in Punjab by Digitally Analyzing Satellite Images " **by AmandeepKaur , Jyothi Rani**proposed a system that detect stubble burned areas in various parts of Punjab using remotely sensed images is which might be utilized to stop the massive scale of environmental degradation . The system detects the presence of fire in specific areas using remote images are mentioned and remotely sensed images of Liss-III and AWiFS for Punjab region are analyzed and processed using matlab to obtain per pixel information. The further neural network was trained with the desired features to accurately detect the presence of fire pixels. The obtained results are 85.5814% accurate[3].

"Developing an E-Commerce Website " by **Sir. Syed EmdadUllah, Tania Alauddin and Hasan U. Zaman** outlined the various aspects of developing an ecommerce website and also provided the optimum solution to the challenges involved in developing one. It consists of the planning process, It starts with determining the use case, domain modeling, and architectural pattern of the web application. The entire development process were primarily divided into two parts: the front-end development and the back-end development. The database design was also discussed with an emphasis on its relational connectivity[4].

"Solution Design for E – commerce Platform of fresh agricultural products Based on Mobile Geographic Information System " by **HongminShen** analyzed an existing problems of the e-commerce of fresh agricultural products of China, and proposes an efficient solution of e-commerce platform for trading of fresh agricultural products which is based on mobile geographic information system. The solution includes logistics and supply chain, e-commerce model design, transaction process design , and the logistics distribution model design of fresh agricultural products e-commerce platform[5].

"Design and Implementation of B2C China and Laos Agricultural Products Ecommerce Platform Based on J2EE" by **Meili Su, WeixiaGui** and **Qian Lu** outlined the e-commerce platform for agricultural products from China and Laos based on the framework of

SSM. J2EE and other related technologies were applied to the system design and for implementation to provide an good platform for agricultural products trading between China and Laos[6].

"LARAVEL: A PHP Framework for E-Commerce Website" by **NehaYadav, Dharmveer Singh Rajpoot, Shri Krishna Dhakad** outlined all the aspects that are considered to choose the best framework for creating an E-commerce website , how to choose the best framework for creating a website, what are the factors that should consider for checking the effectiveness of the frameworks generalizes , the concept of e-commerce website with a framework and what advantages did Laravel had on other frameworks, and how it is different to work on Framework[7].

"Customer-Centered Rules for Design of E-Commerce Web Sites" by **Xiaowen Fang** and **GavrielSalvendy** has derived a set of guideline related to home page, navigation, categorization, product information, shopping cart, checkout and registration, and customer service. In the study, 50 real customers of e-commerce website have been interviewed to obtain information on what customers like and difficulties they had during the online shopping process. The interview was based on shopping online scenario[8].

III. EXISTING SYSTEM
In the existing system, it is found that there are many systems which makes use of several remote sensing, neural network and image processing techniques to detect the areas where stubble burning took place and also efficiently calculated its impact on composition of air. The main disadvantage of these systems are they did not provide efficient means to dispose the stubble , which left the problem of stubble burning unsolved.

IV. PROPOSED SYSTEM
We proposed the system in which agricultural vendors and bio-industry people can find each other at ease. The proposed system is a user-friendly web application that facilitates the trade of the stubble in efficient way, easily track stubble transportation and its disposal. It should also serve as informative website and also gives detailed statistics about the stubble purchase by the bio-industries .
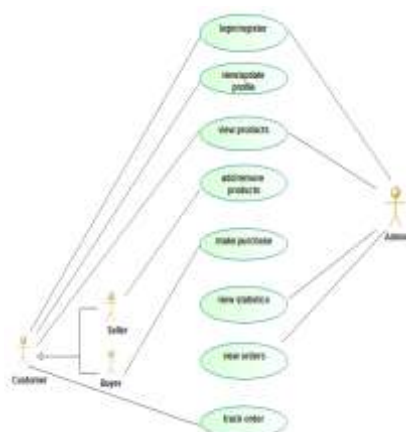
Fig 1.1.Usecase Diagram

V. WORKING PRINCIPLE

In the proposed system we are using HTML, CSS, JS, PHP for the front-end development and validation and MySQL for the back-end database. The main objective is to develop a user-friendly web application that facilitates the customer in find desired buyer or seller of the stubble in efficient way and easily track stubble transportation. Apart from this, forecasting stubble production and tracking of efficient usage of stubble by the buyers can also be obtained.

To achieve a user-friendly web application the following functional, Non-functional and External Interface Requirements are to be followed.

FUNCTIONAL REQUIREMENTS
Various functional modules which the system should provide are:
•User login in into the system using email id and password.
•Admin can login using email id and password.
•User can choose whether they are going to buy or sell product.
•User can add or remove products and can update the added product information.
•User can buy desired products, fill information and can track their orders.
•Admin can view the statics of the orders, availability and usage of stubble.
•The system allows the delivery service to view orders.

NON-FUNCTIONAL REQUIREMENTS
Non-Functional Requirements define system properties and constraints. Following Non-Functional Requirements will be available in the insurance to the internet:
•Secure access to consumer's confidential data.

•24X7 availability.
•Better component design to get better performance at peak time.
•Flexible service-based architecture will be highly helpful for future extensions.
Various other Non-Functional Requirements are:
• Security
• Reliability
• Maintainability
• Portability
• Extensibility
• Reusability
• Compatibility
• Resource Utilization

EXTERNAL INTERFACE REQUIREMENTS
Minimal Hardware Requirements:
• Minimum 1.5GHz processor
• Minimum 4GB RAM
• 15GB Hard disk space
• Internet Connection
• Key Board
• Mouse
Minimal Software Requirements:
• Front End – HTML, CSS, JavaScript, PHP
• Back End – MySql
• Server – Apache Server (WAMPP)
• Design Tool – Visual Studio Code, Note pad
• Testing Tool – WAMPP, Firefox / Chrome browser
• Documentation Tools – Microsoft Word

This chapter provides a clear outline about the system to be developed. The system to be developed is a web application and technology used for implementing the system include HTML, CSS, JavaScript, PHP and Mysql . Apache server (XAMPP), Visual studio code , notepad are some of minimal software requirements . Functional requirements of the system includes admin and customer login, buying and selling of stubble by customers, order tracking by customers and access to statistics about stubble reuse , disposal and availability to admin. Non-functional requirements of the system include security, reliability, maintainability, portability, extensibility, reusability, compatibility, resource utilization.

VI. RESULTS
Following figure shows the homepage of our Agritech site. The user can navigate to other pages like login, my account, blogs, and my profile from this page.

Fig 1.2. Home Page

This is the user login page and here the user has to enter his username and the password provided to login to the site.

Fig 1.3. User Login Page

The user can provide his/her personal information, their role and set their password and username for login.
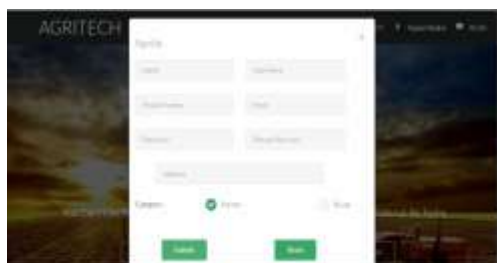

Fig 1.4: User Registration page

After logging in to the site the user can see his/her profile which also contains options to change password, update edit profile and logout.

Fig 1.5: My Profile page

The Upload page project allows the user to upload the product information which includes its image, category, description about it along with its price per kilogram.

Fig 1.6: Upload Product page

Search product page allows the user to search products and the results can be filtered based on categories.

Fig 1.7: Search Product page

On clicking buy option, the user is redirected to Purchase and delivery details page where he/she has to fill the required details about delivery.
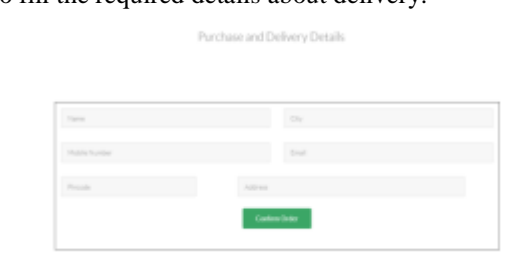

Fig 1.8: Purchase and Delivery details page

VII. CONCLUSION
Agritech, a system which serves as a platform for both the agricultural vendors and bio-industries people has been successfully designed and developed . It is developed in such way that it possess the required features to meet the requirements of comfortable stubble trade, analyzing of stubble availability and its reuse. By use of this website, stubble can be easily traded which thereby reducing the harmful effects of stubble burning .

VIII. FUTURE WORKS

In future we would like to improve the website to be more user-friendly provided with extended features product suggestions based on locations . A mobile application based on the idea proposed will also be developed.

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