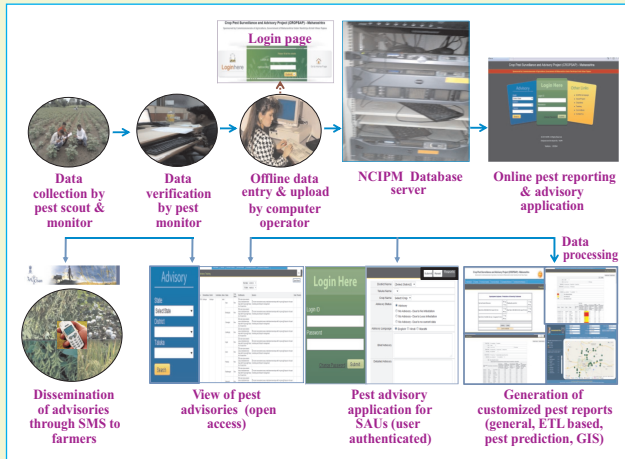


ARCHITECTURE OF E-PEST SURVEILLANCE AND ADVISORY SYSTEM



PROGRAMMES OF ICT BASED PEST SURVEILLANCE IMPLEMENTED BY ICAR-NCIPM

- Crop and Horticultural Pest Surveillance & Advisory Project (CROPSAP/HORTSAP) at Maharashtra .
- National Information System for Pest Management (NISPM) for Cotton.
- Online Pest Management and Advisory System (OPMAS) for Bt Cotton.
- Rice e-pest surveillance (RePS) and advisory services for Rice in Tripura.
- e-National pest reporting and alert system under accelerated pulse production programme (A3P).
- ICT based pest surveillance and advisory services for Rice in Raisen district of Madhya Pradesh.
- ICT based pest surveillance for study of pest dynamics in relation to climate change for Rice, Pigeonpea, Groundnut and Tomato.
- ICT based pest surveillance and advisory services for horticultural crops in Haryana.

IMPACT OF E-PEST SURVEILLANCE PROGRAMS

ICT based pest surveillance provides a larger canvas for implementation of pest management in terms of technological use, number of stakeholders, number of crops, area covered, skill imparted and employment generated. Digital database on pests allows capture of spatial and temporal variability over seasons.

Crops and area covered across Indian States with number of farmer beneficiaries

| Program | Crops | Area (ha) | States | Farmers Benefitted (nos) |
|---------------|--|-------------|--|--------------------------|
| CROPSAP | Soybean, Cotton, Rice, Tur, Gram | 1,10,00,000 | Maharashtra | 90,00,000 |
| HORTSAP | Mango, Banana, Pomegranate, Sapota, Citrus | 3,62,000 | Maharashtra | 15,000 |
| NISPM & OPMAS | Cotton | 25,134. | HR, PB, RJ, GJ, MP, MH, TS, AP, KA, TN | 41,000 |
| A3P | Mung, Urd, Tur, Lentil, Gram | 2,00,000 | MH, UP, MP, JH, AP, KA | 75,000 |
| RePS | Rice | 79,000 | Tripura | 5895 |

ICT based pest surveillance has demonstrated scientific pest management with yield increases across crops and States in addition to judicious use of pesticides. Features of easy replicability, extensive area coverage, efficient use of resources and extreme robustness of ICT based pest surveillance fulfils the policy adoption of 'Integrated Pest Management' and 'Digital India' together.

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INFORMATION AND COMMUNICATION TECHNOLOGY BASED PEST SURVEILLANCE

An Effective Tool for Successful Area-wide Crop Protection



Developed by
ICAR-National Research Centre for Integrated Pest Management
 New Delhi – 110012

PREAMBLE

Changing severity of pest problems are continuous with technology led modifications of agricultural practices and due to climate change. In crop production, 15-25% yield reductions occur in India due to insect pests and diseases. An effective method of crop protection in larger areas is a possibility through systematic real time pest surveillance at field level involving farmers. Pest surveillance has the components of survey and monitoring for use in pest risk analyses, establishment of pest free areas, preparation of region and commodity based pest lists and field level pest management. However, its use for pest management involving Information and Communication Technology (ICT) is a boon for achieving an instant and healthy crop production empowering the crop growers and extension personnel of each State with knowledge based actions implemented along with distribution of critical inputs when and where needed. ICT based pest surveillance (also referred as *e* pest surveillance) detects pest populations and their damage prior to attainment of epidemic situations on target crops and facilitates need based pest management than the risk responsive interventions.

MISSION

- Maximizing crop yields through minimization of yield losses due to pests across major agricultural crops through ICT based pest surveillance and digital advisory.
- Effective and efficient implementation of crop production technologies in general and plant protection in particular through awareness creation and training of farmers.

REQUISITES FOR AN ICT BASED PEST SURVEILLANCE

1. Consensus of State government and associated stakeholders with their roles and responsibilities charted with needful budget allotment.
2. Awareness creation among farmers through group meetings and mass media.
3. An organized sampling plan for selection of fields of target crops.
4. Scientifically based sampling methodology for pests including the monitoring tools (GPS device, traps and lures for insects, data sheets or mobile apps for data entry).
5. IT infrastructure (server, computers, customized software for data entry cum upload and reporting, and modems for internet connectivity).
6. Schedule for pest surveillance, man power for pest observations, data entry and issue of advisories.
7. Skill development for pest scouts/monitors and data entry operators through training.
8. Knowledge on economic thresholds of pests along with formulated pest management advisory capsules for target crops.
9. Registration of growers with their mobile numbers.
10. Need based dissemination of pest management advisories based on real time pest status in fields of growers.
11. Continuous co-ordination among all the stakeholders – [State Department of Agriculture (SDA), State Agricultural Universities (SAUs), ICAR – crop based and thematic institutes as per target crops] right from programme formulation to field level implementation in terms of knowing

the pest status, pest management recommendations and issue of advisories to farmers.

IT TOOLS REQUIRED FOR PEST SURVEILLANCE

- GPS devices for recording of surveillance field coordinates
- Laptops or mobiles with softwares for pest surveillance data entry and reporting modules
- SQL server 2008 & SQLite for database management
- Modems for internet connectivity to upload data and issue of pest management advisories
- SMS portal for dissemination of advisories

STRUCTURE FOR IMPLEMENTATION OF ICT BASED PEST SURVEILLANCE

Data from fixed and random fields 8000 ha/week

