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Design and Development of "Techno seed app"

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Abstract: Information and Communication Technology (ICT) in agriculture is a wide platform which offers solution to many areas in agriculture and rural development. The growing technology in agriculture has led to a marvellous development of application to foster and enhance the information dissemination. In the recent years, mobile is the only gadget to deliver the information in new ways. This paper reveals the idea about the creation of Techno seed app, an android based application. Techno seed app, an application helps the users by giving the information regarding the various enhancement technologies of seed, seed sowing, germination of seedling growth by altering the physiological state of the seed. The Techno seed app helps to improve the germination or seedling growth using the enhancement technologies and the application is very much useful for the seed scientists and farmers.

Keywords: Android application, coating, designer seed, pelleting , priming, seed upgradation, various enhancement technologies.

I. INTRODUCTION

Mobile technology has lead to the creation of innovative services and application that are very much useful for farmer's community. With the development of android phones, the android applications have suddenly become an essential aspect for global and local communications of farmers. To spread agricultural information to farmers the most easiest and simple application is the use android application. Techno seed app is about the technologies of seed enhancement and how it is used to improve the seed sowing, germination and seedling growth by altering the physiological state of the seed. It guides the users by giving them necessary information about the seed science technologies in various aspects. Techno seed app is more users friendly. Techno seed app displays the information regarding seed priming, seed coating, seed pelleting, Designer seed and upgradation of seed. Coating technologies - pelleting, encrusting and filmcoating - are now used increasingly widely to facilitate seed planting, by altering seed shape, weight and surface texture, improving seed-soil contact, or manipulating imbibition. Techno seed app also displayes new pellet manufacturing techniques, using rotary coaters, an alternative to traditional pan coating. Hydration treatments manipulate vigour or physiological status, such as by priming, steeping, and pregermination. These treatments are used to make germination and seedling growth more rapid and synchronous in the seedbed in the open field or in protected conditions and better tolerate environmental stresses. Both priming and coating technologies can also deliver beneficial microorganisms from seeds to crops. This is the only application to deliver the procedures regarding the seed enhancement technologies.

II. REVIEW OF LITERATURE

An Android Application "Organic Terrace", which helps in cultivating the own vegetable crops in their terrace. This application encourage the users in the cultivation of crops in their terrace without the use of any kind of synthetic (inorganic) fertilizers, pesticides etc[1]. An android application which helps in delivering the crop specific fertilizer quantity to be applied. The idea of the app was to calculate the amount of NPK fertilizers to be applied based on the blanket recommendation of the crop of interest[2]. "Maha Farm" a mobile based application for farmers which would exhaustively help farmer community. The app includes agro-based crop information, weather updates, daily market prices and news/loan information updates[3]. Agro-App is a mobile application built keeping the farmers in mind and also a common man who wants to grow vegetables for daily need. It keeps a farmer updated with all the information related to crop, pesticides, insecticides, financial sector etc[4]. Each operating system has its own specialization. The applications differ from one operating system to the other. So the customer needs to use more than one mobile operating system to fulfill their requirements. They developed a mobile application for Multiplatform Operating Systems which will reduce the code development time and energy to half[5].Development of Fertilizer Apps (F Apps) is to develop a well informed Decision Making among the Farmers. The idea of this app is to calculate the amount of NPK fertilizers to be applied based on the blanket recommendation for the villages in Manikandam Block in Tiruchirappalli district[6]. AgriBot is a robot designed for agricultural purposes. As one of the trends of development on automation and intelligence of agricultural machinery in the 21st century, all kinds of agricultural robots have been

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researched and developed to implement a number of agricultural production in many countries[7]. Agro Supply Chain will be an advisory and information system for the farmers. Agro Supply Chain will be available on mobile phones, which will be designed for farmers to help them stay on track, avoid troubled, manage their expenses in cultivation, receive all the latest and updated information, government schemes and strategies related to the field of agriculture along with suppliers details for sugarcane[8].Flash Alert Notification System using Android project aims in developing an application for daily use having easy operation and easy to use. Usually when people are in meeting or any discussion where they have to put their mobile phones on silent mode on which their mobile phones don't even vibrate or else they are far from their mobile at that time[9]. Issues concerning agriculture have been always hindering the development of the country. The only solution to this problem is smart agriculture by modernizing the current traditional methods of agriculture. Hence the project aims at making agriculture smart using automation and IoT technologies[10]. Android Mobile Application are build using Eclipse which helps to known the development of android app for mobile platform. Gives a complete knowledge of how to start working on eclipse, develop an application and get it run on emulator[11].

Techno seed app helps the farmers to provide some knowledge about the embryo development and seedling vigour with priming and also how the seedling vigour of coated seeds stored for six months. This application shows how it enhances plant resistance to insect and fungal attack and improves speed and uniformity of emergence.

III. DESIGN OF THE APPLICATION

Techno seed app delivers the information about how the seed enhancement technologies used for improving seed germination and growth of seedlings required at the time of sowing. This application consists of home page and main page which displays the number of buttons which contains different seed enhancement technologies.
For user interface, Android Studio software is used. Android Studio is the official Integrated Development Environment (IDE) for the Android platform. XML (Extensible Markup Language) is used for designing the Graphical User Interface(GUI) which will be the front end. XML is used in instantiating layout elements in runtime. Declaration of UI elements is also done using XML. Java is used as a platform for app development.

Input:
Techno seed app has information about the definition and various enhancement technologies of seed. The button press is the only required action from the user to explore things. The user can know information about the various seed enhancement technologies such as priming, coating, pelleting, designer seed and seed upgradation from this application.
Process:
When the user clicks the button, the activity page with the content from the "string.xml" and images gets loaded.
Output:
The output of the button press is in the form of displaying the content page.
Algorithm of the application:
Step 1: Get the input from the user
Step2: Displays the other activity page after the button press.
Step3: When pressed the seed enhancement technologies button, it displays the five buttons and these buttons having priming, coating, pelleting, designer seed and seed upgradation.
Step4: Finally, close the application.
Diagrammatic representation (flowchart) of Techno seed application is shown in Fig. 1.

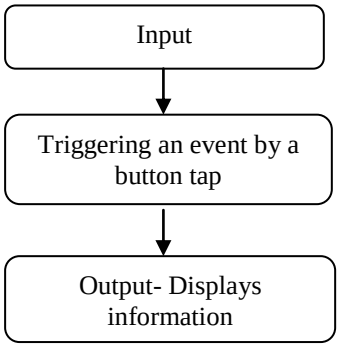

Fig 1: Diagrammatic representation (flowchart) of Techno seed app

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IV EXPERIMENTAL RESULTS

Seed Enhancement Technologies application was implemented using android operating system with Android Nougat 7.0 with spanning versions between 7.0 and 7.1 as target version which has API 24. "Techno seed" application has various enhancement technologies such as seed priming, seed coating, seed pelleting, designer seed and upgradation of seeds. Each enhancement technology has procedure and certain benefits. The sample activity pages of Techno app is shown in Fig. 2,3,4 and 5.

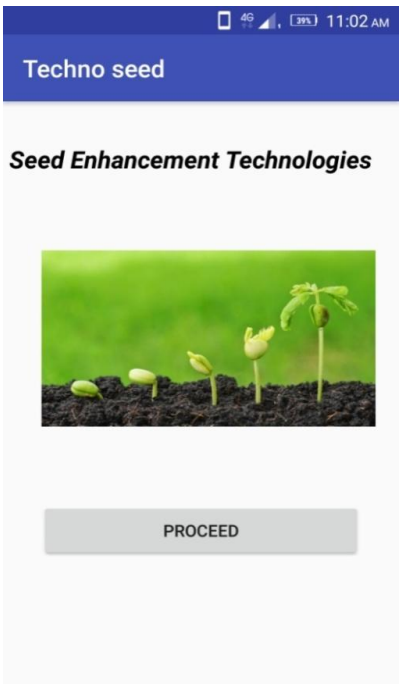

Fig2: Home page of the application

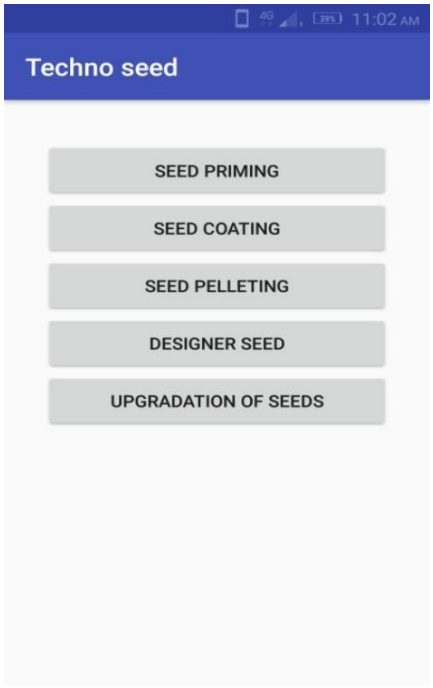

Fig 3: Main page of the application

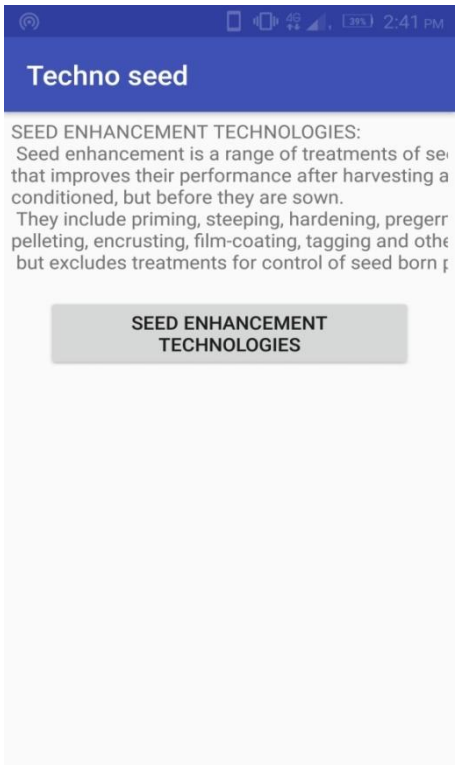

Fig4: Introduction page of the application

Fig5: "PRIMING" page of the application

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V.CONCLUSION AND FUTURE RESEARCH

Techno seed app helps in delivering the information about the various enhancement technologies required for increasing the consistency of the seed. These technologies are gaining to increase the attention for improving germination and vigour potential of seeds in addition to greater disease resistance in seeds. The farmer can be benefited more by using this application. The future scope for this application is to develop a "DISCUSSION FORUM" where the registered users can interact with each other in an effective manner. From this, the users may benefit from each other by sharing the useful information they know.

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BIOGRAPHIES

Sathya priya.B has completed her Undergraduate Degree in Agricultural Information Technology from Tamil Nadu Agricultural University. She did her Internship Programme in IIOR, Hyderabad on "Creation of Lab-Accessible Sequence Database for Retrieval of Sequence through ID Search".

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Dr. M. Kalpana obtained her B.Sc Degree (Statistics) in 2001. She is a rank holder in under graduate degree. She obtained her M.C.A degree from Maharaja College for women in 2004 and M.Phil in Computer Science at Madurai Kamaraj University and her Ph.D in Computer Science in Bharathiar University during 2014. She has to her credit three books, 4 papers in National Conference and 2 paper in International Conference, 12 papers in International Journals and two book chapters in IGI Global, U.S.A. She has also coordinated for the training offered by National Horticultural Mission (NHM) to the State Agricultural and Horticultural officers and prepared manuals. She is a Life member of International Association of Engineers (IAENG), International Association of Computer Science and Information Technology (IACSIT) and member of Internet Society (ISOC). She has been awarded Bharat Jyothi Award from India International Friendship Society.

Dr.V.Manonmani, Professor (SST), Tamil Nadu Agricultural University is having twenty years of experience in teaching and Research. She has handled more than 15 courses for under graduate students, PG and Ph.D students of Agriculture and Horticulture by applying innovative methods like e-content and also formulated manuals and guided 10 PG and 3 Ph.D scholars. She has published more than 40 articles in nationally and internationally reputed journals. She also developed seed priming technologies for small millets, groundnut, sunflower, brinjal and bittergourd. She obtained four national awards for the outstanding contribution in education and research which are R.V.Swaminathan Medal for Best Student in Seed Technology, Best Popular Article award, V.C.Vellingiri Gounder Medal for the Best Research Worker and Outstanding women educator award. She obtained several externally funded schemes as principal and Co-Principal Investigator to the tune of more than 60 lakhs under GOI, UGC and private agencies for strengthening the seed research programme.