Chapter 32
ICT Based Pest Management System for Sustainable Pulse Production: A Case Study

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ABSTRACT

"E-National Pest Reporting and Alert System" in pulse crops is a unique ICT based decision support system, which is very effective and easy to operate through a centralized server system at National Centre for Integrated Pest Management, New Delhi, connected with internet and mobile phones. This system has developed to cater to the needs of rural farmers of India, who grow pulse crops. The useful information is collected, stored, processed, and interpreted, and the appropriate advisories are sent to the registered farmers through centralized server system. They apply suitable corrective measures as per advisories at right time, and thereby, heavy loss caused by various pests can be checked/minimized below economic threshold level. Based on the past experiences and larger response of the stakeholders, Department of Agriculture and Cooperation, Govt. of India, suggested that this program should be extended and implemented in all pulse growing states. This system is quiet useful bottom to top level officials/policy makers, involved in E-Pest Surveillance programme.

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INTRODUCTION

Pulses are the major source of dietary protein for majority of Indian population. India is the largest producer of pulses with 25% share in the global production but it is not sufficient to fulfill nutritional requirements. India relies on import of additional pulses (1.5-2.8 MT per year) from neighbouring countries. This un-wanted import had an economic brunt on the national exchequer to the tune of 1000 of cores per annum. Maharashtra (20%), Madhya Pradesh (17%), Rajasthan (11%), Uttar Pradesh (11%) and Andhra Pradesh (11%) together account for 70% of the total production of 14.76 MT from an area of 23.63 M ha (www.agricoop.nic.in, 2009-10). The reasons for shortage of pulses in India are technological barriers of high yielding varieties, erratic & inadequate rains and upsurge in pests hitherto minor. The impact of climate change has also resulted in resurgence of pests with varying intensity. Hence, there is urgent need to increase the production of pulses, by managing these pests causing significant yield loss. Pest surveillance or monitoring is a cornerstone of pest management rather than calendar-based treatments. The purpose of pest surveillance is to know whether pest in present in the fields and hence to apply the appropriate pest management practice. By continuous and systematic pest surveillance, epidemic situations of any pests can be avoided by detecting damage prior to firm establishment of a higher pest population. In fact, pest surveillance provides field-specific information on pest pressure and crop injury leading to take appropriate decision about selection and application of pest management procedures. Use of information and communication technology (ICT- Internet and mobile) in pest surveillance constitutes e-pest surveillance i.e. basically a web based Decision Support System (DSS) for timely collection of data with regard to pest population and preparation of reports which greatly facilitates the execution of pest management activity. Currently, Directorate of Plant Protection, Quarantine and Storage (DPPQ & S), Faridabad, is responsible to undertake pest surveillance with the help of countrywide located 32 Central Integrated Pest Management Centers (CIPMCs), which is being carried out through rapid roving surveys. Present set up of this organization do not provide real-time information about pest built up, as a result pest damage is occurred before action could be initiated. Whole operation is based on the manual processing of data required manpower as well as time to take up any emergency situation. Unfortunately, systems of compiling and distributing the data are not suitable in devising management strategies. Additionally, lack of capacity and technology within the infrastructure has undone previous investment in IPM and unintentionally gave way to promotion of use of chemical pesticide.

In view of the futuristic requirements as well as strategies to meet unforeseen circumstances, Department of Agriculture and Co-operation (DAC) and National Centre for Integrated Pest Management (NCIPM), New Delhi, took the initiative under the ambit of National Food Security Mission (NFSM) to increase the yield by reducing pest infestation, with the help of "e-Pest Surveillance" and implementation of Area-wide Integrated Pest Management System by involving State Agricultural Departments (SADs), KVK (Krishi Vigyan Kendra) officials and farmers by conveying the clear cut message to the farmers about appropriate and timely decisions to be taken for pest management and the response of farmers are highly significant and encouraging. In this programme, IPM nuclear model villages have been established in 5 major pulse growing states (Uttar Pradesh, Madhya Pradesh, Andhra Pradesh, Maharashtra and Karnataka) of India to implement plant protection measures, covering 76,000 ha in farmers' participatory mode in collaboration with State Agricultural Universities (SAUs). The Department of Agricultural and Co-operation (DAC) has provided separate support