

Mission IT-Rural

ICT Powered Holistic Farming Solution

Proven, validated, sustainable, scalable, unique Village-level model

Special Features

- * National interest driven 23 years efforts of self realized, self funded IT professionals
- * Village-level Agri Management Centres; Franchiser- Employee Model; PPP; Powered by ICT
- * Relaying key data such as live crop-variety production, weather, water level of local water bodies, etc
- * Deliverables like knowledge, input supply & direct selling of farm produces through aggregation
- * Addresses key issues like balanced production, food security & safety, crop loan & insurance
- * Establishing trust between stakeholders particularly farmers and the business entities
- * Two successful pilot projects: 1. ICT4Agricuture@AP; 2. Doubling farmers' Income @TN- 2021-23)
- *Appraisal by collective wisdom of GoAP&GoI-It is proven, replicable, pave way for new extension model





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Background

Science and Technology, particularly Information and Communication Technology (ICT), has been playing the key role in the Industrial revolution and in providing solutions for solving real life complex problems. As an exception, ICT is yet to unleash its full potential in the farming sector. Performance of the agriculture sector, particularly smaller & marginal farmers, still remains choppy and the viability & comfort level of doing farming have not improved significantly. The need of the hour is to transfer the merits of ICT to work at village level, in line with the rural characteristics, to benefit the farmers in terms of yield, quality, profit & comfort level to make farming viable and preferable.

Team of self realized, self funded IT professionals, with their 23 years of committed efforts, Mission IT-Rural. analyzed, designed, piloted and validated a unique, holistic, sustainable, scalable village-level ICT driven farming solution that delivers production based on demand, site-specific knowledge dissemination, better quality & yield and fair price.

Goals

1. to set up ICT powered Agriculture Management Center at Panchayat level, on Public Private Partnership (PPP) mode, Government to own infrastructure and private partner to deploy two employees per center and manage the recurrent expense through their business plan.

a). extend the PRESENT agriculture infrastructure of Government from Block/ Mandal level to Panchayat level, with the power of Information and Communication Technology (ICT) to optimize the outcome of Government schemes and missions (Extension activities). This will overcome the major constraints and limitations of the present system of one Assistant Agriculture Officer (AAO) to cover over 1500 farmers from 6+ VILLAGES and digital routes like Mobile App, Websites that need smartphone and banking literacy.

b). empower farmers, particularly small and marginal ones, to successfully, comfortably and profitably complete their entire crop lifecycle, with the help of two dedicated employees working in the center act as a human interface between the services/ solution and farmers.

c). Encourage farmers to gather, discuss, share, plan, etc at a recognized place for them. Video conference domain experts and playing latest video content on Modern Agriculture will play a major role in reducing the lab-field gap.

2. To timely gather and update the vital data/ information such as preseason survey to understand the trend of farmers, Live Crop-variety production Data, weather report, water level of local water-bodies, disease/ pest attack, etc.

3. To overcome the constraints of small & marginal farmers through aggregating their small input requirements for doorstep delivery and farm produce for effective marketing (Semi automated e-commerce).

4. To improve the trust factor between the stakeholders: Farmers - Government-Business community- Consumers.

5. To maintain the local water resources effectively and increase the gross area sown.

Methodology

1. Reaching the farmers at their doorstep by setting-up Agriculture Life-cycle Management Centers (Kiosks)/ Farmers Facilitation Centers in all Panchayats (irrespective of revenue strengths of Panchayats) on a Public-Private-Partnership Mode, **Franchiser-Employee Model** (Government to allocate district(s) to Franchisers and the Franchisers to recruit employees to work at village level center.

2. Appointing two persons per Kiosk to work as a human interface between the farmers and ICT solution; Operational expense is borne by the Private partner and the Infrastructure cost is borne by Government.

3. Advantage: Lack of knowledge, accessibility and affordability would not be a barrier as the technology is made to reach the farmer by the dedicated personnel in a most reasonable way; an end-to end solution that optimizes farming Life-cycle; This is a sustainable model but Knowledge dissemination is at no cost to farmers and subscription free model also. Results: Minimizing exploitation of present multilayer middle-men system; Improvement of quality; increase of yield; enhancing price realization for farmers; Live Crop Variety Production Data leads towards balanced production for food security and price control; facilitation of farm labor & machinery contracts; higher crop loan recovery and robust crop insurance. A realistically possible approach to empower small & marginal farmers to overcome their limitations & constraints through collective deals (input supply management & marketing).

Solution Architecture

Farmers Facilitation Center at Village		At users'/ consumers' level in the
<u>Level</u>		market
Franchiser-Employ	Computer	Mobile App, Web Portal would act as the
ee Model	Printer	interface for the users of Agri produces like
1 System Operator	Projector	merchants, Mandy, brokers, whole-sale
1 System Assistant	Weighing Machine	markets, consumers, etc.
	Internet	
	Furniture	
Key Functionalists :		Key Functionalists :
Knowledge dissemination, data gathering &		Relevant personnel at Block, District and
updating (mainly live crop variety		State level would ensure prompt, hassle
production data, weather report, water		free services on input supply, service sector
level of local water-bodies), semi a		and marketing farm produces.
automated e-commerce transactions for		
input supply, service sector & marketing,		
etc.		

The implementing agency would set up an Agriculture Life-cycle Management Center at Panchayats and roll-out their proposed solution (along with the available Government services) across the network, initially for the period of four years.

They would recruit, train and deploy appropriate personnel at Panchayat Kiosks (one system operator and one system assistant).

The implementing agency would manage the entire recurrent expense of the project through their business plan (as per the approval of the government).

Agriculture Management Center, initially, would share a suitable government premise that is available in the Panchayat.

The Kiosk is provided with ONE computer with One Computer with Internet connection, Printer, Projector, rain-gauge apparatus and required furniture.

The system operator and system assistant of the Panchayat would handle the key processes such as knowledge dissemination, data gathering & entering (particularly farmer-wise crop-variety area sown details for live crop production data, weather report, water level of local water-bodies), semi automated e-com transactions for the farmers to arrange inputs and selling their farm produces/ allied products on collective deal basis, farmer-labor & machinery contracts, Government-to-Citizenship (G2C) services, one hour free computer literacy programme for village youth, etc.

Usage and Benefits

- <u>Accurate market information for the farmers:</u> Since this solution provides for two way information namely from the farmer and to the farmer, farmers would not be misused/misled by lack of proper and authentic information on market conditions; To sell or hold decision would be accurate (Live Crop Variety Harvesting Data) so that at no point of time, farmers would be at loss;
- 2. <u>Comprehensive Knowledge Bank</u>: The best available Knowledge of Agriculture experts is computerized in a specific IT format in such a way to enable each farmer to get the exact SITE-specific information (printouts in regional language at no cost) at the Panchayat Centers for any of the requirements of agricultural life-cycle just as he/she could reaches-out the best expert in-person to have the details. New issues will be studied by the experts and the solution will be updated with the knowledgebank. The performance of solutions will be updated as farmers review.
- 3. <u>Up-to-date four-dimensional database of villages</u> (Family, Personal, Professional and environmental details):

The System gathers comprehensive data in such a way to provide a wide range of services to the four categories of villagers, namely people a). Who earns now (farmers, labors, SHGs,...); b) Who can earn (trainable and employable workforce); c). Who need not to earn at the moment (students, housewives) and d). Who can not earn (aged, disabled)

As far as farming is concerned, the system collects the baseline data of farmers such as farmer name, land extent, soil, irrigation source, method of irrigation, etc,. For every

season, the system generates agricultural Transactional Data (Season-wise, farmer-land-wise, crop-variety-wise area sown), which is the key tool of the system. At the time of harvesting it gathers crop variety area harvesting details, which emperors farmers to decide whether to delay harvesting/hold or store farm produce/ sell at current price.

4. Semi automated E-commerce (on collective deal basis)

Farmers can order required input materials of their own brand choice with specific date-of- delivery by paying money at the Center. Since most of the input materials are not touch & feel products and factors like small landholding size hence smaller requirements, logistical constraints such as physical fitness, transportation cost, etc would attract farmers to utilize this service. Data aggregation and trust factor makes this possible.

The business wing of the system would start the marketing process from the date of start of the season with the help of agricultural transaction data. It connects the field-market in a transparent way by enabling the farmers to sell their produce directly to the buyers (Government Mandy, Companies, Consumers, etc through the centers.

The system would provide logistical support also. Farm produce are highly touch & feel hence local assessment is required. Since the system, which provides the backward linkage to the farmers, facilitates this marketing process, the buyers would have better credibility over the quality issues. Very importantly, the farmers and buyers know the actual price of the transaction.

5. <u>Free Service to farmers and revenue model</u>: The system provides all knowledge related services at no cost to farmers. It collects a defined, small percentage as service charge from the farmers/business entity for money involved in transactions. This is one of the key revenue sources for the model.

Functionality

The key services farmers can avail at each kiosk are:

- 1. Spotting suitable markets in advance with Localized marketing intelligence. Live data of remaining area of the particular crop yet to be harvested would help them to decide whether to sell, hold or store (particularly during glut)
- 2. Selling farm produces through collective-deal -basis in a transparent, unbiased way that increases the net profit over 50% (with the existing scenario and would

act as the base for the mission of Government to double the farmers' income)

- 3. The farmer can select a crop based on evaluating his potential as well as demand vs. already sown area data of the crop variety the farmer considers for the current season (Live Crop Variety Crop Production Data). This would minimize excess production of a crop at the beginning stage itself.
- 4. Getting SITE-specific (as per soil health card details), optimal yield focused prescription (printouts in regional language **at no cost to farmers**)
- 5. Knowing, comparing and ordering quality inputs such as seeds, fertilizers, etc., with village-level delivery
- 6. Reaching financial institutions
- 7. Organizing farm-labor/machinery from the nearby area
- 8. Acting according to Regional Weather forecast
- 9. Diagnosing diseases through Disease- Diagnosis Tool for timely remedy
- 10. To understand Government Schemes and avail the benefits;

Similar services are available for other earning sources like animal husbandry, Self-employment, etc. In addition, services like G2C, education, health, etc also available at the kiosks.

Sustainability

The major revenue sources for the system are: Services charges from farmers/ business entities/service sector for their transactions/operations (the major revenue source); Event managements/ business promotions/ awareness programmes for all recognized stakeholders; Sharing data & conducting business surveys for recognized organizations; Charges for Facility related services such as G2C, DTP, ticket reservation, etc. The system becomes sustainable in two years from the time of implementation.

Uniqueness

The very unique feature of IT-Rural model is that, benefits of technology is made to reach the farmer at their doorstep through our own personnel;

- 1. This is a pro Public-Private-Partnership Model, infrastructure is owned by the Government and run by the Private partner. The Employer- Employee approach **eliminates the social barrier** for villagers to approach the kiosks to avail services.
- 2. All knowledge related services are at no cost to farmers and it is a subscription free model too. So, all the farmers (particularly smaller & marginal farmers) can get the up-to-date, precision farming oriented knowledge without **any financial barriers**.
- 3. The model is designed in such a way to set up kiosks in all Panchayats of the project area, irrespective of revenue potential, hence there is **no geographical barrier** for the villagers to reach the kiosks.
- 4. The Model does not buy or sell any products hence becomes a neutral platform (**no trust barrier**)
- 5. The model would pave way for setting up weather recording system at villages and thereby providing lead for village-level crop insurance scheme
- 6. The kiosk would have weighing machine thereby facilitating the farmers to get price for the actual quantity
- 7. Technology driven, agriculture focused, self-sustained model hence easy for scaling up
- 8. One hour free computer literacy to village children at no cost to them
- 9. Data driven through data aggregation approach that **minimizes data barrier**

10. The model earned the distinctive remark from the collective wisdom of the Government (RKVY Scheme) that 'the proposed model is unique, proven, replicable one and would pave way for new extension in the country and unprecedented support from Media

Beneficiaries

- **<u>1. Farmers:</u>** Farmers are the ultimate beneficiaries:
 - ✓ Access to better knowledge, quality inputs, man/ machine power, more formal finance, market intelligence, better bargaining power while selling farm produce, price for the actual weight, storages, etc, resulting in an increase of over 30% profit.

- ✓ Comfort level of farming has improved. Tension of farmers is reduced.
- ✓ Better risk management reduces the frustration level

It increases the working opportunities for the farm workers and employable candidates get connected with urban demand.

Social welfare schemes and missions to reach and benefit the eligible beneficiaries.

One hour free computer literacy programme to the rural youth to step up their competence level

All together, the confidence and satisfactory level of villagers has increased significantly hence mindless urban migration is reduced.

2. Government

Farmer-wise crop-variety-wise area sown/ harvesting details in a web-enabled format, in a timely manner would significantly assist the Government to analyse the Crop area statistics, production & forecasts and timely act. This would lead for:

- o Proactively managing the demand Vs. supply leads to regulate inflation significantly
- o Organizing MSP related procurements
- o Pre planning the export limits/ import quantity of Agricultural commodities
- o Effective Disaster management (flood, drought)

Lab-field knowledge dissemination at Village-Level with the power of ICT would allow the experts to think forward rather than repeating the information to big number of farmers; Field-lab feedback to assess the performance of the disseminated knowledge.

To understand and analyse the trend of the farmers, particularly during pre-season for better estimate, manufacture and distribution of Seed, Fertilizer, etc.

Better Return-On-Investment for farmers would significantly reduce the problems of banks in Crop loan recovery. This village-level infrastructure could be used for recording weather data and conducting desired number of crop

cutting experiments thereby opening the door for village-level insurance with the possibility to include more crops under coverage.

Optimizing various schemes like Seed village programme, farm-school, organic farming, etc., with the village-level ICT infrastructure (planning, implementing and assessing the outcome) for better results;

This village-level infrastructure would be used to execute other rural development activities;

3. Business Entities:

To understand and analyse the trend of the farmers, particularly during pre-season for

- o Better estimate, manufacture/ imports and distribution of Seed, Fertilizer, etc.
- o Effectively promoting products, getting customer queries and sales & services

Timely stock management as per the on- season demand;

To establish business relationship with villagers, aggregating the orders and do the sales/ procurement with proper logistics;

4. <u>NGOs</u>

To communicate with villagers and gather relevant beneficiaries' details cost effectively;

To do the regular follow-up for better result and accountability;

5. Consumers

Availability of quality food items at steady price;

It does not eliminate middle-men but tame them to the benefits of farmers and consumers as well;

Proof of Concept

1. Pulivendula Mandal, Kadapa District, Andhra Pradesh: 'Farmers at Madhanapalli

in Andhra Pradesh' throwing Tomatoes on road due to Price crash- on reading this news item 19 years ago, a team of IT professionals believed that the immense potential of ICT could solve such cruel problems effectively and started the mission IT-Rural. In the 19+ years of determined efforts in the domain of ICT4Agriculture, analyzed, designed and successfully piloted a unique, sustainable model that comprehensively deals the key areas like improving quality; increasing yield; enhancing price realization for farmers; balanced production for food security and price control; facilitating farm labour & machinery contracts and strengthening institutional farm credit system.

The model was successfully piloted in Pulivendula Mandal, Kadapa District of Andhra Pradesh. On seeing the outcome, the project was included in the 'Rhastriya Krishi Vikash Yojana' scheme on PPP mode and the State Level Sanctioning Committee of the scheme, approved and allocated fund to implement the model in ONE District with the remark that **it is a unique, proven, scalable one and would pave way for new extension system in the country' (2009)**. But due to the sudden political crisis that happened around that time, the project was not implemented. The team is not disheartened and continues the efforts with a determined passion for a large-scale implementation.

https://fafaco.in/images/itr-proofofconcept-ap-kadappa.pdf

2. Veppangkulam Village, Sivaganga District, Tamil Nadu: Mission IT-Rural, with an aim to double farmers' Income, leads an initiative at Veppangkulam Panchayat, Sivaganga District, Tamilnadu, India by means of effective management of local water bodies (tanks) and better Farming Lifecycle Management.

* With the financial contribution from 9.5 Lacs Rs from villagers and 1.5 Lac Rs from Government, Veppangkulam village revived SIX water tanks (total of 140 acres area and 20 Km length of NINE supply channels). THe village received the best water management reward from the respected District Collector.

https://fafaco.in/images/doubling-farmers-income-veppangkulam-model.pdf

* Government of Tamilnadu recognized the efforts of Mission IT-Rural and approved the first of its kind Farmers Facilitation Center (FFC), 2021-23. The Village-level Farmers Facilitation Center has maximized the outcome of great efforts of Government to the farmers at village level (Knowledge dissemination, schemes, seed distribution, marketing etc)

Impact Summary

• With the existing resources of the Department/ Government, this Village level ICT

powered infrastructure and two employees deployed by the implementing team, optimizes the extension activities and the outcome.**FFC makes the farmers feel confident that the Government stays at their village and travels through their farming life cycle.** Experts from KVK, TNAU, etc share their invaluable knowledge through video conferencing (Knowledge at ZERO distance).

- Proper water management, crop management and marketing opportunities have raised the gross area sown (wet land) from 30 Hectares to 55 Hectares.
- Preseason survey, data aggregation, purchase order aggregation empowered farmers to get qualified, fair price, foundation stage -II paddy seeds (300 bags @1120 INR/ bag) with village level/ doorstep delivery. Blackgram, Greengram, Ragi, KaruppuKavuni, Thooyamalli, Thakkai Poondu, Bindi, Venpoosani, Avarai, Saplings (Brinjal) also delivered. The quality paddy seed resulted in 3-7 bags of increased yield. Fertilizers, pesticides, organic manure worth over 90,000 INR were delivered at village level.
- The increased areas shown significantly increased the working opportunities of farm machineries and farm workers. The summer crop created new space to increase working days. **Over 1,20,000 INR worth of working days have been organized**.
- The timely communication of disease/ insects/ pests, immediate inspection by the department experts and quick delivery of prescribed solutions reduced loss/ damage of crops. The performance of the prescribed solution has been updated with experts so that the other farmers confidently use the solution for the same issues.
- The enthusiasm and momentum encouraged farmers to clean farms, bringing waste/ fallow land into cultivation. **Over 15 acres of land were added into the active farming category.** Another 50 acres of land would be cleaned up soon. Seven farmers started cultivating traditional rice and three farmers follows organic farming
- The dedicated WhatsApp group plays an important role in communicating information/ agri content.
- Mission IT-Rural experimented with various marketing options like village level, nearby markets, online marketing, direct outlet, etc. Knowing the supply data of farmers provides the space for the planning and effective marketing.
- As a breakthrough marketing strategy, Farms-Farmers-Consumers, the data of farmers' wise crops grown and details of probable harvesting date with quantity is collected and with the power of Media, Social Media and friends network, farmers' products are marketed through courier service. Nearby markets like Karaikudi, Kalal and Devakotai also tried.

• Mango, Sapota, Karuppu Kavuni rice, Leamon, Citron, Tamarind, Groundnut, Vegetables, etc. have been successfully marketed. For example 1. This model enables a lemon farmer to sell even his small quantity of 1 kg @60 INR and consumers receive it through courier service @90 INR. 2. Mango farmers got 150 INR per kg and it was delivered at 198 INR to consumers. Correct weighing, transparent price, direct marketing advantage helps farmers to get over 30 % extra price for their produce. Over 14,00,000 INR worth of produce were marketed through the center. When implemented with more involvement of government, the number will be significantly increased and would make the model economically viable for the impleteing agency.

https://fafaco.in/images/Agri-FFC-Report.pdf

Conclusion

ICT is a powerful tool that has the potential to reform the rural sector also. But, the only constraint is that the characteristics of the rural sector do not suit the urban success formula, hence a special approach is required. The proposed unique, village level model IT-Rural is the outcome of 23+ years of sincere efforts in this domain and it would significantly support the all important missions of the Government and making agriculture viable and preferable, particularly for smaller and marginal farmers.

Mission IT-Rural prays for the opportunity to serve the farming community by providing village-level, ICT driven, holistic solutions beyond boundaries.