12 APPLICATION OF INFORMATION TECHNOLOGY IN AGRICULTURAL SECTOR

MESSAGE OF HOPE

Krishi Vigyan Kendra (KVK) at Babhaleshwar near Shirdi has set up seven farmers’ groups around information Kiosks in nearby villages connected through RF towers. This is a local area network for data, voice and video transmission. A PBX, for providing intercom facility is the key instrument in this hub. Video conferencing takes place through webcams available at KVK as well as seven locations in nearby villages.

Farmers attached to each of these seven locations are obtaining information support from KVK on various agricultural subjects. Market information is regularly made available. Disease diagnosis through photographs of diseased plants transmitted through webcams is routinely provided. All the information is in local language. In addition, CD’s on various related issues are regularly displayed.

12.1 IT should be used for demand and supply monitoring in the field of agricultural inputs. Based on the annual crop plan, the demand for the agro inputs can be estimated and accordingly supply can be monitored. The information on availability of seeds, fertilizers and pesticides in different region can be made available to the farmers. This will help him in speedy procurement of inputs at a cheaper rate. Information on availability of quality planting material of horticultural species at various government nurseries and Agriculture Universities should also be regularly posted on the website.

12.2 Agriculture Universities and other National Institutions are regularly releasing improved varieties of various crops. The important features of these varieties such as its performance, disease resistance and adaptability should be made known to farmers through the website.

12.3 The prompt identification and control of pest and diseases of the cash crops is essential in reducing further damage to the crop. Audio-visual clips of the causative organism and affected/diseased plant part with its control measure should be displayed on the website. This would assist the farmers in remote areas to identify the pest/disease and take corrective action.

12.4 Weather plays a major role in incidences of certain pest and diseases. A disease-forecasting module for advance intimation on likely occurrences of pest and diseases and preventive measures to be taken needs to be developed to reduce the economic loss.
12.5 Soil survey section of Agriculture Department possesses around 28000 soil survey maps, which need to be digitized to preserve them permanently and for extracting needful information using GIS technique.

12.6 Basic data pertaining to agriculture can be generated through remote sensing & GIS wherein attributes such as ownership, soil fertility, cropping pattern etc. can be attached to the survey numbers in the cadastral village maps. This data could be integrated and analyzed at different levels to help decision-making. This data could also be shared with different line departments.

12.7 Integrated information systems for various components of watershed development programmes needs to be developed for making effective Watershed development projects assisted by the Agriculture Department and these can be monitored at various levels if appropriate monitoring and evaluation software is developed.

12.8 While preparing an effective crop plan, it is essential to gather micro details of all watersheds and villages in Maharashtra using GIS. Once this data is available, it will help in preparing micro level production plan. It is also essential that the farmers should have the information on area sown under various crops in different seasons and the expected production. This will help them in choosing alternative crops in a particular season considering future glut in the market.

12.9 The micro level data can be of use in preparing an interactive module for the farmers which will take into consideration the local agro climatic conditions and suggest him an alternative crop plan. Suitable software can be developed for effective monitoring of the crop plan by various officials at different levels and update them with the latest situation. GIS technology will enable the policy makers to assess the area and production of crops. This will help to frame the short term and long term market/credit policy.

12.10 Use of satellite imaging data analysis for forecasting agriculture related information should be adopted for forecasting rainfall, area under different crops, yield estimations and soil properties.

12.11 Interactive module needs to be prepared to assist the farmer in preparing crop budget, which will help him in documenting data on cultivation cost and make him aware of the profitability.

12.12 To enhance the productivity it is essential that the latest information on production and post production aspects of various economic crops be made available to the farmers. There is an urgent need to prepare a crop guide containing reliable and authentic information on important varieties, cultivation practices, recommended fertilizer doses, types of pest and diseases and its control, harvesting
methods and post harvest practices including primary processing at the farmer's field. This information being dynamic should be kept update.

12.13 The post harvest losses of fruits and vegetables in India are to the tune of 30 percent. Therefore it is essential to educate our farmers in reducing these losses by adopting appropriate methods of harvesting, sorting, grading, packaging and storage. The information on the storage requirement, methods of storage and ideal duration of storage of economic crops should be made known to farmers. This would assist him holding the produce in good condition during the glut situation in the market.

12.14 There is an urgent need to create a database of various agencies and institutes relating to agriculture. Information of agricultural input manufacturers and dealers, Agro processing service providers, exporters and importers should be compiled for the benefit of farmers. It should also cover detailed information relating to the work carried out at various institutions like NRCs, SAUs and Training Centres. The Agriculture Research Database should be created by compiling research findings, recommendations published by the scientists from the four Agricultural Universities in Maharashtra.

12.15 Harnessing Information Technology for agricultural extension is going to receive high priority in future. While developing any system of IT for Agriculture technology, the farmer should be kept in focus as a player, generator and user of the knowledge. Extensive use of modern information technology should be promoted for two way communication between scientists, extension workers and farmers to transfer technologies and information more cost effectively. Taking into consideration the individual agriculture management by the farmers, some useful software packages should be developed and made available on the website. Some of the softwares which need urgent consideration are Drip designs, Green House design, Cropping Pattern, Farm Accounting and Management.

12.16 The Agriculture Department and private sector should be encouraged to develop multimedia based extension material in local language. Multimedia CDs on various topics would be of great utility to the farmers.

12.17 The public extension machinery needs to be professionally skilled and competent for providing information and technology at the grass root level. It should play a central role in knowledge based dissemination of technology which are central to the farmers concern. Similarly, private sector participation including Cooperatives, NGOs and farmers organizations should be encouraged. Use of Information Technology for dissemination of information through these agencies has been found very effective. These agencies can promote Agro Cyber Cafes at village level specially operated by unemployed agricultural graduates in the manner of PCO/STD booths.
12.18 The infrastructure and the hardware for an agro cyber cafe should be provided by the private agency while the Government should provide assistance in the form of CDs and software so as to have access to suitable information available at the district KVKs, line departments and markets. Such information should be dispensed by the agency to the farmers and farmer groups on payment. The ideal situation would be to have Agro Cyber Cafes in each village.

12.19 Wireless in Local Loop Technology has been found very effective in providing and operating telecom and internet services in rural areas. State should adopt an ICT strategy consisting of internet, cable TV and community radio to cover 10 million farming population to reach the unreached and should aim at to cover each and every farming family in its efforts for technology dissemination and market information.

12.20 Agriculture produce marketing requires connectivity between the markets and exporters / growers / traders/ industries and consumers through a wide area network with national and international linkages. Therefore there is a need to establish such network through which day to day information with regard to commodity arrivals and prevailing rates, export related documentation and information relating to leading national and international marketing organizations can be provided.

12.21 Information related to nationally and internationally acceptable standards of grading, packaging, labeling, storage, transport, warehousing, sanitary and phytosanitary measures and quality certification in farm sector will enable trade and processing sector to undertake large scale agricultural marketing operation in domestic as well as international markets. Information on export procedures, rules and regulations should be made available to the producer so as to promote exports.

12.22 Data on various aspects of agricultural marketing is important for policy formulation, infrastructure planning and research. It is necessary to create a state level Atlas of Agricultural Markets which would provide information with respect to each commodity, major areas of production, its movement and storage and major consumption centres. This will facilitate both the Public as well as Private sectors in development of appropriate marketing strategy in agricultural sector.

12.23 The WTO & GATT regulations will have a major impact on farming community. Therefore a simplified interpretation of these regulations should be widely disseminated through the use of ICT.

12.24 Several central institutions set up by the Government of India like NCDC, NAFED, TRIFED, NDDB, NHB, APEDA are directly involved in implementing programmes to strengthen agricultural marketing to help farmers in the process of marketing agricultural produce. There are other agencies like Commodities Boards and Export Promotion Councils for specific commodities to promote exports. All the relevant programmes and policies of these institutions need to be disseminated to the farmers and target groups to enable them to take full advantage of newer
opportunities. The website can be an effective media for disseminating this information.

12.25 For penetration of the Information Technology at the grass root level it is essential that the extension staff and the farmers are computer literate. Massive programme of computer literacy at various levels needs to be undertaken throughout the State. The existing staff with the agriculture department and universities has basic knowledge of computers. However those with further interest in these areas should be identified and given advanced training in computer application. Local NGOs and Institutions should be involved for imparting training in developing capacity of the farmers and women groups in IT usage. Information Technology as a subject should be incorporated in the degree level syllabus of the Agriculture Colleges.

12.26 A Virtual University for Agrarian Prosperity as a centre of excellence should be set up to consolidate, process and disseminate information on various aspects of Agriculture. It may be established in Pune, considering ease of obtaining strategic support from Commissionerate of Agriculture & NIC. The Virtual University should have a Technical Advisory Committee comprising of data generators, data managers and data users. The facility should have latest hardware, software and trained manpower. The manpower should be drawn from Department and SAUs having experience in Agriculture, Horticulture, Soil and Water Conservation, Post harvest management and marketing. In addition, technical staff with expertise in hardware and software management should be deputed to operate the centre. A suitable mechanism needs to be developed to ensure that the source of information being disseminated is authentic. For greater usage of such centers, an interface with revenue data like record of rights could also be developed.

12.27 The proposed Virtual University for Agrarian Prosperity should be structured on a hub-and-spokes model, with SAUs and Commissionerate of Agriculture serving as hubs. It will be a 21st century institution with only a few professionals managing both content and connectivity. The content should be demand driven and user-friendly. The University should deliver the correct information at the correct time and at the correct place. It should use the Internet, cable TV and Community Radio in an integrated manner, to reach the unreached and include the excluded in information, knowledge and skill empowerment.