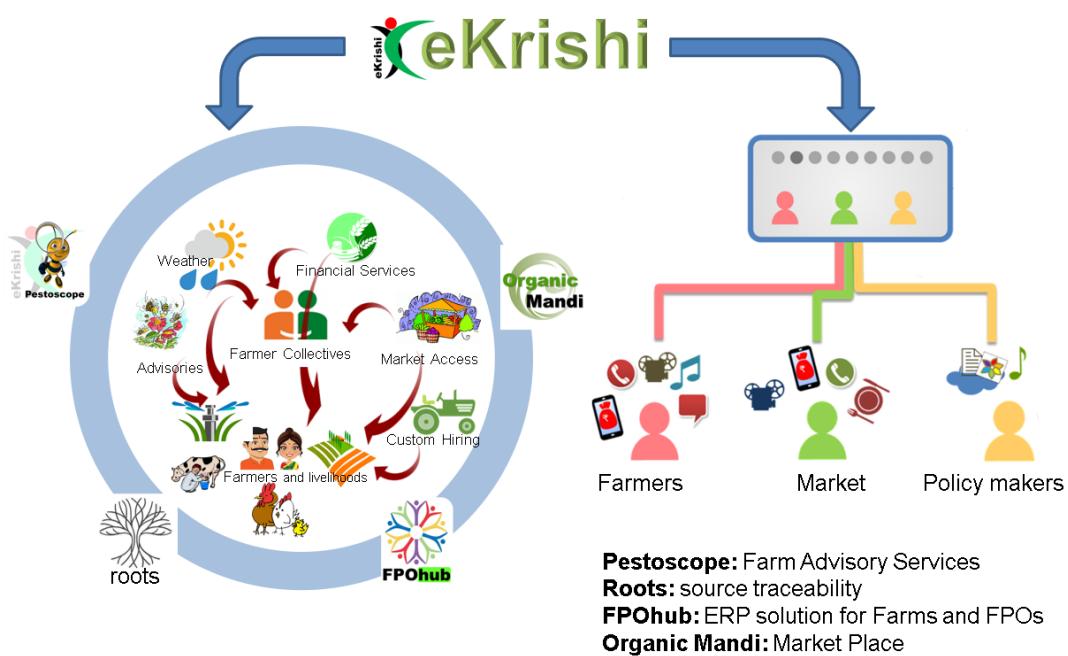


eKrishi: Towards An Integrated Digital Platform

One of the main reasons for crisis in agriculture is lack of timely and quality farm extension services. The knowledge and extension in agriculture today is highly generic and do not serve the local needs. In the absence of quality extension, the farmers are dependent on the local input dealers and depend on them for the practices. Costs of extension services are also becoming prohibitive and government is withdrawing from them. With the onset of digital revolution, there are many startups which have come with digital applications to provide information, they all function as silos without data interoperability and farmer/farmer collectives end up subscribing to too independent solutions. In this context Centre for Sustainable Agriculture started working on an integrated digital platform which can plug in any application and be accessible over cloud which helps the field level functionaries to have easy access to the information and knowledge.

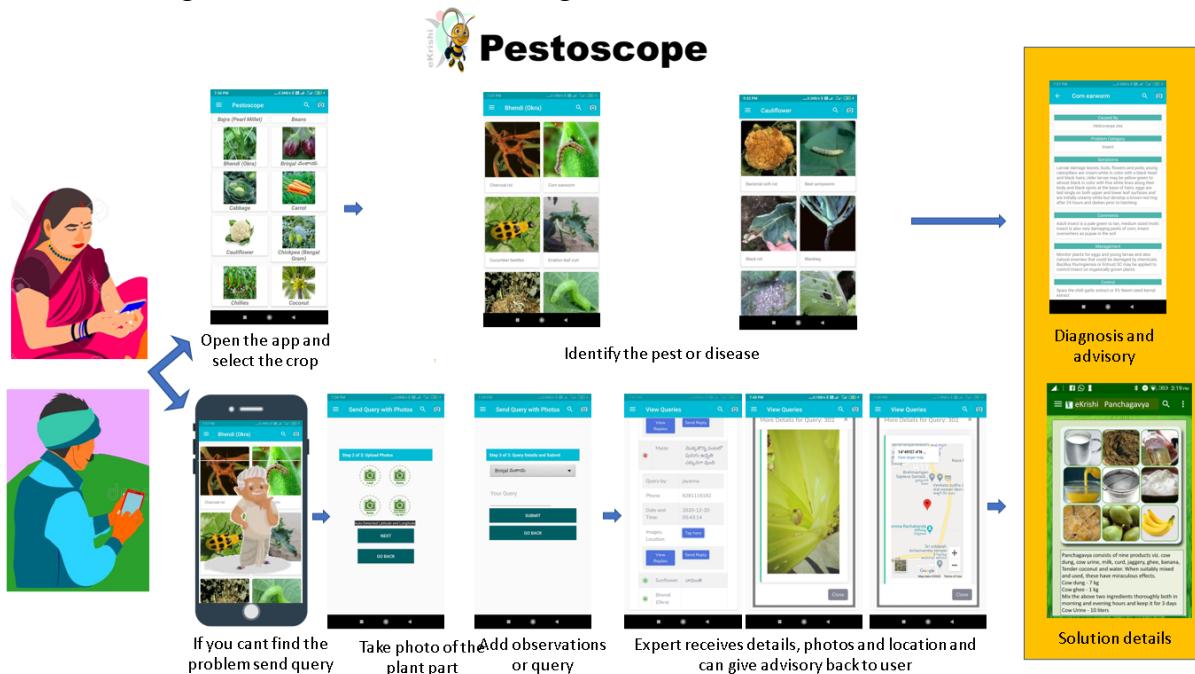
eKrishi: is an integrated digital platform for small farmer collectives to manage their production and marketing. The platform will provide a cloud based end-to-end digital decision support services to farmers and farmer collectives. eKrishi will use a hybrid digital and offline model to establish comprehensive support services to farmers to improve their incomes, improve the sustainability of production system and supply chain and establish a transparent traceability system.

The application will have the following modules.



Module I: eKrishi Pestoscope: a pest and disease surveillance, diagnosis, and advisory tool

- Pestoscope:** The pests and diseases in various crops (paddy, wheat, tomato, brinjal, redgram, maize, potato and cabbage) indexed crop wise can be identified through the pictures. Once the pest is identified the user can access the management practices.
- Diagnosis:** if the user cannot diagnose the problem, or face with a new problem send query module will help the user to collect required information and take 3 photographs to the experts and suggestions would be given in a day time and the system would be updated with the new problem and solution.
- Pest and disease Surveillance:** Regular monitoring at the village level to understand the kind of pest and disease build up species wise, number wise and abiotic stresses like drought, advise farmers for necessary action. This is based on the counts in the traps established in different directions. This data provides accurate pest and disease incidence and helps in making better advisories at the village level.



Module II: eKrishi GEO: Soil, Weather and Crop management

- Weather monitoring:** The weather parameters –

- atmospheric temperature,
- humidity,
- rainfall

through an automatic weather station. Daily update on weather parameters helps to monitor the abiotic stresses like drought, floods, hailstorms etc. The data will also feed into the central server based on which long term predictions can be developed.

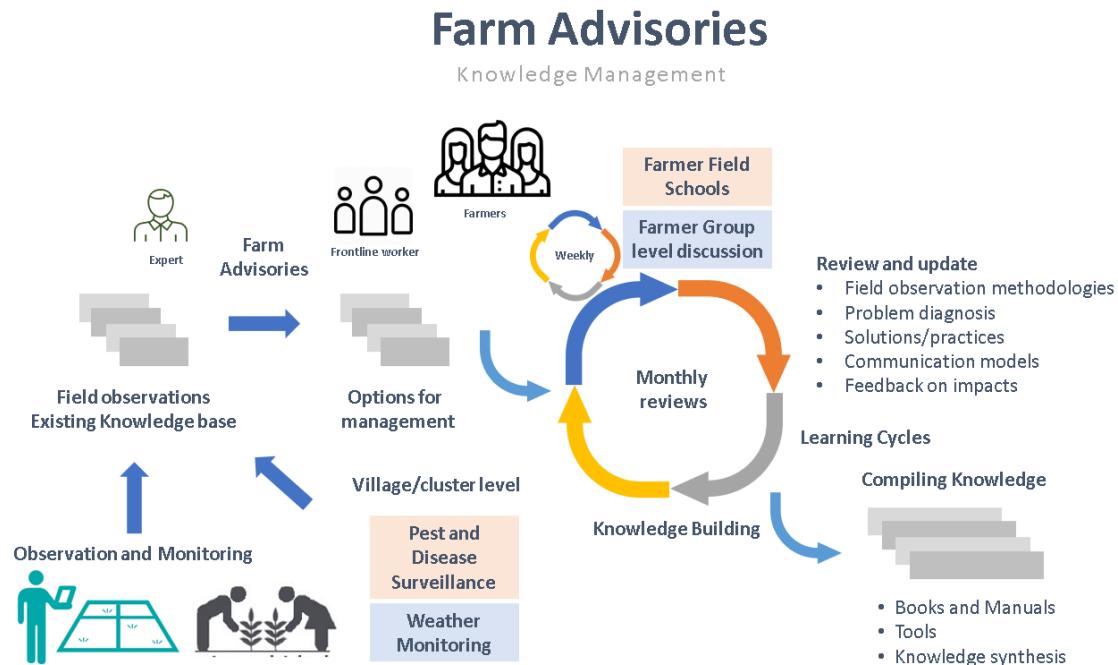
2. Soil Monitoring:

- Nutrient content
- pH
- EC

d. Soil moisture

Through soil analysis and use of probes soil nutrient content (major nutrients of NPK), pH, EC and soil moisture would be captured based on which crop choices, advisories are given.

Advisories on sustainable crop management: all the practices for management based on pest and disease alerts, weather data are sent to the farmers. Based on the farmers feed back the knowledge base is updated and disseminated.



Module III: eKrishi Roots: for Source Traceability

1. **Organic integration:** Helps farmers and farmer group to manage the Quality management data from their mobile phones. Android app is already released. This data can be used for submission to any PGS (Participatory guarantee System) and organic certification systems.
2. **Trace :** tools to trace the farm produce at various levels.
 - a. **Production level** Geo-tagging of plots, Practices followed, Season of harvest, Quality standards adopted (Organic Certification, PGS, Good Agricultural Practices)
 - b. **Collection and distribution Centres:** product aggregation, grading, distribution. Bags/Crates can be tracked using RFID cards.
 - c. **Processing and Manufacturing:** in case products are processed (single ingredient for eg paddy to rice) or manufactured (multi ingredients for eg cookies made using millets, jaggery etc) ingredient source data is managed.

Module IV: eKrishi FPOhub: for Farmer collectives and their business operations

1. **Farmer Producer Organisation Management:** Tools to manage farmer collectives
 - a. **Information on legal compliances:** Registration, Taxation,

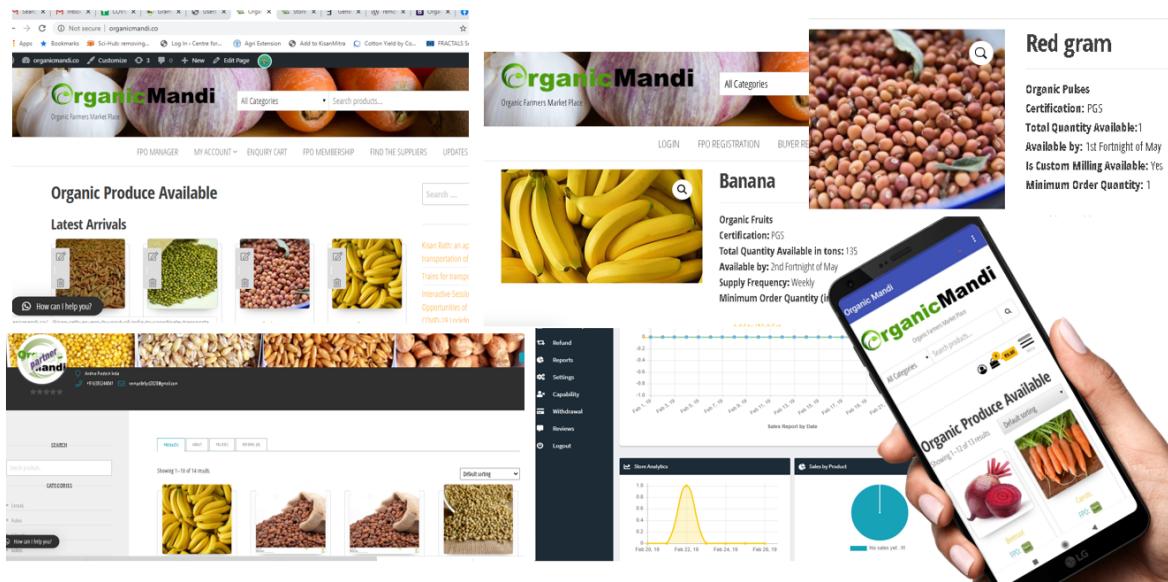
- b. Information on support services:** Credit and Insurance services, Market information
- c. ERP for FPO management:** an ERP solution to help FPO to manage their enterprise with details about
- Membership
 - Share capital.
 - Loans and finances
 - Production and Business planning
 - Inventory/Stock management
 - Custom Hiring of machineries and services
 - Forward backward linkages
 - Accounting
 - Transactions (products and cash), and
 - Legal compliances: Tax compliance, Annual Returns etc



Module V: eKrishi Organic Mandi: Organic Mandi is market place for farmers for buying inputs or selling their produce. Its an aggregating e-commerce platform. This will have a dashboard for each farmer collective

- Online sales
- Bulk sales
- Quotations
- Customer Management

Organic Mandi



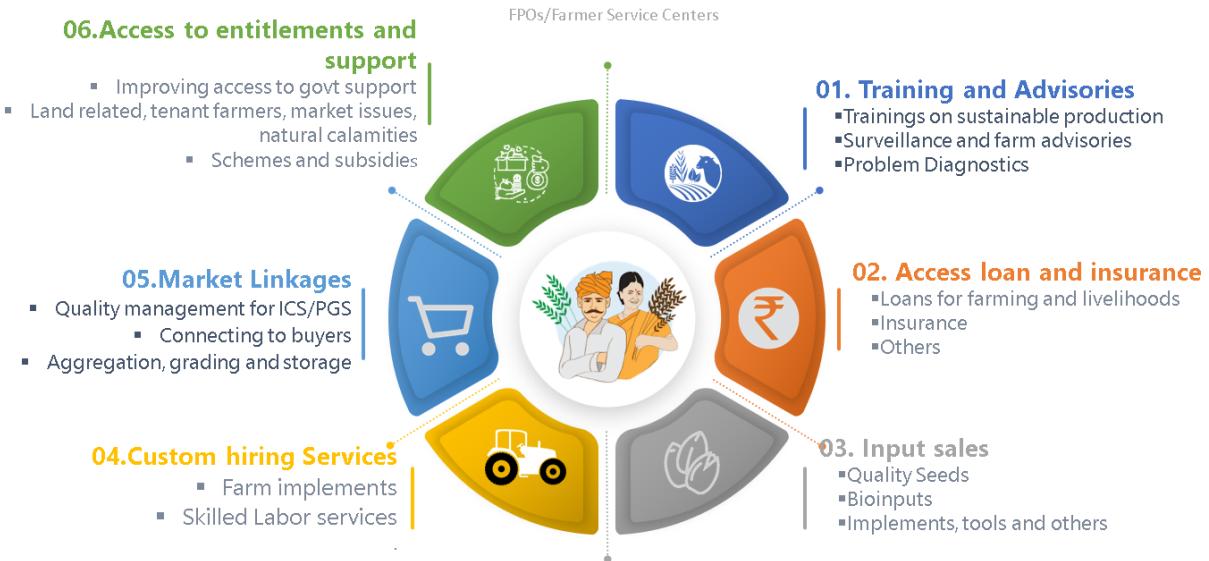
Module VI: eKrishi KisanMitra: to improve the last mile delivery of the public support services for farmers by improving governance and provide one stop information and run a helpline for handling any grievances.

- To track the performance of public support services to farming
- Public investments
- Subsidies
- Extension services
- Agricultural credit
- Crop and livestock insurance
- Prices etc
- Available Services to Farmers
- Performance monitoring based on statistics
- Helpline for farmers to increase access to support services to farmers
- Recruiting Kisan Mitras (Champion Farmer – both men and women, empowered with eKrishi) for establishing community of practice and bridging the gap of gender digital divide through peer-to-peer learning.

User Access

- Mobile/cloud applications:** The apps developed for various mobile platforms will help farmers, grassroot extension workers, community resource persons and farmers to directly access the information and the grass roots workers to enhance their knowledge and skills
- Farmer Service Centres:** Farmer Service Centres are set up by entrepreneurs or Farmer collectives to provide the bundle of services which include
 - Digital classrooms for trainings etc
 - Diagnostic tools
 - Input sales and
 - Procurement centres
 - Custom hiring centres

Farmer Service Centers



Farmer Service Centre



Custom Hiring Centres

Farm Machines | Skilled Labour | Packaged Services



Collection Centres

- Quality Assurance
- Aggregation
- Grading
- Transportation

Images courtesy: Be'Nishan Producer Company



Team involved

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More info on eKrishi: www.ekrishi.in

The University of York || STFC Hartree Centre || IBM Research || RAL Space