

Development of Android based Mobile Application in Sunflower for Knowledge Dissemination

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ABSTRACT

India has become the fastest growing mobile market in recent years. In India, there are enormous opportunities for utilizing the smart phones as a part of agribusiness improvement. Its utilization is vital for quick growth and easy access to information to Indian agriculturists, farmers and growers. When information is made available easily and accessible through ICTs to the farmers to take effective decisions at the right time farming can be made easy for the farmers. Usage of smart phones is exponentially increasing in rural areas hence, providing information to large number of farmers. In this context ICARIIOR-SUNFLOWER, mobile app was developed by ICAR-IIOR to provide entire package of practices required for sunflower cultivation. An Android based App was developed with easy navigation to access information on climate, soils, seasons, agronomic practices, cultivars, cropping systems, pests & diseases, AICRP centres and Commodity markets. The App supports English language and available on Google play store. Features include offline and online mode and offer valuable information to the extension workers, farmers, sunflower researchers and other stakeholders.

KEYWORDS

Android, Mobile App, Sunflower, ICT, package of practices.

INTRODUCTION

Agriculture is the backbone of Indian economy and needs to stay updated with new technologies from time to time. Access to timely, adequate, correct technology and related information is among the most important enablers for smallholders to improve productivity sustainably (Davis, 2008; Birner et al., 2009). Reaching every individual oilseed farmer has always been a big challenge. Advent of mobile phones has led to the development of new services and applications in agriculture for the benefit of farmers and other stakeholders. The mobile application is a software programme designed to run on smart phones, tablets and other devices (Serrano et.,al., 2013). Smart phone apps revolutionized the connectivity and used for transferring agri-information for farmers (EMarketer, 2016). In India, with a 1.5

billion people, the wireless subscription as on October 2022 was 1016 millions. (TRAI, 2022). Increasing penetration of smart phones in India and affordable prices, it has been considered necessary to create mobile Apps.

Sunflower (*Helianthus annuus* L.) is one of the important edible oilseed crop with wider adaptability of soil and climate. The crop has high yield potential and oil quality. It is cultivated in Karnataka, Andhra Pradesh, Maharashtra and Tamilnadu which contribute to more than 90% area and 80% production of the country. The crop has proven high potential in non-traditional areas of Punjab, Haryana, Bihar, West Bengal, Uttar Pradesh, Orissa and Chhattisgarh in spring and rabi seasons. It is grown over an area of 7.2 lakh ha with productivity of 805 kg/ha in India. Nearly 33% of sunflower area is in kharif and the rest in rabi/summer and spring seasons. The crop has demonstrated, high realizable productivity of more than 1500 kg/ha in the country with the adoption of available improved production technologies, indicating the possibility of increasing national production by 90% over the current production.

The current extension services delivered through trained officers at the local level are having limited scope and hence a strong ICT media is required as a support to align with the requirements of farmers, their existing experience and knowledge base with modern agricultural technologies and practices. Hence, a mobile application on sunflower production technologies was developed by ICAR-Indian Institute of Oilseeds Research, Hyderabad aiming to empower sunflower farmers and other stakeholders with knowledge on sunflower for better yield. In the present research paper, the unique features of ICAR IIOR Sunflower Mobile App developed by ICAR-IIOR are discussed.

MATERIALS AND METHODS

ICAR-IIOR Sunflower mobile application on sunflower management practices was developed by ICAR-Indian Institute of Oilseeds Research to facilitate the stake holders with handy information. The App was developed using Android Studio an open source software for developing Mobile Apps through Java object oriented programming language. The information on sunflower was compiled and was categorised into: General Information, Agronomic Practices, Preferred cultivars, Hybrids and Varieties, Cropping systems, Insect Pests, Diseases, AICRP centres and Commodity markets for ease of the end user. The application was created in English and works both in online and offline mode.

Minimum system requirements: Operating System: Microsoft windows 7/8/10, 64-bit; RAM: Minimum 3 GB, Recommended up to 8 GB and 1 GB for Android Emulator; Disk space: Minimum 2 GB of available disk space, Recommended up to 4 GB; Java Version: Java Development Kit (JDK) 8.

Design Approach

Once the App is developed it is compiled and then published in the Google Play store. The sunflower Mobile App flow chart is presented in Fig.1. The Mobile App ICAR-IIOR Sunflower can be downloaded from google play store at: https://play.google.com/store/apps/details?id=in.org.icar_iior.icariiorsunflower.

Once the user installs the app from the play store in the android phone, it can be browsed any number of times as per the choice of end user. The app is a user friendly app wherein the user can navigate from any point to any other point for the information with a single touch. The app is designed in such a way that once the app is installed in the mobile, the end user can operate the app without internet.

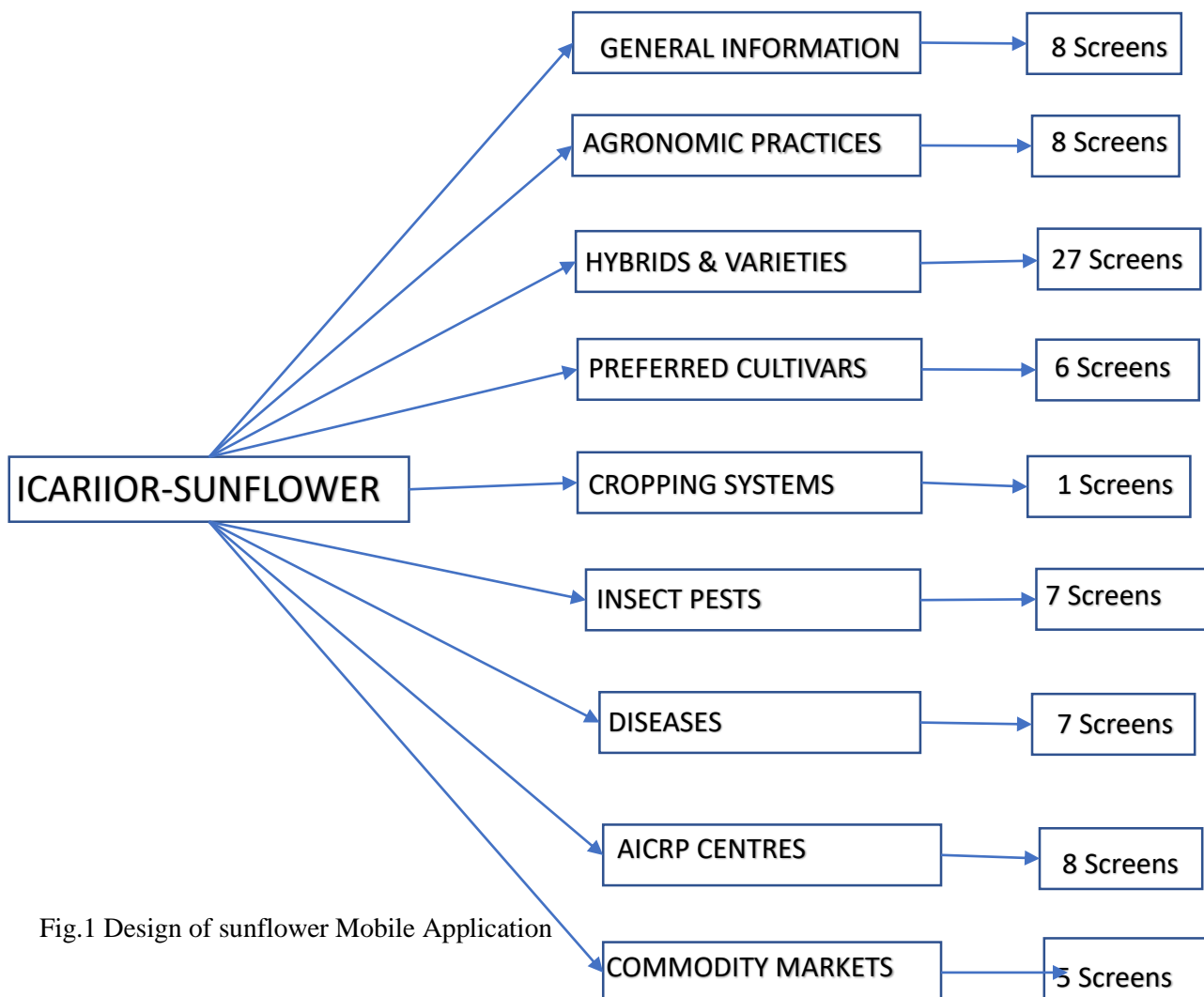


Fig.1 Design of sunflower Mobile Application

RESULTS AND DISCUSSION

In this ICAR IOR Sunflower App, developed by ICAR-IIOR has 85 screens with relevant photographs and text for different aspects. The mobile app is developed in english and has easy navigation from one screen to other. The main home screen has the drop menu option with information on general information, agronomic practices, preferred cultivars, hybrids and varieties, cropping systems, insect pests, diseases, AICRP centres and commodity markets(Fig.2). The basic information of the sunflower crop viz., scientific name, local names, importance, major crop growing states, seasons, climate and soils for cultivating sunflower and the approximate yields have been provided under general information menu (Fig. 3). Under agronomic practices tab, the information on sowing time, spacing, seed rate, seed treatment, recommended dose of fertilizers, irrigation, thinning and harvesting are discussed in brief. The information on seed yield, oil content, duration, suitable areas for cultivation of varieties and hybrids are discussed under the hybrids and varieties menu. Upon clicking the cropping system tab, the popular intercropping system recommended for different states along with information on addition net returns was displayed. This page includes photographs of inter cropping system followed in different states and description of row ratio of main crop and inter crop.



Fig.2

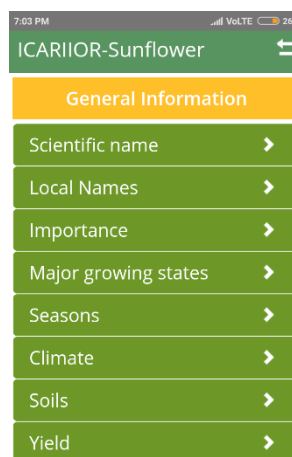


Fig.3

The information on pests and diseases which affect the yield of the crop were discussed in Insect Pests and Diseases tab wherein the nature of damage, management practices along with the suitable photographs was provided. The contact details AICRP centres related sunflower crop are provided under AICRP centres menu. Once the crop is harvested, the farmer has to sell the produce in the markets. Hence, the daily prices prevailing in the major APMCS with regard to sunflower growing states are provided under Commodity market menu.

Finally, the aim of developing the Mobile app is to provide handy information in a cost effective way on sunflower to the end users including farmers, researchers, extension workers, NGOs and students. The increasing popularity, access, use of mobile phone technology and its diffusion in all the section of the society in India give a distinctive opportunity in ICT mediated extension for communicating agricultural information (Lahiri *et al.*, 2017). The ICAR IIOR Sunflower Mobile has been developed to offer valuable information on improved and latest varieties/hybrids and package of practices of castor to extension professionals, farmers, researchers, students and other stakeholders. The Apps can contribute significantly to production and productivity of castor and boost castor farming in India.

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