

WEBSITES DEVELOPED:

SEED INVENTORY MANAGEMENT SOFTWARE

This software is developed and used by NSP, Bangalore. Salient features are as follows:

- Entry of sowing details to software and extraction of crop wise, variety wise and season wise sowing data
- Updation of final inspection report linked to sowing inspection and arrival updation based on FIR reference
- Updation and extraction of arrival and processing details crop wise, variety wise and season wise
- Updation of quality control or genetic purity details, delivery details to stores and extraction of daily stock reports details etc...

The image displays three screenshots of the SeedStep Admin portal interface, each showing a different form. The top navigation bar is green and contains icons for Users, Crops, Sowing Report, Seed Receiver, QA, Billing, and Reports. The first screenshot shows the 'Add Farmers' form with fields for Farmer Name, Father/Husband Name, Anahin Acres, Village, Taluk, District, State, Pincode, Mobile, Email ID, Caste (with a dropdown menu), Aadhar Card Number, Bank Name, Branch, and Account Number. The second screenshot shows the 'New Quality Assurance' form with fields for Seed Processing Lot Number (a dropdown menu), Date of Sampling, Date of Test, Germination (%), Genetic Purity (%), Date of Resampling, Date of Test, Germination (%), and an STL Report field with a 'Choose File' button. The third screenshot shows the 'Create Billing' form with fields for Billing Type (a dropdown menu), Phone Number, Farmer/Institution (with a dropdown menu), Center for Seed Purchase (a dropdown menu), and Payment Mode (a dropdown menu). Below these fields is a table for 'Crops' with columns for S.No., Crop Name, Variety, and Class. The table has one row with 'Please Select Crop', 'Please Select Variety', and 'Please'. Below the table are fields for Total, Advance Paid (Rs), Rebate (Rs), Remarks for Rebate, Transportation Handling (Rs), and Grand Total. Each form has 'Save' and 'Cancel' buttons at the bottom.

ONLINE FERTILIZER RECOMMENDATION SOFTWARE – KRISHIGANAKA

“Krishignaka” mobile App/Website has been developed for online fertilizer recommendation through STCR approach for Tumkur district, which is 1st of its kind in India. Using mobile application farmers can get fertility status of their land by (using Geo-Coordinates of their land through satellite) standing on their field and also get the fertilizer nutrients to be applied as per STCR targeted yield concept in the final **Soil Heath Card** by entering the crop to be grown and the yield target.

Website: Online Fertilizer Recommendation
<http://www.krishiganaka.sit.ac.in>



Scan Me



Google Play Store: Krishiganaka

Scan Me

Next Generation Technology (NGT) forecasting pests and diseases

Information and Communication Technology (ICT) and internet of thinking (IoT) based intelligent pest and disease forewarning system for rice, pigeonpea and grape is an innovative system for providing forewarning on pests and diseases. It aims at improving farm productivity through better crop management (www.ngtforewarningpd.com). In this web portal, aims to predict the occurrence of pests and diseases based on microclimatic parameters generated by automated weather station (AWS) data. This pest and disease forewarning information and appropriate crop management practices will be disseminated to the farmers using electronic media through short message service (SMS) and mobile application. In this way, both livelihood security and environmental security are achieved.

- AWS system monitors all the critical parameters 365 days 24 hrs a day from the farm and opting data to cloud server and later saved in UAS, Bangalore local server.
- The data is used for analysis by the scientists and research team at UAS, Bangalore, to develop statistical and mathematical predictive models for agricultural pest prediction.
- The system would calculate various parameters using a defined model developed by the scientists on the data received.
- The build-in threshold for each pest of rice, pigeonpea and grape provides mobile alerts about the pest occurrence based on weather parameters and advisory to manage.

- The registered farmer will be notified through a short message service (SMS) in the local and English language.

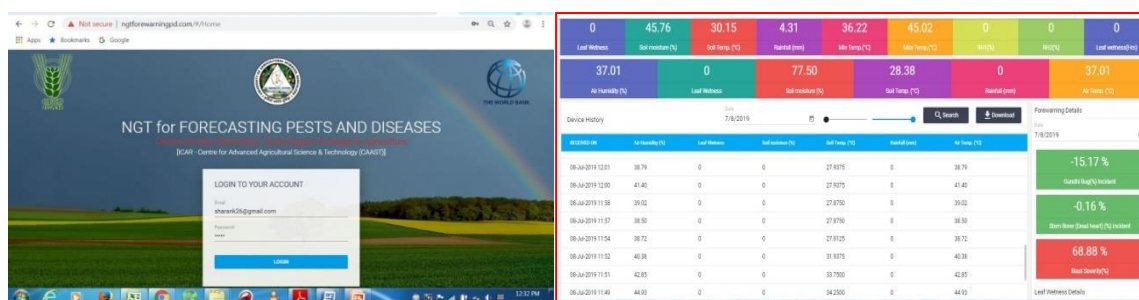
Advantages:

- Monitor farms on a real-time basis and identifies problem proactively
- Reduce production losses due to pest and human error
- Increase productivity and environmentally safe
- High-end analysis for optimizing environment parameters
- Alert mechanism – During any deviation in environmental parameters
- Forecasting models for rice, pigeonpea and grape pest and advisory to manage.

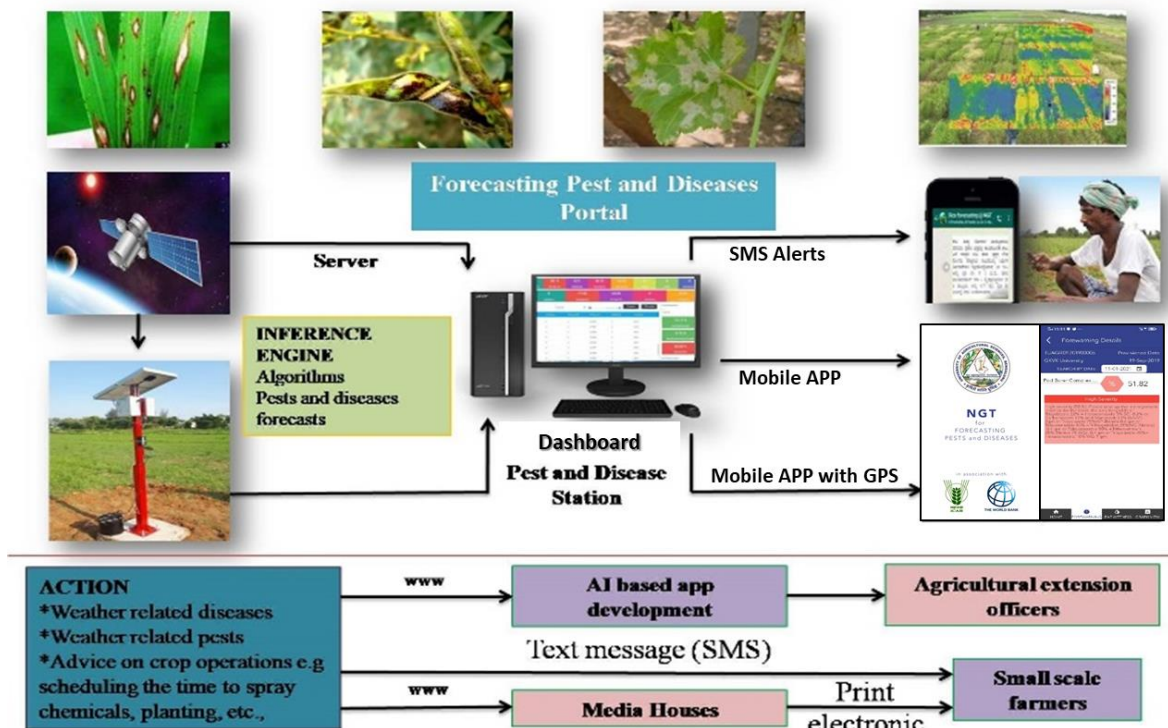


Integrated agricultural pest and disease forewarning web portal

www.ngtforewarningpd.com



The web portal of agricultural pest & disease forecasting and issuing an advisory to the farming community through SMS alerts (Dashboard).

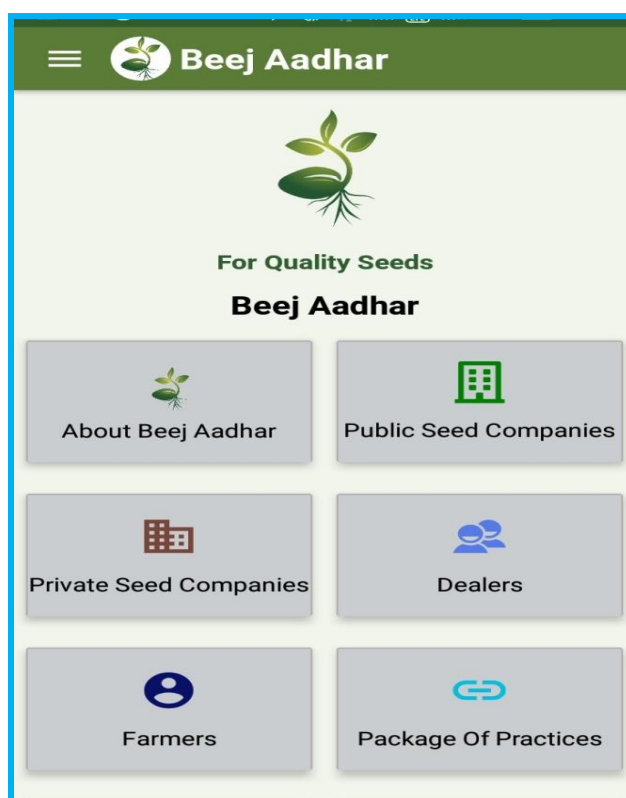


The architecture of NGT- forewarning pests and diseases web portal

Mobile Apps developed

BEEJ AADHAR App. as a seed platform where in both public and private seed industry personnel can upload the latest technologies related to seeds.

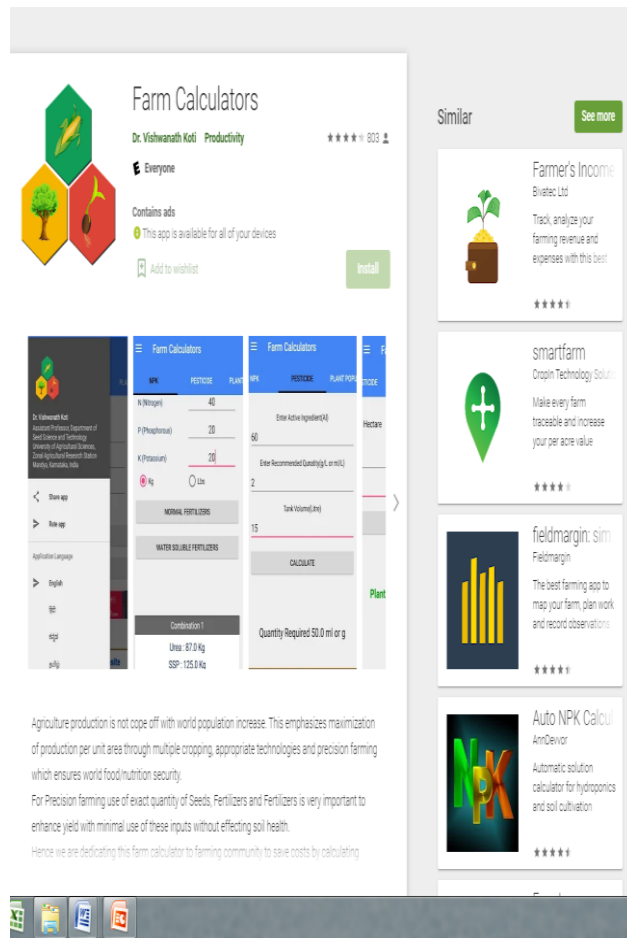
- “BeejAadhar” mobile app and webpage has been developed to create common platform for the seed producers, consumers and seed stakeholders for furtherance of the sustainable agro production system.
- It provides information on all hybrids/varieties developed, Land races, etc., field tested and being distributed from all type of seed producers to the farmers or farmer’s organizations, availability, cost of seeds, also establishes organic linkages between seed producers and growers besides providing information of package of practice and advanced technologies.



BeejAadhar App

FARM CALCULATOR App which is ready calculator for fertilizers calculation, seed rate and plant population calculation instantly.

- Fertilizers (NPK) Calculator: Calculate exact quantity of NPK fertilizers required per unit area based on recommendation or soil testing, which saves costs and avoids excess use of fertilizers and degradation of soil health.
- Pesticides/ Fungicides/ Herbicides Calculator: Apply exact quantity of Pesticides/ Fungicides/ Herbicides of different company pesticides with different active ingredients (a.i) to manage your pests/diseases/weeds at your farm and minimize excess use of these agriculture inputs
- Plant Population Calculator: Calculate exact number of seeds for your field crops or plats required for unit area for your horticulture crops.
- Seed Rate Calculator: Calculate exact quantity of seeds required for your farm based on seed test weight and germination of the seeds.
- Seed Blending Calculator: Calculate blending of seeds of marginal lots with high germination lots to avoid wastage of marginal seed lots according to Karl Pearson square method. This could be also used as wine blending calculator.

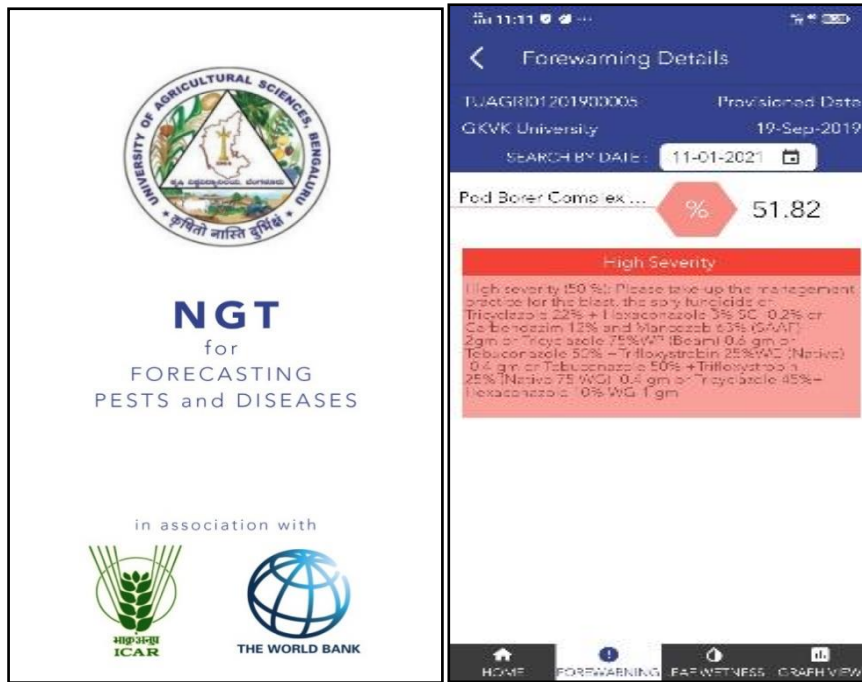


Farm Calculator App

Agricultural Pest Prediction and Advisory (APPA)

Among ICTs there has been increasing use of mobile phones with number of services provided by various agencies. Mobile phones have penetrated rural India bringing by the digital education. In this background, an android based mobile app has been developed for disseminating the technology's. This mobile application is in continuation with the web portal (www.ngtforewarningpd.com) NGT forecasting pests and diseases. The additional features provided in the APPA are as follows

- Farmers can view the forecast and advisory whenever it needs.
- It is enabled to gather the open source weather data of current location by GPS (mobile GPS should be on).
- Model incorporated will predict the pest severity based on the local weather condition
- Advisory will be issue based on the pest severity.
- This mobile application increases the accuracy and is user friendly

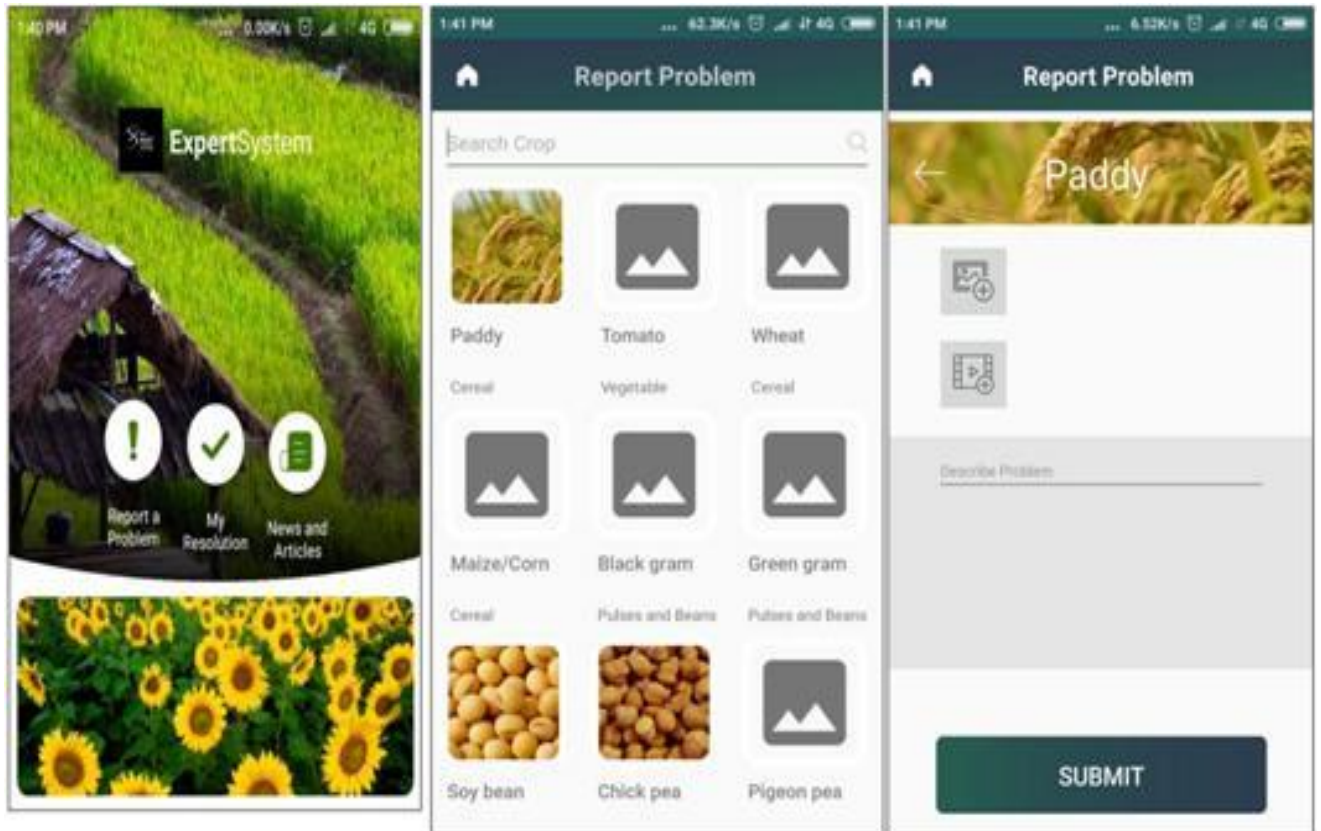


Android mobile application for pest and disease forecasting and advisory issuing to farmers

NGT EXPERT SYSTEM

NGT expert system is an android mobile app for managing pests and diseases on field by experts which would be reported by individual farmers or pest monitors on behalf of farmer. Farmers report the problem on field by using android app which is transferred to designated

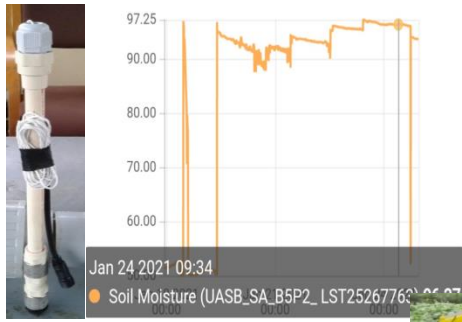
expert. Experts then provides advisory to the farmer through text SMS or voice SMS.



Field automation/ precision crop practices

Sensor based automated irrigation techniques in important agricultural crops

Conventional surface irrigation is water expensive and costlier. Precision production system through time / volume based automation require human intervention and interpretation, emphasizes for sensor based automation for efficiency and effectiveness. This system provides complete precision irrigation solution considering crop, soil and weather information using AI and IoT. It consisted of Gateway, Soil moisture sensor, Field controller, Solenoid valve, IoT pump controller.



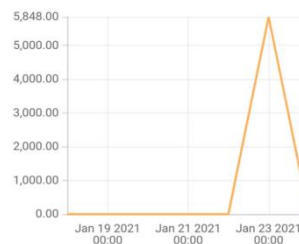
Soil Moisture sensor



Field controller



IoT pump controller



Solenoid valve

- Laser Spray / Rain Hose Method Of Irrigation could enhance uniform germination of agricultural and vegetable crop seeds.



- Drip irrigation in aerobic rice saved water to the tune of 45-55 percent apart from reducing methane emission (18-20 Kgs/ha) almost 5 times less over surface flooded irrigation.
- Drip Irrigation with application of N & K fertilizers through fertigation in different splits at fortnightly intervals upto flowering enhanced N and K use efficiency upto 65 and 80 percent respectively

Reduced runoff farming

Conceptualizing drylands with rainfall above 750 mm as irrigated ecosystem, a water and energy secured polyhouse based rainwater harvesting and sustainable production system is generated under NAHEP. The components of the system includes complete rain water harvested polyhouse, storage sump having a capacity of 50% harvestable water, solar green energy system and precision protected cultivation viz., sensor based automation, fertigation, weather control. The module supports commercial crop under protected cultivation for 220-250 days annually with only harvested rain water.



Reduced Runoff Farming

Solid state cooling module for raw milk cooling

India is the leading producer and consumer of dairy products worldwide with 130 million ton annual milk production, yet a significant proportion is spoiled due to microorganism activity and lack of transportation facilities in rural areas of India. Proper cleaning and rapid cooling at 4°C or less temperature is essential to avoid spoilage. TEC or SSRS is an alternative for the conventional cooling systems. This technology works on the principle of Peltier effect which states that when voltage is applied between two ends of electrode, which is connected to semiconducting material creates the temperature difference which will cause material to diffuse from hot side to cold side. Thermoelectric solid state systems are compact, reliable, noiseless, flexible, eco-friendly and green technology. The present refrigeration system provides more cooling effect by using refrigerants but is has some disadvantages like emission of GHC's. Considering these demerits of conventional refrigerator system, the solid state refrigerator was designed and developed.

It is fabricated with food grade stainless steel material with 52 W/mK. The inner vessel (water jacket) has 3 litre capacity and outer cooling cabinet has 6.5 litre capacity, having 45 cm height and 15 cm diameter and the insulation has been provided to the unit with thickness the of 1 cm to reduce the heat loss to the surrounding. Components of solid state refrigerator include, Thermoelectric module/cooler, Extended fins with exhaust fan (heat sink), Switch mode power supply



Outer and inner view solid state cooling module

Use of ICT in dispersing agro-met advisories

ESAP for real-time pest management

ESAP is a digitized tool to empower extension officers of Dept. of Horticulture and Rural youth for real-time pest management through ICT platform -ESAP

- Extension officer of Dept. of Horticulture (Ramanagara and Chikkaballapura districts) and rural youth @ 1 per taluk were trained and empowered with tablets containing pest diagnosis and management contents for providing on-spot consultation to farmers
- During the period of 10 months Extension officer and rural youth diagnosed and suggested management options for 16,813 pest problems
- Problems that were unable to diagnose using tablets were referred to subject experts located at KVK and other stations. Totally 1389 such problems were resolved by the experts using smartphones/ computer within 24 hours
- Based on the success of the pilot project implemented at UAS, Bangalore, the Dept. of Horticulture, Govt. of Karnataka has expanded and adopted the same in the entire state of Karnataka.



Extension officers resolving pest problem using app-based support system in farmers' field.