# Project Details

# for

# Establishment of IT Based MAHA-AGRISNET For Agriculture Extension

# In

# Agrisnet of DAC, New Delhi.

## Department of Agriculture, Government of Maharashtra

# Establishment of IT Based MAHA-AGRISNET For Agriculture Extension

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## 1: Introduction

A High Level Committee to prepare an action plan for agriculture for coming 25 years was constituted by the Government of Maharashtra under the chairmanship of Dr.M.S.Swaminathan in December 2001. This committee submitted its report on 31 December 2002. This report discusses in detail about current agriculture scenario in Maharashtra and has given useful recommendations to improve this scenario in coming 25 years. Establishing "***Virtual University"*** with an objective to achieve Maharashtra's Agrarian Prosperity is one of the most important recommendations among other 347 recommendations given in the report.

By drawing inspiration from the vision of Dr. M.S.Swaminathan, Department of Agriculture, Government of Maharashtra has decided to establish ***MAHA-AGRINET*** *for Maharashtra's Agrarian Prosperity*. According to Dr.M.S.Swaminathan, Maharashtra's agriculture should rest on **Four Pillars of Agrarian Prosperity,** namely Productivity, Quality, Profitability and Sustainability. Agrarian prosperity could be achieved in Maharashtra only by bringing about revolution in agriculture based on the Four Pillars. **MAHA-AGRINET** will be an instrument through which this objective could be achieved. It will also provide a mechanism to implement various other recommendations suggested by the High Level Committee. The same concept will be implemented as **MAHA-AGRISNET** with the help of GOI.

MAHA-AGRISNET is a fairly new concept of forming a coalition of all the interested partner institutions with a view to pooling their best expertise, resources and facilities for developing agrarian prosperity in Maharashtra. The objective is to help farmers and villagers though farm specific, need based, demand driven and just-in-time advise and knowledge; and mobilize the farmers in such a way that farmer groups use it in a self-directed and self-sustainable way; and follow a path towards their continuous agrarian development and progress. This type of coalition formed for achieving goals and objects of the MAHA-AGRISNET is possible only when broadband Internet is used extensively and farmers and their groups are enabled to use IT tools, appliances and techniques that enable and help them in using knowledge resources in their functionalities related to agriculture. The details of activities and programs that need to be taken up for moving towards agrarian prosperity are given in the Report of the M.S. Swaminathan Committee.

This is a great task and challenge. This is a new way of building development-centric MAHA-AGRISNET to face the challenges of globalization and localization, by making quality of agriculture products and services a central theme of the development. With an expected to build agrarian prosperity on the basis of M.S. Swaminathan Four Pillars of Agrarian Prosperity, namely productivity, quality, profitability and sustainability.

The organizational structure proposed for the MAHA-AGRISNET is a very lean and thin which will operate entirely on Internet with e-governance; and create distributed knowledge resources, put them in a mega-database and on a Knowledge Grid, and enable the farmers to use it for the success of their farm and village development.

The success of the organization is dependent on the ICT Infrastructure with latest technologies, the use of IT tools and techniques for the village and farm level functionaries, management of continuous information and knowledge flows through the organization network, and successful mobilization and development self-help groups and learning communities with specific developmental interests.

## 2: Concept and Design

### 2.1 The Concept

***" The concept of a MAHA-AGRISNET is of a* networking of institutions and fields, *enabled by appropriate ICT applications, working together in practical ways to plan programs, develop the required content and ensure the delivery of those programs, content and support services to farmers."***

The Establishment of IT Based MAHA-AGRISNET For Agriculture Extension and e-governance will be a virtually functioning cloud of stake holders and will be a coalition of International and national resource institutions, Government departments, State Agriculture Universities, Open Universities, Non Governmental Organizations, Crop growers associations, private sector companies, scientists, experts, traders, service providers , farmers and communities with a prime objective of 'Sustainable Agriculture & Rural Development (SARD)' leading to Maharashtra's Agrarian Prosperity.

### 2.2 Goals and Objectives:

The goal and objects of the Establishment of IT Based **MAHA-AGRISNET** For Agriculture Extension and e-governance are as follows:

**Goals**

The goal of the **MAHA-AGRISNET** is to develop and establish, by employing the latest Information Communication Technologies the infrastructure, processes and management that will help mobilize agriculture extension workers at field level and farming and rural families for sustainable agrarian prosperity.

The goal is to ultimately lead to empower farmers to make better choices and have better control over their own development.

**Objectives**

1. **Establish and sustain a virtual network** of farm communities, voluntary and public MAHA-AGRISNET/institutions, service providers, policy makers,

researchers and educators that would work for agrarian prosperity of Maharashtra.

2. **Strengthening of service delivery system and e-governance** by way empowering the field functionaries of agriculture department with ICT infrastructure and processes.
3. **Educate and train** farmers and stakeholders in knowledge-based development of agriculture and related services that would lead to all-round development Agriculture
4. **Establish a knowledge network and communicate timely information** to farmers and villagers, and their various interest groups for their self-directed and sustainable development.

## 3: Content Services and Deliverables

The identification, generation, management of content and rendering useful services to target groups will be core functions and will be the heart of the **MAHA-AGRISNET** operations.

The MAHA-AGRISNET will generate the content on **agricultural as well as non-agricultural topics**. A **needs assessment mechanism** will be developed for studying information needs of the target groups and managing its accuracy. This will help **MAHA-AGRISNET** to focus on demand driven content development in association with partner organizations.

### 3.1 content

Content can be classified depending upon its nature of generation, development, storage and delivery.

1. Static / stable content
2. Dynamic content
3. Demand driven content
4. Multimedia content

The **sectors and topics** for which information is to be generated can be broadly listed as ,

1. **Agriculture & Horticulture**

Crop directory and cultivation practices
Land management / Integrated nutrient management
Organic farming systems
Agriculture inputs and implements
Water management / Watershed development
Integrated pest & diseases management
Post harvest management
Weather forecast and alerts
Markets and Agriculture exports
Logistics
Legislation / Acts & notifications

Importers / exporters / traders / service providers
Research & advanced technologies
Agro based industries
Animal husbandry
Energy conservation
Energy / water / natural capital audits

**2. Government related information**

Government departments, semi government institutions
Government schemes
Rules and regulations
Acts and notifications

## 3.2 Services

- Mega Web Portal of MAHA-AGRISNET
- Query Redress System: An advisory system to enable farmers to post a variety of questions relating to their farming livelihood, which will be answered online by qualified experts.
- IVRS based Market Price System to give farmers market price updates over touch-tone based phones.
- Digitisation of static, dynamic and multimedia content
- Latest Crop-related weather information and weather alerts.
- E-Agriculture Library to provide farmers with information on diverse subjects.
- Online Market Prices Information to give farmers the latest prices of agricultural commodities in all major mandis (markets) of Maharashtra.
- Online Market Place where companies may promote their products and services to farmers. Will also allow farmers to sell their produce and services directly to consumers.
- Online e-governance activity.

Generation of various kinds of content i.e. static, dynamic and need based content from all available sources, authentication of this content and its conversion in deliverable form will result into a huge and updated knowledge base residing on central server.

Since MAHA-AGRISNET will also function as a Knowledge and Information Grid, local level servers would also be containing information and knowledge generated at a local level. Maintaining this knowledge base – Central-Local Info base-, enriching it on continuous basis, assuring its quality and managing its delivery will require an efficient Knowledge Management System (KMS).

This kind of knowledge and Information management will expect high level of efficiency and professional culture for service provision from partner organizations. Users will also contribute in the form of locally generated content and their shareable experiences. The

richness of the content will attract users as well as partner organizations at local level to actually deliver the content to the target population.

### 3.3 Beneficiaries of improved services

**1. Primary target groups**

- Farmers
- Rural women
- Entrepreneurs / Agro-businesses
- Local climate managers, Rural Development (RD) workers, local service providers
- Farmer associations / Local institutions
- Policy makers, State and district Govt. officials and staff

**2. Secondary target groups**

- Knowledge generators / Universities
- Rural Development Managers
- Research institutions
- Agriculture produce market committees

A mobilization strategy that will be adopted for an overall successful impact is as follows,

1. Farmer groups each of 20 families and Special Interest Groups each of 20 people will be formed at village / local level
2. Total 5 Lakh such groups will be formed covering 1 Crore farm families all over Maharashtra.
3. A contact farmer, who will be trained continuously, by the field extension worker in order to propagate technologies and other information to his farmer group
4. One highly skilled farmer preferably agriculture graduates / diploma holders among five such groups called as 'Krishimitra' will act as agricultural extension point.
5. 'Krishimitra' will run their own enterprise / agribusiness / agroclinic/Common service center in addition to providing services and information to groups.
6. 10000 Common service centers (CSC) at village level are proposed to be established by the Department of Information Technology, GOM.
7. These centers will be connected to each other and partner Organizations, service providers over the network, which will collectively form MAHA-AGRISNET.

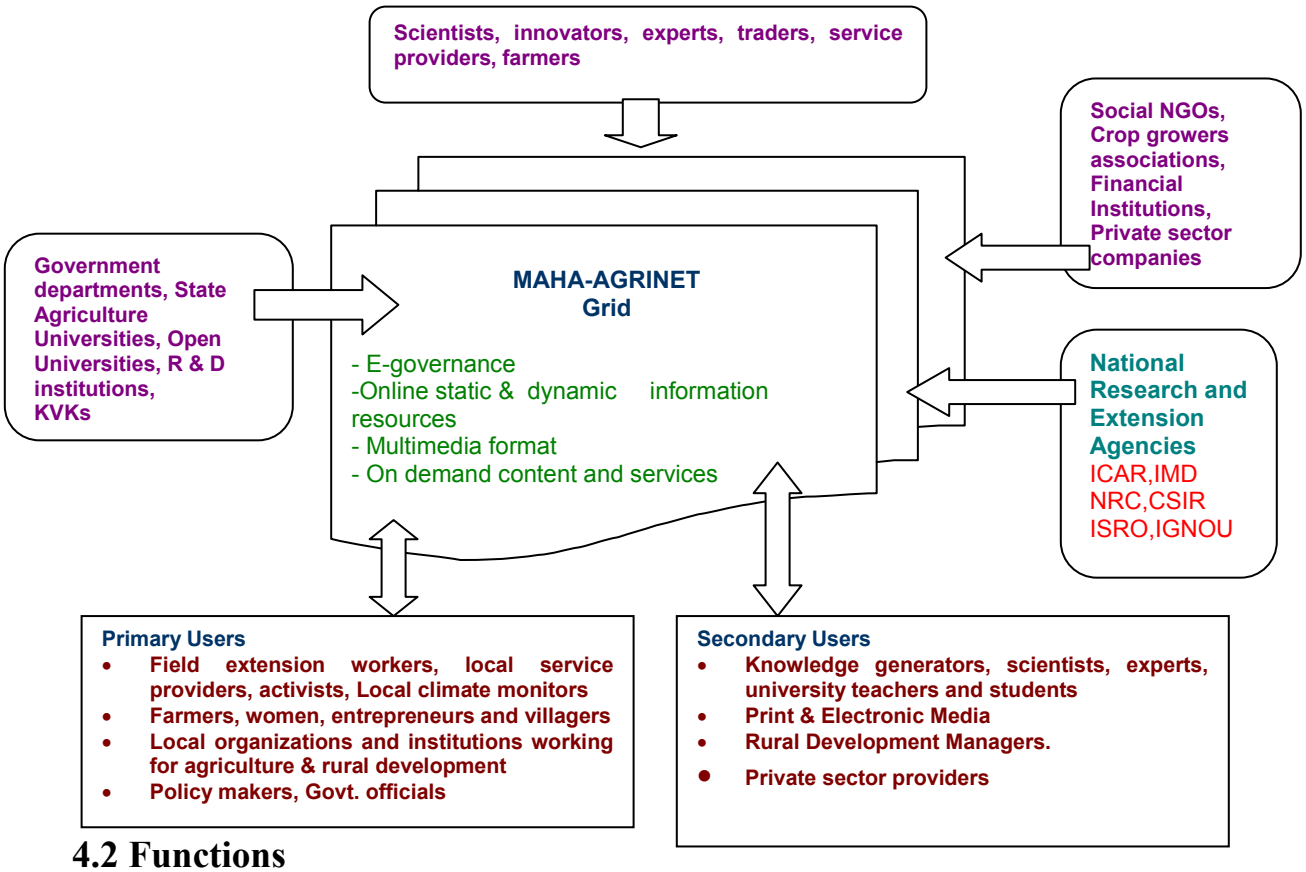
## 4: Project Implementation and Management

The **MAHA-AGRISNET** will strengthen the National Agricultural Research and Extension Systems (NARES), by extending outreach of various institutions and MAHA-

AGRISNET involved in agricultural extension to all the rural people particularly the underprivileged by adopting right policies and practices. The adoption and percolation of ICT will depend essentially on availability of infrastructure, skilled human resources, financial and technological support extended to the entrepreneurs and local leaders at village level. A lot of capacity building is therefore needed before we expect encouraging results. The task is so gigantic that resources of the State will never be adequate; and hence participate and cooperative assistance of GOI involving all the institutional/ Organizational and monitory support.

For all the coalition partners, **MAHA-AGRISNET** will provide a virtual platform, to offer and deliver the Agriculture technology and developmental services, to share the knowledge resources they have. The MAHA-AGRISNET will also be concerned as much with "adding value" to conventional on-going activities of the institutions. Today the field functionaries of the department of agriculture are the only resource available to deliver the change to remote corners of the state and specially the under privileged community. While building a knowledge and service network, the delivery has to be ensured by strengthening the field extension workers with ICT tools.

### 4.1 MAHA-AGRISNET Model –




## 4.2 Functions

In order to achieve goals and objects, **MAHA-AGRISNET** will be carrying out the following **functions**:

1. **Build ICT infrastructure and establish network** that would support all the stakeholders to communicate and carry out their activities.
2. **Develop processes and systems for knowledge and information creation and delivery**
3. **Create knowledge grid and content databases** that would enable provision of demand driven just-in-time developmental and personalized and localized developmental services.
4. **Development of ICT tools and techniques** required by functionaries from target groups for personalized, farm-specific and group related developmental activities.
5. **Promote and facilitate formation of self-help, interest based groups** and build their communities for their sustainable development.
6. **Raise continuously productivity, quality, profitability and sustainability** of agriculture so as to be globally competitive and cost-effective and locally relevant.

## 4.3 MAHA-AGRISNET Management

**Divisions:**

The functions of the organization mentioned above could be organized under **Five Divisions**:

1. ICT Infrastructure and Network Development
2. Content and Services Management
3. Mobilization and Training of Farm Communities
4. Quality assurance and R&D Management
5. Grid Management
6. Service delivery and e-governance at field level.

1. **ICT Infrastructure and Network Development**

Functions:

- Network establishment and management
- Central server and infrastructure development
- Hub and Spokes facilitation and training
- Web based framework development and maintenance
- Handholding of stake holders
- Facilitation of existing networks of partner institutions
- Technical capacity building of field level extension functionaries

## 2. **Content and Services Management**

Functions:

**A. Content Development and Communication:**

- Needs assessment of target groups
- Development of Knowledge Management System
- Content generation and content development in web, multimedia and granulated object related format.
- Continuous up-gradation, development and maintenance of the content.
- Development of web/PC based tools and software systems for users.
- Identification of service providers and deployment of online/offline services
- Ensuring successful delivery of content and services.

**B. Content and Services Delivery:**

- Identification and registration of learners and learning groups.
- Demand driven training delivery.
- Feedback and Development Impact assessment.

## 3. **Mobilizations and Training of Farm Communities**

Functions:

- Formation of farmer groups, self-help and special interest groups and their communities.
- Training and orientation of the groups and communities for participatory decision-making and for sustainable and integrated development.
- MAHA-AGRISNET of literacy programs through functionality for all in the areas of ICT, water, weather, land, trade and GAP for all.

## 4. Quality assurance and R&D Management

The Division functions:

- Development of quality norms and standards for content, courses, delivery, processes and services
- Evaluation and QA process management.
- Ensuring quality and standards of content, courses, delivery, processes and services
- Impact assessment
- Research and development activities related to the fulfillment of the goals and objects of the **MAHA-AGRISNET**.

**5. Grid Management**

Functions

- Strategic planning for development and operations.
- Policy formulation and advocacy.
- Financial and Administrative Management.
- Partnership Management at the State, National and International levels.

**6. Service delivery and e-governance at field level**

Functions

- Strengthening of ICT infrastructure of field level extension functionaries
- Development of system for e-governance upto village level
- Develop system for monitoring and assessment of service delivery
- Encourage field functionary to use ICT for local data generation and service delivery
- Integration of functions of line departments at field level

## 4.4 Positioning of implementation team

**The MAHA-AGRISNET is organized at TWO levels:**

**Central or State level** where the authorities and officers will be working, and

**Local or Hub level** for ensuring participation of target group representatives and local institutions and organizations.

**A. Project Management**

Most of the operations related to **MAHA-AGRISNET** will be carried out through a mega web portal. Needs assessment, content creation and delivery, services deployment, quality control, network control, interactions among institutions and users will be built-in features of this internet based management system.

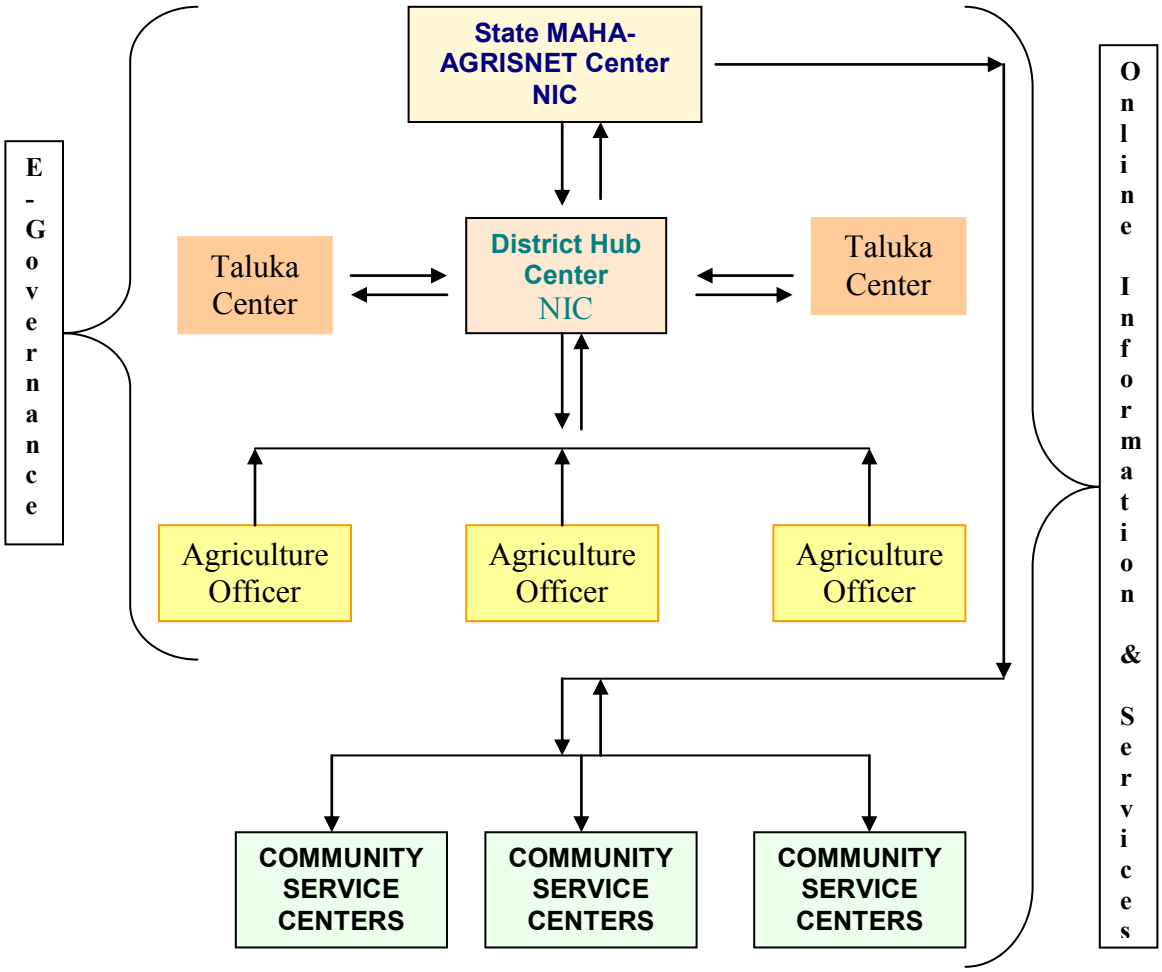



**Diagram: – Central-Local Level Management**

## 4.5 Positioning of Empowered Committees

A committee under the chairmanship of Secretary, Agriculture will be formed for monitoring successful implementation and delivery of the program. Officials from Line departments and Department of Information Technology, experts from the field of Agriculture as well as Information Technology will be part of this committee.

## 4.6 Positioning of Mission leader

This program will be led by the Commissioner, Agriculture, Department of agriculture, MS along with implementation team, which will have following members,

1. Director, Horticulture, Pune
2. Director, Extension, from four SAU's
3. Joint Director of Agriculture, Horticulture, Pune
4. Representative from NIC, Pune

## 4.7 Elaborate mechanism for regular data updation on real time basis

Content generation team will be responsible for generation, editing and publishing demand driven content. Various functionaries of network working at central and local level will contribute in the form of content on regular basis. Their activities and contribution will be recorded online and he / she will receive minimum assured remuneration for that. It will extremely transparent and open system.

# 5: Evaluation, Quality Assurance & Promotion

## 5.1 Evaluation:

- Specific Local Needs Assessment is essential for knowing needs and demand of learners, groups and community, on whom demand driven support would be built. Based on the outcome of the assessment, support organisations, products and services essential for support would be identified and developed. Networked system of on-line feedback, feedback analysis and dissemination would be evolved and implemented.
- Evaluation of CSC's will be done on the basis of the services generated and offered, their success in group mobilization and creation of business with sustainability.
- Evaluation of the effectiveness and efficiency of the field functionaries will be done on the basis of the data generated and services delivered
- Impact analysis for e-governance will be done

## 5.2 Bases for evaluation

- Four pillars of Agrarian Prosperity namely productivity, quality, profitability and sustainability achievement.
- Prosperity generation will be measured in terms of (a) physical & financial (b) social (sharing & caring) (c) cultural (knowledge, intelligence & expertise development) (d) political (democratic participation, self-governance, self-directed development {autonomy achieved}) (e) ethical values adopted and promoted.

**It is necessary to develop indices for the measurement of these factors.**

## 5.3 Quality Assurance:

- Quality Assurance would be built in the total activities of networking and in services offered on the net.
- Special groups and agencies of experts would also be formed to check quality of information, products and services offered on the CSC Network.

## 5.4Success criteria for assessing project impact

- No. of CSCs (Common Service Centers) and their interactions with users.
- Regularity of users demanding various services at CSCs.
- No. of users / farmers availing various services
- No. of users applied and received quality certification.
- No. of pages of content.
- No. of content and services providers.
- No. of queries received and answers given.
- Increase in productivity, profitability, sustainability of land and quality of produce
- Exchange of knowledge among group members.
- Economic, socio cultural development of group members.
- No. of demand driven sessions delivered to farmers and its usefulness in the field.

## 6: Details of the ICT infrastructure available in the State.

Department of Agriculture is well equipped with hardware up to the Tehsil office with Internet connectivity. The resources available with the department that is as follows.

### Computer Infrastructure

The infrastructure of the Agriculture Department consists of 843 Computers, 753 Printers, 605 UPS, 48 CVT, 384 Modems and 60 Scanners . At present e-mail facility is available up to Block level offices, which is being effectively used for transferring data and reports.

### Training of manpower

For effective use of computers, more than 7000 technical and non-technical staff have undergone training in website designing, software usage and hardware maintenance. The above staff has also acquired Diploma in Information Technology. In addition, specific need based training are also conducted.

### Development of Software

Major software developed are daily Rainfall Reporting, Horticulture Estimates, Preparation of plans and estimates of water harvesting structures, Agriculture Census, Monthly Progress Report, Personal Information System, etc. All these software have

directly or indirectly benefited both the departmental staff and the farmers at large. Total 24 software have been developed and installed at various level of offices and 8 software are under development.

### Web Site

For wider dissemination of information, the Agriculture Department with the help from NIC has launched a website http://agri.mah.nic.in. The website covers information on cultivation of important crops, agriculture statistics, schemes, technologies, events, news and rainfall data.

Website for the departmental use http://intraagri.mah.nic.in, to manage various webbased software has been launched. The major webbased applications are Daily rainfall reporting, Nursery management, Web lab, MIS for computers, Staff training monitoring.

### Interactive/Video CDs for farmers training

The Agriculture Department has produced interactive video CDs on IPM of cotton, drip irrigation, watershed management, Integrated nutrient management, Biotechnology, National Crop Insurance Scheme and Crop production technology for 14 agronomical crops, Green hose floriculture, Crop production technology for export of Vegetables, Grape and Pomegranate Production, Orange, Lime and Lemon Production, Mango and Cashew Production, Banana and Papaya Production. These CDs are used for farmer's training programs. The various multimedia effects used while preparing the CD makes the topic more interesting for the farmers. The CDs being interactive, the user can get access to the topic of his interest. Total 55 important topics have been covered.

### GIS and Remote Sensing

Regional Remote Sensing Center, Nagpur is assisting the Department in developing GIS based pilot project for land and water resources development in watershed areas and digitization of soil survey maps. Pilot project for generation of land and water resources development plan through Remote Sensing and GIS techniques on village level has been initiated with the assistance from MRSAC and RRSSC.

### Market Information Centers

Presently the Agriculture Department has established 240 Market Information Centers . The objective of these centers is to provide information on market rates, agriculture technology, input availability, weather updates, etc.
A group Consisting 50 or more farmers in one village has been formed for comprehensive use of Information Technology . Internet Kiosks Centers based on Wireless in Local loop are established in 60 villages of Pune District . The Department has assisted in developing the Infrastructure of the center. The farmer's group daily visit the center to acquire technical as well as statistical information of it's urgent need. The information is available either on Internet or on CDs, printouts etc. The farmers

can interact directly with the Subject Matter Experts by using Net meeting or e-mail. The kiosk owner is supposed to earn sustainable income while offering computer services to farmers as well as he is supposed to give some free services related to technical and statistical information of Agriculture.

The Circle Agriculture Officer and the Agriculture Supervisors and Assistants working at the village level constitute a major part of the team delivering services to the farmers. It is proposed that this delivery point will be strengthened by providing them palmtops/ simputers. This will bring them and the farmers in the MAHA-AGRISNET grid which ultimately improve the delivery mechanism and also will facilitate monitoring of the service delivery at state level.

## Available infrastructure and services of other institutions

- Marketing Board has all the APMCs in the state connected with internet
- All the SAUs has fully equipped ATIC centers
- Kisan Call Center
- KVKs are giving online constancy to the farmers.
- The NRCs in the state.
- The Regional training institutes have well developed ICT infrastructure.

In the near future these ICT facilities of other institutes will be incorporated in MAHA-AGRISNET.

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