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SEMINAR SOUVENIR

Seminar on

EXTENSION STRATEGY FOR
AGRICULTURAL DEVELOPMENT

at
Navsari
25th Feb., 2007

Organised by

SOCIETY OF EXTENSION EDUCATION, GUJARAT &

NAVSARI AGRICULTURAL UNIVERSITY, NAVSARI.
Agriculture sector continues to be an important component of our national economy with a contribution of about 22% to the GDP. The sector provides direct employment about 234 million farmers and farm laborers. However, 260 million people are still living below the poverty line in India about which, 193 million are in the rural area who are perpetually faced with conditions of hunger, malnutrition and related health disorders.

We need to develop extension strategies which can help in reorient our Extension System, Agricultural Research and Development programmes with emphasis on diversification, post harvest processing and value addition in the production areas, developing appropriate cost effective technologies, improving technology dissemination system, developing market and infrastructure etc. so as to create more employment opportunities, enhance farm profitability and improve overall economic empowerment in the rural areas. So, the agricultural extension should reorient itself in such a way to transfer knowledge based inputs which are essential for agribusiness at various levels. In present situation there is a need to develop new extension strategies to meet challenges and overcome existing problems. It is high time that an existing situation is made in order to plan sheds selection and prioritization of future need through the state level deliberations.

The total 65 papers covering the various aspects of extension strategies for rural development are falls in to following themes.
- Diversifies farming
- Public-private extension
- Indigenous knowledge
- Natural resource management
- Gender sensitization
- Market led extension
- Farmer led extension
- Information & communication technology
- HRD in agricultural training and research.
- Research - Extension - Farmers linkage.

We believe that the abstracts presented in this volume will provide a fertile ground for fruitful deliberations and discussions during the seminar. The deliberations of the seminar will not only result in a rewarding academic experience but will also be translated into concrete action related to extension strategies.
MESSAGE

I am happy to learn that Society of Extension Education, Gujarat and Navsari Agricultural University, Navsari are jointly organizing a State Level Seminar on “Extension Strategies for Agricultural Development” on February 25, 2007 at Navsari Agricultural University, Navsari.

The present theme of the Seminar is unique, relevant and timely in view of growing concerns over adoption gap, low agricultural productivity, food security, growing population, malnutrition, unemployment and disparity between the rich and the poor.

I am sure that Social Scientists will discuss many of the important issues for development of suitable extension strategies and thereby suggest practical solutions to take Indian agriculture in particular and that of developing countries at large to a new height. I convey my best wishes to the organizers and wish this Seminar a grand success.

(R. P. S. AHLAWAT)
THEME : I : DIVERSIFIED FARMING

1. Awareness, Knowledge and Adoption of Tissue Cultured Plant Growers
   -Kacchiapatel V. A. & Pandya R. D. 1

2. Pros and Cons of Organic Farming Management
   -Patel C. D., Kamani A.B. Kanani P. R. & Kapopara M. B. 1

3. Challenges of Diversified Farming in India
   -Kamani A.B., Kanani P. R., Kalpesh Kumar, & Patel D.V 3

4. Impediments Faced by the Vermicompost Producers: A Natural Resources Utilization
   -Kamani A. B., Kanani P. R., Kalpesh Kumar & Patel P.G. 4

   The Relationship Between Knowledge And Vermicompost Producers: 5
   -Kamani A.B., Kanani P.R., Patel P.G. & Chavda Haresh

   Awareness of Value Added Techniques of Mango & Banana Growers 6
   of South Gujarat
   -Mewara R. C. Pandya R. D. & Patel G. R.

THEME : II : PUBLIC PRIVATE EXTENSION

   Strategic Clue for Public Private Partnership in Paddy Crop 8
   -Pandya R. D.

THEME : III : ITKs FOR SUSTAINABLE AGRICULTURE

   Epistemological Paradox of Farmers Towards Indigenous Technical Knowledge (ITK) as the Strategies for Sustainable Agricultural Development
   -Kamani P. R., Kamani A.B., Tarpara V.D., & Patel D.V. 10

2. Application of Innovations and Indigenous Technological Knowledge (ITK) in Agronomic Research
   -Kamani A.B., Kanani P.R., Kalpesh Kumar & Haresh Chavda 11

3. Impact of Profile of the Farmwomen on their Indigenous and Scientific Knowledge Regarding Various uses of Neem
   -Zala P.K., Chauhan N.B. & Patel S.T. 13

THEME : IV: NATURAL RESOURCES UTILIZATION AND MANAGEMENT

1. Problems in Adoption and Operation of Drip Irrigation System among Farmers of Gujarat State
   -Timbadia C.K. & Patel R.B. 14

2. Impact of Watershed Development Programme in Vyara Taluka of Surat District
   -Pandya C.D., Pandya R.D. And Suthar M.P. 14

3. Techno-Economic Consequences occurred as a Result of Adoption of Watershed Crop Production Technology by Farmers
   -Prajapati V.V., Thakkar K.A. & Patel V.T. 15

4. Adoption of Farm Technology in Watershed Management Area in Gondal Subdivision of Gujarat State
   -Pandya C.D. & Dave D.H. 16

5. A Study On The Purposes Of Adoption Of Drip Irrigation System Among The Farmers Of Gujarat State
   -Timbadia C.K. & Patel R.B. 17
6. Attitude of Farmer Towards Organic Farming: A Natural Resources Management
   -Patel C. D., Kanani P. R, Kamani A. B., Patel P. G. & Gohil G. R.

7. Constraints in Organic Farming with Respect to Natural Resources Utilization
   -Patel C. D., Kanani P. R, Kamani A. B. & Gohil G. R.

8. An Overview of Vermicompost in Saurashtra Region: A Natural Organic Waste Resources Utilization
   -Kamani A. B., Kanani P. R., Haresh Chavda & Kalpesh Kumar

9. Adoption of Soil Conservation and Water Harvesting Technology by the Farmers of North Gujarat
   -Prajapati M. R., Patel V. T., Joshi K. M. & Chaudhari N. V.

THEME: V: GENDER SENSITIZATION

1. A Study of Behaviour of Farm Women Regarding Agricultural Entrepreneurship
   -Karkar B. R., Kalsariya B. N., Thakrar D. M. & Bharad N. D.

2. Extent of Adoption of Wheat Production Technology by the Farm Women
   -Karkar B. R., Kalsariya B. N., Popat M. N. & Bharad N. D.

3. Decision Making of Tribal Farm Women for Sustainable Agricultural Development
   -Chauhan N. M. & Chauhan N. B.

4. Constraints For The Farm Women Participation In Development Programmes

THEME: VI: MARKET LED EXTENSION

1. Perception of Office-Bearers, Governing Body and Members Regarding Extent of Professionalism in Management of Co-Operative Sectors
   -Naik R. M., Patel R. B., Vejapara V. P. & Pandya H. V.

2. Impact of Group Cohesiveness on Professionalism in Management of Co-operative Sector

3. Influence of Personal Profile on Professionalism

4. Correlation between Management Efficiency and Economic Performance of Banana Growers
   -Patel H. B., Bhatt P. M. & Patel K. F.

5. Attitude Of Dairy Farmers Towards Dairy Farming
   -Ashwar B. K., Soni M. C., Patel V. R., & Shaikh S. A.

THEME: VII: FARMER LED EXTENSION

1. Adoption of Watershed Crop Production Technology by Farmers
   -Prajapati V. V., Thakrar K. A. & Patel V. T.

2. Impact of NATP on Land use Planning Scheme on Adoption and Perception of Farmers Kalthan
   -Timbadia C. K., Patel A. P. & Patil R. G.

3. Farmers’ Perception Regarding Water Logging and Soil Salinity Problems
   -Timbadia C. K., Vanparia O. D. & Pandya C. D.

4. Impact Survey of Drip Irrigation in Gujarat State
   -Timbadia C. K. & Patel R. B.

6. Adoption of Recommended Mustard Cultivation Technology by the Farmers of Borsad and Petlad Talukas of Kheda District of Gujarat
   -Suthar M.P. & Patel K.F.

7. Study on Adoption of Drip Irrigation System and Problems to Banana Cultivation in South Gujarat
   -Timbadia C.K., Vaghasiya P.M. & Patil R.G.

8. A Scale to Measure Attitude Towards Improved Banana Cultivation Practices
   -Patel H. B., Bhatt P.M. & Patel K.F.

9. Co - Relates of the Vermicompost Producers
   -Kamani A. B., Kanani P. R. Patel P.G. & Patel D.V.

    -Tavethiya B.A, Thakrar D.M., Barvaliya U.B., Gardharia H.B.& Kalsariya B. N.

11. Technological Gap In Kharif Fennel Cultivation By Fennel Growers Of Banaskantha District Of Gujarat State
    -Kaid S.V., Prajapati M.R. & Prajapati R.R.

12. Information Needs of the Rice Growers for Sustainable Agricultural Development
    -Chauhan N.M., Chauhan N.B. & Thakor R. F.

13. A Scale to Measure the Knowledge of Dairy Farmers Regarding Improved Animal Husbandry Practices
    -Bhatt P. M.¹, Patel H. B.² & Patel K. F.

14. Extension Strategy for Improving the Productivity of Maize Crop in Dahod District under ATMA Project
    -Soni N.V., Bhatt M.R. & Machhar R.G.

THEME : VIII: INFORMATION AND COMMUNICATION TECHNOLOGY

1. Telephone - A Source of Agro-Technology Information
   -Pandya C.D. Timbadia C.K. & Mehata H.D.

2. Professionals' Attitudes Towards Eco-friendly Agriculture System
   -Pathak A. B. & Pandya R. D.

3. A Study on Awareness of Soil Health Card
   -Patel H.B., Bhatt P.M. & Patel P.P.

4. Correlates of Mass Media Exposure of Dairy Farmers
   -Bhatt P.M., Patel H.B. & Patel P.P.

5. Organic Farming Yesterday, Today & Tomorrow: An Analysis of Resources Utilization
   -Patel C. D., Kanani P. R. Kamani A.B. & Trada V.K.

6. Cyber Extension through ICT in the Transfer of Agricultural Technology During the Millennium
   -Jadav N.B.¹, Kamani A.B., Kanani P.R. & Kapopara M.B.

7. Role of Distance Education as an Extension Strategies for Sustainable Agriculture
   -Kamani A.B., Kanani P. R., Chavda Haresh & Tarpara V.D.

8. Information and Communication Technology as a Pedology for Farmers in respect to Diversified Farming
   -Kanani P. R., Kamani A.B., Patel D.P., & Patel P.G.
9. E-Learning Education: A Tool Of Communication for Dissemination of Agriculture Information
   -Kamani A. B., Kanani P. R., Chavda Haresh & Trada V.K.
10. Expectations of the Farmers about Community Intranet Center at Village Level for Agricultural Development
    -Chauhan N.M. & Chauhan N.B.
11. Application of Information Technology: Special Reference to The Rural Development
    -Patel D.V., Kanani P.R. And Tarpara V.D.
12. INTERNET: A FARM MAKING TOOL
    -Thakker B.N. & Patel S.T.
13. Impact of Krushigovidya Farm Magazine on Subscribers

THEME : IX : HUMAN RESOURCES DEVELOPMENT –TRAINING /RESEARCH

1. A Study on Perception of Farmers Regarding Selected Aspects of Training Programme
   -Patel H.B., Bhatt P.M. & Patel P.P.
2. Role of IT in Bridging the Scale of Epistemologies of Vermicompost
   -Kanani P. R., Kamani A. B., Tarpara V.D. & Patel D.V.
3. Farmers’ Perception Regarding Training Methods & Opinion about Institutional Training
4. Gain in Knowledge to the Livestock Inspectors Through Refresher Training
   -Gardharia H.B., Savaliya B.D. & Thakrar D.M.
5. Correlates of Training Needs Assessment of Tobacco Growers about Recommended Tobacco Production Technology
   -Patel S.T., Patel B.B., Zala P.K. & Thakker B.N.

THEME : X : RESEARCH-EXTENSION-CLIENT LINKAGES / PARTICIPATORY APPROACH

1. Peoples Institution for Resource Poor Village Development
   -Kavad S. D., Patel R. B & Patel G. R.
2. Impact of Participatory Irrigation Management Through Irrigation Co-Operatives
   -Joshi P.J., Patel A.R. & Thakor R.F.
3. Farmers’ Perception about Usefulness of Agriculture Extension System
   -Chavda V.N. & Popat M.N.
4. Shortfalls In Present Extension System: Farmers Perception
   -Chavda V.N. & Popat M.N.
5. Usefulness and Opinion of Farmers Regarding Krushi Mahotsav Programme in Middle Gujarat
   -Patel H.B., Soni N.V. & Patel P.P.
6. Extension Strategy for Improving the Productivity of Cow in Dahod District Under ATMA Project
   -Soni N.V., Bhatt M.R., Machhar R.G. & Patel J.B.
AWARENESS, KNOWLEDGE AND ADOPTION OF TISSUE CULTURED PLANT GROWERS

Kacchiapatel V. A. & Pandya R. D.

Agricultural sector has acquired about one fourth of the total GDP and horticulture is contributing 24.5% of it. India stands first as banana producer and third in growing area. It holds 13% of total fruit crops area of the country. Gujarat secures fourth position in area as well in production. To sustain the production of banana, farmers are adopting good seed and fertilizers with modern irrigation techniques even though things are working adversely. Tissue culture is viable answer for the banana growers. By adopting tissue cultured plants one can get true type plants, diseases free plant, within year time and with uniform growth. Several research reports showed that the tissue cultured plants increases the production up to 30%. Rajpipla taluka of Narmada district was selected purposely due to higher number of tissue cultured banana plant growers. Ex post facto research design was used for the study. By lottery method first five growers of the lists of five villages were selected. Thus, the total sample size of the respondents becomes 50 for the present study. To determine the level of awareness and knowledge of tissue cultured banana plant growers the scaling technique developed by Mayani and Kumar (19980) whereas, the extent of adoption was measured by the scaling technique developed by Sengupta (1967) were used. The majority of the growers were aware, had knowledge and partially adopted tissue cultured banana plant technology and cultivation techniques.

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PROS AND CONS OF ORGANIC FARMING MANAGEMENT

Patel C. D., Kamani A. B., Kanani P. R. & Kapopara M. B.

Organic farming is a production system, which avoids or largely excluded the use of synthetically compounded fertilizers, pesticides, growth regulators, and live stock feed additives. To the
maximum extent feasible, organic farming systems rely upon crop rotation, crop residues, animal manures, legumes, green manures, off-farm organic mill bets, mechanical cultivation, mineral-bearing rocks, and aspects of biological pest control of maintain soil productivity and tilth, to supply plant nutrients, and to control insects, weeds, and other pests. (Lampkin, 1990). Organic agriculture has developed rapidly worldwide during the last few years and is now practiced in approximately 120 countries of the world. Its share of agricultural land and farms continues to grow. India’s organic farmers have been at the forefront of developing field based technologies ranging from Vermicomposting to integrated livestock practices that facilitate their ability to improve soil fertility even in semi-arid or barren areas. Different parts of India have developed their own local or regional systems for ecological agriculture such as _agnihotra_ and _panchakavya_ that are now gathered in one umbrella term: ‘Jaivic Krishi’.

The study of organic farming practices helps in recommending those practices which are similar evaluative perception of organic farming practices that is the end product of centuries of trial and error, natural selection and keen observations by the farmers. The interest in indigenous knowledge is gaining considerable momentum more so, in case of organic farming, where the modern knowledge alone is being considered inadequate to overcome the contemporary problems. The present investigation might be the first attempt to assess farmers towards organic farming in South Saurashtra Zone of Gujarat State. The results of the study will bring out selected characteristics of the respondents towards organic farming.

Evaluative perception was measured in terms of seven dimensions, viz.; simplicity, profitability, efficiency, sustainability, input availability, flexibility and cost effectiveness. The findings with respect to each dimension and the overall evaluative perception score obtained by the respondents are presented and discussed in this paper.

2. Associate Professor, Department of Extension Education, JAU., Junagadh.
Diversification is an integral part of the process of structural transformation of an economy. In India, as in other developing countries, the economy is diversifying at the macro level with the secondary and tertiary sector becoming progressively more important in terms of contribution to national income as well as in deposition of the workforce. Within agriculture, some of the sub-sectors like animal husbandry, forestry and fisheries progressively occupy a more significant place compared to crop production. And within the crop-mix the so-called ‘superior cereals’ progress faster compared to the ‘inferior cereals’. These developments are fairly common. However, the factor prompting diversification and the speed with which the change occur vary in different situations.

In the last few years the need for rapid diversification was strongly articulated in the context of the rice economies of south-east Asia. A number of the countries where rice is predominant crop are facing a secular decline in rice prices since 1980. there were two option open to such countries, either to support the domestic rice prices by giving huge subsidies, or to allow rice grower to ‘adjust’ to the declining prices of this staple crop. Both these options were unattractive. In this context, a forced pace of withdrawal of farm resource, including manpower, from agriculture and, significant change in cropping pattern were advanced as a more desirable alternative. In the Indian context the need for diversification is advocated on certain additional grounds.

In this note, we will try first to discuss the concept of diversification which is relevant to the Indian situation. Next, we will look into the rational for diversification between agriculture and non-farm sectors as well as within agriculture and, examine the determinants of such change at the enterprise level. We will conclude by referring to the desired public to subserve the objective of diversification.

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4. Assistant Professor, ( Agril. State), JAU., Junagadh-362001.
The advent of organic farming has made farmers innovative and nature friendly. Vermicomposting, an effective replacement for chemical fertilizers is the most sought after due to its cost-effectiveness and quality of enriching the soil. Shwetha E. George, a freelancer based in Kerala writes about the advantages of vermicomposting and feels that some what to be done to create proper awareness among farmers about vermiculture.

Vermicompost refers to organic manure produced by earthworms. It is a mixture of worm castings (faecal excretions), organic material including humus, live earthworms, their cocoons and other organisms. Vermicomposting is an appropriate technique for the disposal of non-toxic solid and liquid organic wastes. It helps in cost effective and efficient recycling of animal wastes (poultry, horse, piggery excreta and cattle dung), agricultural residues and industrial wastes using low energy. Vermiculture is a branch dealing with rearing and maintaining of earthworms for vermicompost preparation. It includes different organic waste materials like crop residues, straws, leaves, animal waste, residues of green manuring crops, household waste material, etc. Generally there are 3200 species of earthworms occur in nature. Out of these Eisenia fetida and Eudrelis eugina are used for preparing vermicompost. The economic value of products from vermicomposting confinement livestock wastes may not justify the cost of an intensive system, but the benefit to society as a whole might count them worthwhile. Practices such as applying too much manure directly on agricultural land and holding liquid wastes in poorly designed lagoons have, in some cases, resulted in very high nutrient levels in ground and surface waters. If confinement livestock operations are unable to ensure the protection of water and soil resources using current practices, processing the large amounts of wastes they generate will become a community concern. Vermicomposting technology is applicable to the rural as well as the urban society. It not only helps in commercial aqua-farming but also acts as a convenient source of earthworm for growing ornamental fishes in aquarium. Thus vermicomposting can be included as a component of sustainable life-style. Application of
vermiculture and vermicomposting in aquaculture is ecofriendly and bio-ethically acceptable. (http://www.biol.com).

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THE RELATIONSHIP BETWEEN KNOWLEDGE AND VERMICOMPOST PRODUCERS: A POLICIES & APPROACHES FOR NATURAL FARMING

Kamani A. B., Kanani P. R., Patel P.G. & Chavda Haresh

The green revolution is resulted due to intensive agriculture with extensive use of chemical fertilizers. The intensive agricultural practices boosted the production to feed the growing population of developing countries. However no thought has been given towards the adverse effect in the long run on the soil health. The sustainability goals of this initiative are two-fold: firstly, vermicompost making should sustain as an income-generation activity; secondly, micro posting should contribute to sustainable farming in the locality. With this in view, corrective measures are suggested regularly in the method used as well as functioning of the groups. In the beginning of this activity, more than 70% of the material used was dry dung and the remainder was straw and dry litter. Some groups have been using the same proportion for wet dung as well. This was corrected to not more than 40% dung, so that a larger proportion of straw and litter can be made into vermicompost. The aim is to maximise the recycling of waste biomass for increasing the biological fertility of soil.

In this globalization, Indian farmers need to be updated with latest knowledge to compete for global marketing. He must have the information like: vermicompost production practices, new techniques of farming, new methods of cultivation, crops, and seeds advice on
crop rotation to maintain soil fertility and other allied activity like dairy, poultry, weather information and regional level, etc. Vermicompost is a new development in biotechnology based product which helps to solve the partially pollution problems. Vermicompost is a mixed culture which contains one specific culture of soil bacteria mixed with an effective strain of each worms. Earthworm culture popularly called vermicompost is being widely practiced in big commercialized manner. In India too many companies have come up but by and large general awareness remains lacking, desire fact that several non-governmental organizations and governmental institutes are trying hard to popularize the subject for adoption.

In this context, this paper attempts that how the Vermicompost production practices can be further accelerated. The study identified role of Information Technology in Vermicompost production practices in South Saurashtra zone of the Gujarat State. A total 35 Vermicompost producers from eight districts purposefully were selected. The surveys through personal interview local carried out to draw the conclusion.

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AWARENESS OF VALUE ADDED TECHNIQUES OF MANGO & BANANA GROWERS OF SOUTH GUJARAT

Mewara R. C.· Pandya R. D.· & Patel G. R·

According to his excellency Dr. A. P. J. Abdul Kalam “there is a need to inject technology and innovation to have continuous growth in productivity, also there is a need to find value added diversified products from the various produce suiting the need to consumers”. In India less than 2 % of the fruits and vegetables produces are being
processed against 65 % of the US, 70 % of Brazil, 78 % of South Africa and 83 % of Malaysia. Moreover, the annual wastage of fruits and vegetables in India has been estimated at 25 thousand corers. Here the food processing sectors can play the significant role in diversification of horticulture produce. Many house holds scale pickle manufacturers have expanded in to relatively medium and large scale units, adopting modern value added technologies for filling and packaging though continuing use the traditional time tested methods and recipes for the production of these culinary delights.

Ex-post facto research design was used for this study. Valsad and Pardi talukas of Valsad while, Kamrej and Choryasi talukas of Surat district were selected on the basis of the highest area under the cultivation and production of mango and banana fruit crops, respectively. The list of major mango and banana growing villages were obtained from the Department of Horticulture. The five villages from the total were randomly selected from selected talukas and the lists of major mango and banana growers of twenty villages were obtained from the Talati cum Mantri of the villages to identify the growers. A simple random sample procedure was followed to select 10 growers from each village which made 200 sample size for this study. Keeping the objectives in view, the interview schedule was prepared and selected fruit growers were interviewed at their home. To know the level of awareness of mango and banana growers regarding value added techniques, the index developed Mayani & Kumar (1980) was used, respectively. The data were analyzed by using simple statistics.

The majority of the mango growers and banana growers had medium level of awareness about value added technique. The majority of the mango growers were aware about making of mango salad followed by grading of mango, sour mango pickle, sweet mango pickle, packaging of mango, mango nectar, mango murabba, mango chhunda, mango ambolia/kachumber, sweet mango chutney, mango juice secured, cold storage, mango pulp, value added products of
mango and marketing of mango. Whereas, all the banana growers had aware about marketing of banana followed by grading of banana, banana wafer, cold storage, value added products of banana, packaging of banana, drying chips of unripe banana, banana chutney, banana juice, and banana squash.

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A STRATEGIC CLUE FOR PUBLIC PRIVATE PARTNERSHIP IN PADDY CROP

Pandya R. D.

Achievement of self reliance in food is greatest success of agricultural extension with solid support of research system. Today the challenge is not the same. Finding a better market for surplus produced will decide Indian agriculture. Besides, opportunities opened up due to WTO also needs change in the mindset of all stake holders in agriculture supported by required change in the systems. Limited resources in extension compel to look for support of other extension systems, thus, opened a thinking on private extension. Even though private extension is operational at present in various forms and picking up very fast, needed clearly among the all stake holders. Collaboration is a tradition of extension work. Collaboration refers to an agreement between to or more agencies to persue a common goal together.

Ex-post facto research design with two stage simple random sampling was employed to select the 5 villages and 20 farmers, where majority had adopted paddy. The list of researchers and extension workers who are directly engaged with paddy crop were obtained
from the Gujarat Agricultural University, Navsari and Agricultural Department of South Gujarat and from that, 10 researchers, 10 extension workers were randomly selected. In all, 40 respondents was the sample size for the study. An interview schedule was prepared to collect the responses from the researchers, extension workers and farmers by arranging personal interview at their office, home or at their farms. Scoring procedure was followed on the collected responses to identify the amicable technologies of paddy for strategic public private partnership in extension services. The collected data were analysed by using simple statistics.

Out of 17 selected extension services of paddy cultivation, the 6 were fully served by public extension services, viz., general information on paddy cultivation, availability of seed / seedlings, information on time / method of fertilizer doses, information on interculturing, information on harvesting and information on storage. Whereas, 8, viz., availability of tillage / puddling implement, information on transplanting, information on seed treatment, availability of farm yard manures / chemical fertilizers, information on irrigation management, information on repairing of irrigation equipment, availability of pesticides / plant protection equipment and information on transporting were served effectively by private extension services moreover, remaining 3 were having fifty–fifty participation from both the sides.

1. Department of Extension Education, N. M. College of Agriculture, NAU, Navsari.
EPISTEMOLOGICAL PARADOX OF FARMERS TOWARDS INDIGENOUS TECHNICAL KNOWLEDGE (ITK) AS THE STRATEGIES FOR SUSTAINABLE AGRICULTURAL DEVELOPMENT.

Kanani P. R.; Kamani A.B.; Tarpara V.D.; & Patel D.V.

The farmer has been diligent in carrying out experiment with plants, animals, tools and implements to optimize resources use and to improve production, processing and storage. The information thus gained over a period of time was passed on from generation to generation by the words of mouth. This knowledge in today’s parlance is called local knowledge, traditional knowledge, traditional wisdom or simply indigenous knowledge (Chittiraichelvan and Raman, 1991). Indigenous knowledge may be the sum total of knowledge and practices, which are based on people’s accumulated experience in dealing with situations and problems in various aspects of life and such knowledge, and practices are special to a particular culture (Wang, 1988). Rajasekaran and Warren (1994) opined that ITK can be used to fulfill socio-economic needs and conserve biodiversity. At the same time, Hiranand (1979) pointed out that folk beliefs play an important role in indigenous knowledge system and it was found that out of twenty dry farming practices recommended by the formal (R. and D) as many as nine practices were almost similar to the local practices followed by the farmers.

The attention should be drawn not only on developing suitable cropping systems but also on supplementing natural resources, high level management and alternate uses and systems with due emphasis on indigenous technical knowledge. The existing knowledge of traditional agriculture should be consolidated and put together and the advantages of these practices should be brought to light. When many of the imported modern agricultural technologies were found to have adverse effects on soils, plants and environment as well as in the long run, on the eco-system balances, our research started to look back for our old farm, farmer and eco-friendly system of traditional agriculture.

Farmers practised different agricultural practices which were inherited over generation, and developed by indigenous initiatives. Most of the practices are time tested and based on the logics as envisaged in modern agricultural sciences. Many indigenous
practices are at the variance with the practices recommended in the package, and the scientists should accord these practices for further research. Recommencing those practices to the farmers in a similar agro eco-system could follow documenting and analyzing all the indigenous practices.

Certain traditional practices can be advocated for replication by the farmers in similar agro-ecological conditions elsewhere. Blending of indigenous technology having scientific rationale, with modern science is a prime need to minimize risk and harvest quality with quantity production.

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APPLICATION OF INNOVATIONS AND INDIGENOUS TECHNOLOGICAL KNOWLEDGE (ITK) IN AGRONOMIC RESEARCH

Kamani A.B., Kanani P.R., Kalpesh Kumar & Haresh Chavda

Agriculture and environment are of late threatened irreversibly by the indiscriminate use of modern technologies. From the time immemorial, man has been dependent on nature for survival. This dependency has led the primitive people living in close harmony with nature to evolve a unique system of indigenous knowledge or traditional wisdom about the utilization and conservation of resources by the way of trial and error. Thus, recording indigenous knowledge becomes important which would otherwise be lost soon, not to be regained at any cost in the future. Agronomic research can extract benefit out of local knowledge to tune the process of innovation, development and diffusion to more realistic ones.

Since, long back the farmer has been diligent in carrying out experiment with plants, animals, tools and implements to optimize resources use and to improve production, processing and storage. The information thus gained over a period of time was passed on from generation to generation by the words of mouth. This knowledge in today's parlance is called local knowledge, traditional knowledge,
traditional wisdom or simply indigenous knowledge (Chittiraichevan and Raman, 1991). Indigenous knowledge may be the sum total of knowledge and practices which are based on people's knowledge. Sir John accumulated experience in dealing with situations and problems on various aspects of life and such knowledge and practices are special to a particular culture (Wang, 1988).

The attention should be drawn not only on developing suitable cropping systems but also on supplementing natural resources, high level management and alternate uses and systems with due emphasis on indigenous technical knowledge. The existing knowledge of traditional agriculture should be consolidated and put together and the advantages of these practices should be brought to light.

Farmers have been developed own technologies in order to meet the challenges faced by them due to natural calamities like drought, cyclone, rain, pests, diseases and other unfavorable conditions. They have learnt these technologies by experiences. Most of practices are time tested and based on the logic as envisaged in modern agriculture Sciences. Indigenous practices may be at the variance with the practices recommended in the package, and the scientists should accord these practices for further research. Documenting and analyzing all the indigenous practices could be followed by recommending those practices to the farmers in a similar agri-eco system.

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IMPACT OF PROFILE OF THE FARMWOMEN ON THEIR INDIGENOUS AND SCIENTIFIC KNOWLEDGE REGARDING VARIOUS USES OF NEEM

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Neem tree (Azadirachta indica, A. Juss) is recognized as “Kalpavriksha” because all parts of neem and its products are very useful in agriculture, industries, medicines and in many other fields. Farmwomen can be encouraged to popularize usages of this tree. For this a study was conducted in Chhotaudaipur and Sankheda Taluka of Baroda district of Gujarat on randomly selected eighty tribal farmwomen and eighty non-tribal farmwomen having neem tree near by their houses or farms. Data were collected through personal contact method and analyzed by using correlation-coefficient. The results revealed that indigenous and the scientific knowledge about various uses of neem was observed better among those tribal farmwomen, who had higher level of education, mass media exposure and cosmopoliteness with smaller size of land holding. Incase of non-tribal farmwomen the scientific knowledge about various uses of neem was observed better, who had higher level of education, big size of land holding, higher annual income, better mass media exposure and positive opinion about usefulness of neem and dependence only on agriculture occupation.

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PROBLEMS IN ADOPTION AND OPERATION OF DRIP IRRIGATION SYSTEM AMONG FARMERS OF GUJARAT STATE

Timbadia C.K. & Patel R.B.

Drip irrigation system is comparatively a new innovation and as such it is difficult to convince the farmers that more yield and thereby, more money can be obtained by the efficient use of water. But still there is a lot of variation in the adoption and operation of drip system by the farmers. Hence, the present study was carried out to know the “Problems in adoption and operation of Drip Irrigation System among farmers of Gujarat State”. Ex-post-facto design was used. Only those districts were selected where the number of drip owners exceeds 100. Thus, 13 districts were selected for the study. Proportionate method of random sampling procedure was adopted. Thus, 150 drip owners were selected and interviewed personally. Among the problems those related to system were frequent clogging of drippers and lack of availability of technical know-how, while the problems related to marketing and finance were high cost of spare parts and non-availability. The important maintenance problems being faced by the drip owners was lack of after care service. Likewise, general problems were damage caused by the rodents/rats to the system and insufficient water source throughout the year.

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IMPACT OF WATERSHED DEVELOPMENT PROGRAMME IN VYARA TALUKA OF SURAT DISTRICT

Pandya C.D., Pandya R.D. and Suthar M.P.

Watershed management implies the wise use of soil and water resources within a given geographical area so as to enable sustainable production and to minimize floods. The study was carried out in Vyara taluka of Surat district. Total 82 beneficiaries of all the three watersheds, who introduced groundnut crop were purposely selected.
Ex-post-facto research design was used for the present study. The data were collected with the help of structural schedule by personal interview method. Suitable statistics were used to make the meaningful findings. The dependent and independent variables were measured by the scale advised by different researchers. Impact occurred due to implementation of watershed programme was quite admirable. A significant change was found in all the dependent variables of the study. The watershed development programme, thus, played an important role in accelerating agricultural productivity and effecting a positive change in life standard of the tribal of Vyara taluka of Surat district.

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TECHNO-ECONOMIC CONSEQUENCES OCCURRED AS A RESULT OF ADOPTION OF WATERSHED CROP PRODUCTION TECHNOLOGY BY FARMERS

Prajapati V.V.; Thakkar K.A.; & Patel V.T.

This study was undertaken in Banaskantha District of Gujarat State. It is one of the leading districts where rainfed farming is dominative. The district consists of twelve talukas of which three talukas are selected where National Watershed Development Project in Rainfed Areas (NWDPRA) is functioning. There were 21 villages where the project was in operation during 9th Five Year Plan. All these villages were selected purposively to make the present study reliable. Using proportionate random sampling, 200 beneficiaries were selected. The findings indicated that the majority of the beneficiaries (71.00 %) of the project had medium level of techno-economic consequences. Due to adoption of watershed crop production technology by beneficiary farmers, significant change was observed in case of cropping intensity, annual income, use of farm inputs, use of farm machinery/
implements, household possession, housing condition and clothing pattern. Whereas, no significant change was observed in food habit of beneficiaries.


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ADOPTION OF FARM TECHNOLOGY IN WATERSHED MANAGEMENT AREA IN GONDAL SUBDIVISION OF GUJARAT STATE

Pandya C.D. & Dave D.H.

Technologies generated by the scientists are of no use unless it is adopted by the farmers. The study was undertaken in Gondal subdivision of Rajkot. Out of 19 watersheds and 20 villages of Gondal taluka, 4 watersheds and 6 villages were selected randomly. Ten per cent of beneficiaries of said watersheds were selected randomly in proportion. Thus, 111 respondents were the sample size of this study. An interview schedule was structured to collect the data from the respondents by personal interview.

The adoption of recommended farm technology was divided into two major groups. One was mechanical measures, which was divided into seven practices and second was agronomical measures, which was divided into seventeen practices. The weightage of particular practice was determined by seeking the opinion of the experts working in the field. The weightage of the particular practice assigned by each expert was summed up and mean was calculated. The adoption quotient developed by Chattopadhyay (1974) was used with slight modification. The study of adoption of mechanical measures reveals that 97.30 per cent respondent have adopted technology of land smoothening/shaping closely followed by land leveling (96.48 per
cent. There were 95.22 per cent and 68.12 per cent respondent had adopted contour bunding and deep ploughing respectively. The graded bunding technology was less adopted while, none of them had adopted nala plugging and farm pond practices. Majority of them were from medium adopters category of mechanical measures (64.86 per cent).

In case of agronomical measures, higher adoption were found in early maturing, high yielding / hybrid variety (94.92 per cent) followed by crop rotation (92.96 per cent), optimum plant population (91.46 per cent) and earthing up practices (91.15 per cent). These were closely followed by inter / mix cropping, use of FYM / compost manuring, use of vegetative bunds, interculturing and weeding. However, use of chemical fertilizers and plant protection measures were falls medium adoption category and plantation of useful trees, sowing of cover crops and soil testing were adopted to a low extent. The practice of contour cultivation was adopted to a negligible extent and mulching and strip cropping were not adopted at all. Majority of the respondents were medium adopters of agronomical measures (78.38 per cent). Data of overall adoption of the recommended farm technology in watershed management area indicated that 77.48 per cent of the respondents were medium adopters of the recommended farm technology in watershed management area. Whereas, 14.41 per cent were high and 8.11 per cent were low adopters of farm technology in watershed management area.

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A STUDY ON THE PURPOSES OF ADOPTION OF DRIP IRRIGATION SYSTEM AMONG THE FARMERS OF GUJARAT STATE

Timbadia C.K. & Patel R.B.

Whenever an individual introduces a new technology on his farm, he has some specific purpose, and by adopting the technology he has a sense of satisfaction that he has achieved. So, "A Study on the purposes of adoption of Drip Irrigation System among the farmers of..."
Gujarat State” was carried out. Ex-post-facto design was used. Only those districts were selected where the number of drip owners exceeds 100. Thus, 13 districts were selected for the study. Proportionate method of random sampling procedure was adopted. Thus, 150 drip owners were selected and interviewed personally. Farmers were conceived that due to the adoption of the drip irrigation system, the economic use of irrigation water had reduced labour cost, irrigated more area with limited water resources and procured higher yield with better quality.

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ATTITUDE OF FARMER TOWARDS ORGANIC FARMING: A NATURAL RESOURCES MANAGEMENT

Patel C. D., Kanani P. R., Kamani A. B., Patel P.G., & Gohil G.R.

The introduction of high yielding varieties changed the agricultural environment leading to numerous pest problems of economic importance. Increased irrigation, higher usage of fertilizers and wide adoption of high yielding varieties led to the resurgence of pests. Many agricultural chemicals like pesticides, fungicides, herbicides, hormones and antibiotics leave residues in the food stuffs that cause cancer or genetic damage. Also depletion of ozone layer is the major threat which causes numerous unpredictable disease attacks to the crop, animals and human beings. Organic farming may be defined as a production system, which avoids or largely excludes the use of synthetically compounded fertilizers, pesticides, growth regulators, and livestock feed additive. To the maximum extent feasible, organic farming systems rely upon crop rotations, crop residues, animal manures, legumes, green manures, off-farm organic wastes, mechanical cultivation, mineral bearing rocks and aspects of biological pest control to maintain soil productivity and tilts, to supply plant nutrients and to control insects, weeds and other pests (1980, U.S.D.A)

Organic agriculture systems are not a repudiation of the assets of modern agriculture technology; neither are they systems of simple
elimination of synthetic fertilizers nor pesticides. Methods in organic agriculture are less intensive in terms of synthetic and other external inputs compared to the conventional farming methods, but are much more intensive from a biological point of view. Organic agriculture systems include approaches and methods like organic biodynamic, regenerative, nature farming and permaculture. The study of organic farming practices helps in recommending those practices that are similar agro-eco systems for replication by the farmers. Such a newer and initiative study of organic farming practices followed by the farmers of South Saurashtra Zone in Gujarat State was carried out for the first time. Thus, the present investigation is expected to guide further detailed studies of this nature.

It is also essential to know the attitude and knowledge of the farmers, towards organic farming practices. At the same time it will be very useful to ascertain the factors responsible for determining the knowledge and attitude of the farmers towards organic farming.

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CONSTRAINTS IN ORGANIC FARMING WITH RESPECT TO NATURAL RESOURCES UTILIZATION

Economic status of the people in country like India mostly depends upon the agricultural production. Need for more intensive and economic agricultural production led to indiscriminate use of high doses of chemicals fertilizers, pesticides etc, relentless use of these chemicals not only alter the eco-system but also claim death to many lives every year due to their hazardous nature.

After the green revolution was launched in India, substantial
increase in the production of food grains was achieved through the use of improved crop varieties and higher levels of inputs fertilizers and plant protection chemicals. But it has now been realized that the increase in production was achieved at the cost of soil health. In fact, about 60 per cent of our agricultural land currently under cultivation suffers from indiscriminate use of irrigation water and chemical fertilizers. Most of the growth in the food production during the green revolution period is attributed to the higher fertilizers use.

The scientists have realized that the green revolution with high input use has reached a plateau and is now sustained with diminishing return and falling dividend. The intensive use of inputs has not only polluted the soil, water and the environment causing their slow degradation but also affected the human beings. Thus a natural balance needs to be maintained for survival and well being of the human beings, plant and animal kingdom. The obvious choice for that would be adoption of organic farming without compromising agricultural production. Organic farming which aims at cultivating the land and raising crops in such a way as to keep the soil alive and in good health may be an alternative to the present system of farming solely depending on chemicals.

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AN OVERVIEW OF VERMICOMPOST IN SAURASHTRA REGION: A NATURAL - ORGANIC WASTE RESOURCES UTILIZATION

Kamani A.B., Kanani P.R., Haresh Chavda & Kalpesh Kumar

Sustainable agriculture is one in which the goal is permanence, achieved through the utilization of renewable resources. This leads to development of concept of organic natural farming. Among various components of organic/natural farming,
vermicomposting is a key component for making compost through earthworms. In vermicomposting you are turning your waste garbage which might be a polluting agent to valuable compost. Earthworm in general is beneficial to agriculture. They are good friends of the farmers, as they are continually ploughing and manuring the soil (Barley 1959).

The sustainability goals of this initiative are two-fold: firstly, vermicompost making should sustain as an income-generation activity; secondly, miscomputing should contribute to sustainable farming in the locality. With this in view, corrective measures are suggested regularly in the method used as well as functioning of the groups. In the beginning of this activity, more than 70% of the material used was dry dung and the remainder was straw and dry litter. Some groups have been using the same proportion for wet dung as well.

Recently interest has been shown in the development of eco-friendly novel processes which are based upon the utilization of biological systems. One such system involves the culture of earthworms (vermiculture) for the stabilization of a variety of organic solid wastes (vermicomposting). The key role of earthworms in improving soil fertility is well known since long (Darwin, 1881; Chandana, 1981; Kale and Krishnamoorthy, 1981). Earthworms feed on any organic waste, consume two to five times their body weight and after using 5-10% of the feedstock for their growth, excrete the mucus coated undigested matter as worm casts. 

Worm casts consist of organic matter that has undergone physical and chemical breakdown through the activity of the muscular gizzard which grinds the material to a particle size of 1-2 micron. The nutrients present in the worm cast are readily soluble in water for the uptake of plants (Bhawalkar and Bhawalkar, 1993). Vermicasting is a rich source of macro and micronutrients, vitamins, enzymes, antibiotics, growth hormones and immobilized micro flora.

Vermicompost technology is applicable to the rural as well as the urban society. It not only helps in commercial aqua farming but also acts as a convenient source of earthworm for growing ornamental fishes in aquarium. Thus vermicomposting can be included as a component of sustainable life-style. Application of vermiculture and vermicomposting in aquaculture is eco-friendly and bioethical acceptable. (http://www.biol.com).
ADOPTION OF SOIL CONSERVATION AND WATER HARVESTING TECHNOLOGY BY THE FARMERS OF NORTH GUJARAT

Prajapati M.R., Patel V.T., Joshi K. M. & Chaudhari N.V.

Watershed Development Projects have been taken up under different programmes launched by Government of India. The latest programme based on the watershed concept is the National Watershed Development Programme for Rainfed Areas (NWDPRA). The consequent effects of the programme are reflected in terms of the extent of adoption of watershed management technology. Keeping this fact in mind the present study entitled; «Adoption of Soil Conservation and Water Harvesting Technology by the Farmers of North Gujarat” was carried out.

The present study was conducted in Banaskantha district. The NWDPRA was running in nine talukas of the Banaskantha district. Among these, three talukas were selected randomly. Further five villages from each taluka were selected purposively where watershed work had been completed since last four years. Six farmers from each village were selected randomly from the list of beneficiaries of the project. This constituted a sample of 90 farmers from fifteen villages. The data collected through a well-structured interview schedule prepared with the help of soil science, agronomy, extension and GLDC personnel. The data were coded, classified, tabulated and analyzed in order to make the findings meaningful.

Significant number of respondents had adopted watershed management technologies viz. construction of field bunds (100.00 per cent), land leveling (85.00 per cent), sowing across the slope.
(76.66 per cent), summer ploughing (68.88 per cent) and tillage across the slope (57.77 per cent). Further negligible number of farmers had adopted recharging of wells (2.22 per cent) and installation of sprinkler / drip irrigation system (6.66 per cent). Not a single farmer had constructed farm pond and adopted mulching practice on his own field.

In case of the adoption of agronomic practices the data revealed that around 90.00 per cent had adopted practices viz. inter culturing (96.66 per cent), weeding (91.11 per cent) and use of chemical fertilizers (88.88 per cent). While majority of them had adopted practices viz. early variety, timely sowing, mixed cropping, use of organic manures and supplementary irrigation and plant protection measures. In case of practices viz. mid season correction (46.66 per cent), seed treatment (24.44 per cent), disease control (30.00 per cent) and planting of trees (27.77 per cent) had adopted by least number of farmers.

Soil fertility get reduced due to removal of top soil in leveling and field bunding (76.66 per cent), production get reduced in initial years due to leveling and field bunding. (66.66 per cent), total land is not covered under watershed (64.44 per cent), inadequate water harvesting and ponds for irrigation facilities (57.77 per cent), unavailability of manures and input supply (51.11 per cent) were the important constraints experienced by the beneficiary farmers under the NWDPRA.

Among them important suggestions, more financial assistance should provided by Government (66.66 per cent), watershed programme should be implemented full fledge (64.44 per cent), subsidy should be provided to purchase of manures and inputs (62.22 per cent), water harvesting structures should be constructed for increasing irrigation facilities (61.11 per cent) and free soil testing services should be provided to the farmers (51.11 per cent).

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A STUDY OF BEHAVIOUR OF FARM WOMEN REGARDING AGRICULTURAL ENTREPRENEURSHIP

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Training is one of the most commonly used devices that impart knowledge and skill to the farmers. In this way, there is enough scope to increase the productivity of the agricultural crops in the country. The present study was undertaken with the objective to find out the personal and socio-economic characteristics and suggestions to make training more effective by the farm women. The study was conducted in three villages, i.e. Akolvadi, Prempara and Thoradi of Talala, Visavadar and Una talukas of Junagadh district, respectively. The total number of 25 trained and 25 untrained farm women were selected proportionately by using random sampling technique. The result of the study showed that the majority of the trained and untrained farm women belonged to young age group up to 30 years. Nearly one third of the trained farm women possessed college level of education and untrained farm women had secondary level of education.

Majority of the trained and untrained farm women belonged to large sized family. More than three-fourth of the trained farm women had medium social participation. Whereas, more than two-third of trained and untrained farm women had medium extension participation.

The suggestions for making training more effective were that for training venue, that should be the Farmers’ Training Centre (FTC), the time for training should be during slack season, training methods should be lecture with practical followed by lecture with discussion, demonstration and field visit. All of them suggested that they would prefer female teachers for training.

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Training is the most important activity of Sarder Smruti Kendra, Junagadh Agricultural University, Junagadh for transfer of agricultural technology to the farming Community. The principal objective of the study is to measure the adoption pattern of wheat production technology of the farmwomen and to identify relationship between the adoption and their selected characteristics of the farm women who have already been trained in this institution. The result of the study depicted that the adoption of improved varieties of wheat occupied first ranked followed by tillage (rank-II) and harvesting (rank-III) in case of trained farm women. Whereas, in case of untrained farm women, the first rank was occupied tillage followed by harvesting (rank-II) and sowing time (rank-III). In general, trained and untrained farm women had similar priority in their ranks of adoption of WPT (Wheat production Technology). However, they differed in their aggregate extent of adoption. In case of trained farmwomen, there was positive and highly significant association between extent of adoption of WPT and their characteristics, viz.; education, annual income, reading habit, extension participation, yield and knowledge index. Whereas, untrained farm women, only annual income, yield and knowledge index were positive and highly significant association with extent of adoption of WPT.

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Farm Women is an integral part of the human Society. Women contribute one third labour force required for farming operations and allied enterprises. They have been playing significant role in homes, farms and allied activities.

In Indian context farming is a family occupation. farmwomen is associated to her husband in various activities that has greater role in decision making process. Thus, the timely and judicious decision making ability of the farm family have a direct bearing on the development of agriculture sector. Empowerment of the farmwomen in decision making is a current need of the time in an agrarian country like India. “Adivashi” women of Southern part of Gujarat are illiterate even though they contribute a lot to the agricultural development in the region. It is, therefore, imperative to study the pattern of adivashi women in decision making related to home, farming and livestock operations .The study was conducted with following objective- to appraise the participation of Tribal farm women in decision making related to home, farm and animal husbandry enterprise in the Navsari District of the South Gujarat for sustainable agricultural development.

Empowerment of the Farm Women in Decision Making is a need of the time in agrarian country like India, where farming is a family occupation. Thus study was therefore designed to appraise the participation of Tribal farm women in decision making related to home, farm and animal husbandry practices. Results of the study reveals that tribal farm women play dominant role in making decisions related to animal husbandry enterprise. Whereas, they found recessive in decisions regarding farm operations. It is amazing to note that except home decoration, in most of the areas of home management the decision was dominated by male/husband.

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CONSTRAINTS FOR THE FARM WOMEN PARTICIPATION IN DEVELOPMENT PROGRAMMES

Barvaliya U.B.; Thakrarar D.M.; Gardharia H.B. & Karkar B.R.

Women played a pivotal role in agriculture and livestock management. In modern agriculture too, women continued to share a number of farm operations with men. Women have all along been active partner in farming undertaken management along with men. Due to lack of training to women and social taboos, many such jobs after mechanization and modernization of industrial enterprise tend to become male domain. The low status of women in large segments of Indian Society cannot be raised without opening up opportunities of independent employment and income for them. To achieve this various welfare and development programmes have been introduced to improve the living conditions of women development programmes farm women to be tailored to their needs and their valuable time scheduled must be kept in mind, but there were some constraints for farm women to participate in development programme.

The principal objective of the study is to find out the constraints for the farm women's participation in development programmes and to seek suggestions to overcome the constraints to participate in development programme.

The study revitalized that the major constraints for farmwomen to participate in development programmers were: burden of house work, lack of awareness and low literacy level, lack of decision making power and affects social life of farm women.

The majority farm women strategy suggested the programme should be conducted at off season, creating awareness on development programme, established FTC at taluka places, arrange *Krushi-mela* at taluka place and timely guidance should be given about different development programmes.

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PERCEPTION OF OFFICE-BEARERS, GOVERNING BODY AND MEMBERS REGARDING EXTENT OF PROFESSIONALISM IN MANAGEMENT OF CO-OPERATIVE SECTORS.

Naik R.M., Patel R.B., Vejapara V. P. & Pandya H. V.

The co-operatives in the present times represent myriad socio-economic activities with a wide range and depth. Their management has become a complex phenomenon requiring a high degree of innovation, skills and ability to experiment with new ideas. The problems of management have become manifold requiring specialized attention in the spheres of marketing, banking, processing, consumption etc. Due to this, application of specific fields of management with their techniques and methodologies has become important in the field of co-operatives, where management at present is quite simple and elastic, portraying a disjointed and somewhat outdated outlook. The co-operatives should not show despondency by showing a lukewarm attitude to the rapid advances in the field of management. A definite spin off effect of professionalism will be raised in productivity for co-operatives, which will be an important yardstick of success for the growth of co-operative organizations.

Ex-post-facto research design was used for the present study. The three co-operative sectors, viz., agricultural, sugar and dairy are spread over and functioning in all the part of South Gujarat. Later on three co-operative societies from each sector were selected randomly. Three categories of respondents, viz., office-bearers, leaders and primary members of the societies were selected randomly at the ratio of 5:5:10. Thus, the total numbers of respondents were 180. The data were collected with the help of structured schedule by personal interview method. The dependent and independent variables were measured by utilizing suitable scales and procedure adopted by other research workers. The statistical measures such as percentage mean score, standard deviation, co-efficient of correlation, stepwise multiple regression, standard partial regression co-efficient and path co-efficient analysis were used.
Majority of the respondents of Amalsad and Pratapnagar societies had average level, while the respondents of Karcheliya society had poor level of perception of professionalism in all eight dimensions. Majority of the respondents of all three societies perceived all eight dimensions of professionalism to be at average level. Majority of the respondents perceived good level in Vasudhara Society and average level in Dudhdhara Society and Choryasi Society of perception of all eight dimensions of professionalism.

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IMPACT OF GROUP COHESIVENESS ON PROFESSIONALISM IN MANAGEMENT OF CO-OPERATIVE SECTOR

Naik R.M., Patel R.B., Vejapara V.P. & Patel G.R.

Group cohesiveness is nothing but “we feeling” and sense of belongingness which developed by the members with the co-operative. Group cohesiveness refers to the degree to which its members are attracted to the group, are motivated to remain in the group and mutually influence one another. Members of highly cohesive groups are more energetic in group activities, are less likely to be absent from group meetings, and are happy when the group succeeds and sad when it fails, whereas member of less cohesive groups are less concerned about the group’s activities. The members of highly cohesive group are more likely to conform to group pressures than the members of low cohesive groups are.

Ex-post-facto research design was used with simple random sampling method in this present study. The three co-operative sectors of agricultural, sugar and dairy sectors were selected randomly. Three categories of respondents, viz., office-bearers, leaders and primary members of the societies were selected randomly at the ratio of 5:5:10. Thus, the total numbers of respondents were 180. Data were
collected with the help of structured schedule by personal interview method. The dependent and independent variables were measured by utilizing suitable scales and procedure adopted by other research workers. The statistical measures such as percentage mean score, standard deviation, co-efficient of correlation, stepwise multiple regression, standard partial regression co-efficient and path co-efficient analysis were used.

A majority of the agricultural (58.33 percent), sugar (78.33 per cent) and dairy (61.67 per cent) co-operative sectors' respondents had moderate level of group cohesiveness. It was found highly significant correlation between group cohesiveness and professionalism.

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INFLUENCE OF PERSONAL PROFILE ON PROFESSIONALISM


Professionalism is essentially a function of modernization in which co-operatives have to emerge as strong business enterprises so as to emerge triumphant amidst the winds of change in the economy. As they have matured as organizations, there is a corresponding need to infuse adequate doses of professionalism in their functioning. The co-operative sector in India has emerged as one of the largest in the world with 504 thousand societies of various types with a membership of 20.91 crore and working capital of Rs. 2.27 crores. Almost all villages in India are covered under the co-operative fold. Therefore, Effect of the personal, socioeconomic and psychological characteristics of respondents on professionalism in context to effectiveness of the co-operative sectors was studied.

Ex-post-facto research design was used to study the three co-operative sectors, viz., agricultural, sugar and dairy are spread over
and functioning in all the part of South Gujarat. Three co-operative societies of each sector and respondents were selected randomly. The total numbers of respondents were 180. The data were collected with the help of structured schedule by personal interview. The dependent and independent variables were measured by utilizing suitable scales and procedure advocated. The statistical measures such as percentage mean score, standard deviation, co-efficient correlation, stepwise multiple regression, standard partial regression co-efficient and path co-efficient analysis were used.

The variables viz., income, attitude towards their co-operative society, attitude towards other members of the co-operative society, faith in people, perceived benefits of co-operatives, group motivation and knowledge about principles of co-operation had found highly significant correlation with professionalism in management of co-operative sectors.

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CORRELATION BETWEEN MANAGEMENT EFFICIENCY AND ECONOMIC PERFORMANCE OF BANANA GROWERS

Patel H. B., Bhatt P. M. & Patel K. F.

Improvement of agricultural practices is the product of modern science and technology. The area under banana crop is increasing steadily. The packages of practices based on scientific investigation are recommended to achieve greater production. There are number of factors affecting the banana production. Management is the one of the most important factors which helps the banana growers to exploit natural resources and accumulate capital. It was
found that management efficiency of banana growers (marginal, small, medium and pooled) was positively and significantly related with their economic performance. For better economic performance of banana growers, the various components of management efficiency should be given due consideration.

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ATTITUDE OF DAIRY FARMERS TOWARDS DAIRY FARMING

Ashwar B.K., Soni M. C., Patel V.R., & Shaikh S.A.

An attitude is an affect or favourable and or unfavourable feelings towards dairy farming of dairy farmers. Investigator has developed and standardised an attitude scale for this study by adopting the methodology suggested by the Likert (1932). The study was conducted in Mehsana, Banaskantha and Sabarkantha districts of the north Gujarat.

Study revealed that majority of the respondents hold moderately favourable to highly favourable attitude towards dairy farming. The average attitude score was also very high (83.55*), indicated their positive feelings towards dairy farming. Relationship between various selected attributes of dairy farmers and their attitude towards dairy farming indicated that out of the 15 variables, 13 were, knowledge (0.7235*), economic motivation (0.7072*), scientific orientation (0.6455*), infrastructure experience (0.6247*), extension contact (0.5762*), income (0.5758*), milk production (0.5060*), extension participation (0.5019*), animal size (0.4393*), education (0.4083*), caste (0.3419*), social participation (0.2626*) exerted positive and significantly correlated with attitude, contributing significantly in predicting attitude level. However, age and dairy farming did not show any significant relation.

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ADOPTION OF WATERSHED CROP PRODUCTION TECHNOLOGY BY FARMERS

Prajapati V.V.; Thakkar K.A. & Patel V.T.

This study was conducted in Banaskantha District of Gujarat State. Using purposive random sampling three talukas where National Watershed Development Project in Rainfed Areas (NWDPRA) is functioning were selected. There were 21 villages where the project was in operation during 9th Five Year Plan. All these villages were selected purposively to make the present study reliable. Using proportionate random sampling, 200 beneficiaries were selected. The findings revealed that majority of the beneficiaries of the project had medium level of knowledge and adoption of Watershed Crop Production Technologies (WCPT). Majority of them adopted no cost or low cost technologies such as summer ploughing, sowing across the slope, growing short duration varieties, hand weeding and use of organic manure. It was interesting to note that very less number of beneficiaries had adopted costly/complex technology such as mulching, use of herbicide, recharging of well and terracing.

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IMPACT OF NATP ON LAND USE PLANNING SCHEME ON ADOPTION AND PERCEPTION OF FARMERS KALTHAN

Timbadia C.K., Patel A.P. & Patil R.G.

Keeping in mind, the crop production related constraints identified in selected pilot area, the interventions viz., improved
varieties of existing crops, chemical and biological reclamation of salt affected soil and introduction of new crops were attempted for enhancing the crop productivity in pilot area. So, study on “Impact of NATP on land use planning scheme on adoption and perception of the farmers” was carried out. Among the 180 farmers, 37 within and 28 from outside the pilot area were selected randomly. Thus, 65 farmers were included in the study. An appropriate questionnaire was developed and farmers were personally interviewed. It is inferred that irrespective of land holding groups, the majority of the farmers of in and around Kalthan pilot area have realized the importance of scientific land use planning in coastal areas.

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FARMERS’ PERCEPTION REGARDING WATER LOGGING AND SOIL SALINITY PROBLEMS

Timbadia C.K., Vanparia O. D. & Pandya C. D.

Water logging problem in the pilot area is a major constrain for viable agriculture which adversely affects the economic status of the farmers. In order to assess the information regarding farmers’ perception of water logging and soil salinity, 47 farmers of Sisodara pilot area were randomly selected and interviewed through prescribed questionnaire. Ninety two per cent farmers were of the opinion that the crop yield had declined due to water logging and salinity. They also stated poor permeability of the soil as a major factor leading water logging and salinity. The majority of the farmers have attributed canal water supply and adoption of unscientific water management practices for water logging and salinity problem. The farmers have expressed that the major problems in the pilot area are; lands are going out of cultivation due to water logging and salinity.

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IMPACT SURVEY OF DRIP IRRIGATION IN GUJARAT STATE

Timbadia C.K. & Patel R.B.

Drip irrigation system advanced method is becoming popular among the farmers of Gujarat State for efficient utilization of natural resource water. But still there is lot of variation in the adoption of drip system by the farmers. Hence, the main idea behind this investigation was to analyze the impact of the system on crop production and water saving at farmers’ level. Ex-post-facto design was used. Only those districts were selected where the number of drip owners exceeds 100. Thus, 13 districts were selected for the study. Proportionate method of random sampling procedure was adopted. Thus, 150 drip owners were selected and interviewed personally. Majority of the drip owners felt that the saving in water was above 25 per cent, weed control expenses 51 to 75 per cent and saving in labour expenses 26 to 50 per cent. Nearly, 69 per cent of the drip owners were not adopting fertigation through their drip system. More than half of the drip owners expressed that the yield could also be increased by about 26 to 50 per cent. Large majority of the drip owners stated positively in regards the improving of quality of their farm produce.

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DIAGNOSTIC SURVEY FOR CULTIVATION PRACTICES OF SPIDERLILY
(Hymenocallis littoralis L.) IN SOUTH GUJARAT

Patel R.L.¹, Parmar B.R.², Chundawat B.S.³ & Patel M. M.⁴

The present investigation on “Diagnostic survey for cultivation practices of spider lily (Hymenocallis littoralis L.) in South Gujarat” was carried out to know the existing cultivation practices of spider lily and to enucleate major calculations spider lily (Hymenocallis littoralis) cultivation in South Gujarat was known to have been started in 1986 by four farmers in 17.16 ha. area and by
1996, 82 farmers were cultivating this crop in 112.52 ha. It is a good remunerative crop. Regarding the trends in cultivation practices involved in spider lily crop in South Gujarat, majority of the farmers (42.68 %) planted this crop during October to January on flat bed (60.98 %) by keeping plant-population above 55080 bulbs per ha. (57.44 % farmers) by planting it as taken top in young farmers (51.00%) perfumed in grow horticultural crops and lily on their farm lands. With regard to fertilizer used, 81.71 per cent of lily growers applied up to 400 kg N / ha /year, 71.95 % applied P up to 10 kg / ha / year and 54.88 % applied K up to 25 kg / ha/year. Regarding irrigation application to lily crop, it was found that 62.20 % growers applied more than 25 irrigation/ ha/year. Flowers were harvested by 74.39 percent of lily growers on day to day basis at white bud stage in the early morning hours with the help of tropic. Majority of lily growers (55.00 %) marketed their product in nearby cities.

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ADOPTION OF RECOMMENDED MUSTARD CULTIVATION TECHNOLOGY BY THE FARMERS OF BORSAD AND PETLAD TALUKAS OF KHEDA DISTRICT OF GUJARAT STATE

Suthar M.P. & Patel K.F.

The average yield of mustard in Kheda district is 1009 kg/ha, which is low as compared to yield gained from research station (2,200 kg/ha). Hence, a study on adoption of recommended mustard cultivation technology by the farmers of Borsad and Petlad talukas of Kheda district was conducted. Two stage random sampling method was used for the study. The data were collected with help of personal interview schedule. Majority of the mustard growers possessed medium level of knowledge and were adopted recommended mustard cultivation technologies by the growers up to medium extent.

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For increasing productivity of banana as well as efficient use of natural resource water and fertilizer, drip irrigation is becoming popular among the farmers of Gujarat. Hence, a study was carried out to know the “Adoption and problems to Banana Cultivation in South Gujarat”. The respondents were selected randomly from six talukas. Thus, 89 farmers were selected for the study. The respondents were personally interviewed through set of standard questionnaire. Mean and percentage were used. Overall 57 per cent banana growers are adopting drip method of irrigation. Among them, land holding group wise distribution indicated that the large farmers prefers banana crop and more so with adoption of drip irrigation. Farmers’ perception about water and fertilizers saving along with increase in yield due-to use of drip method of irrigation was also obtained. Among the infrastructural problems, irregular power supply is ranking first. While soil and water related constraints are concerned nutrient management seems to be a major problem. Among crop related problems, disease is at the top priority.

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A SCALE TO MEASURE ATTITUDE TOWARDS IMPROVED BANANA CULTIVATION PRACTICES

Patel H. B., Bhatt P. M. & Patel K. F.

The area under banana crop is increasing steadily. Attitude towards improved banana cultivation practices is one of the important factors which affect the adoption of technology. With this in view, an attempt
has been made to develop a scale which can scientifically measure attitude of banana growers towards improved banana cultivation practices. The present study was confined to develop a scale which can scientifically measure the attitude of banana growers towards improved banana cultivation practices. From the 72 statements 48 statements were selected according to the fourteen criteria suggested by different scientists. The final scale constitutes 19 statements. The calculated reliability co-efficient is 0.83.

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CO - RELATES OF THE VERMICOMPOST PRODUCERS

Kamani A. B., Kanani P. R., Patel P. G. & Patel D. V.

Vermicompost is a profitable enterprise. It helps to meet the essential nutrients to the soil and economic beneficial opportunities for the others. India has attained nowadays slowly increasing position among the vermicompost producing countries in the world. Vermicomposting technology is applicable to the rural as well as the urban society. It not only helps in commercial aqua farming but also acts as a convenient source of earthworm for growing ornamental fishes in aquarium. Thus, vermicomposting can be included as a component of sustainable life-style. Application of vermiculture and vermicomposting in aquaculture is ecofriendly and bio-ethically acceptable.

The green revolution is resulted due to intensive agriculture with extensive use of chemical fertilizers. The intensive agricultural practices boosted the production to feed the growing population of developing countries. However, no thought has been given towards the adverse effect in the long run on the soil health. Soil fauna play a prominent role in regulating soil processes and among this and the Earthworms play a vital role in maintaining soil quality and managing efficient nutrient cycling. Vermes is a Latin word for worms and vermicomposting is basically composting with worms.
Vermiculture is a branch dealing with rearing and maintaining of earthworms for vermicompost preparation. Earthworms decompose waste organic materials and give out in a granular form which is known as vermicompost. It also includes cocoons and young stages of earthworms. It includes different organic waste material like crop residues, straws, leaves, animal waste, residues of green manuring crops, household waste material, etc. Generally there are 3200 species of earthworms are occurring in nature. Out of these *Eisenia fetida* and *Eudrelis eugina* are used for preparing vermicompost.

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**GREEN GRAM GROWERS' KNOWLEDGE ABOUT GREEN GRAM PRODUCTION TECHNOLOGY**

Tavethiya B.A., Thakrar D.M., Barvaliya U.B., Gardharia H.B. & Kalsariya B. N.

Among the pulses, green gram (*Vigna radiata* L. wilezek) is one of the most important and extensively cultivated pulse crop. In our country where people are predominantly vegetarian, pulses form the main source of protein and are thus of vital importance in our daily diet. It provides very good quality green gram fodder to animals. The principal objective of the study is to measure the level of knowledge of green gram growers about green gram production technology and to identify relationship between knowledge and their selected characteristics of the green gram growers. The result of study depicted that majority of the respondents had medium level of knowledge about green gram production technology. This might be
due to fact that the green gram growers had medium extension contact and medium social participation. This factor has favorable helped the green gram growers in getting more knowledge about recommended green gram production technology. The independent variable age showed negative and significant relation with their knowledge, while education, innovativeness, social participation, extension contact, cropping intensity, irrigation potentiality, risk orientation and economic motivation has positive and significant relationship with their knowledge about green gram production technology, while size of land holding have no relationship with their knowledge.

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TECHNOLOGICAL GAP IN KHARIF FENNEL CULTIVATION BY FENNEL GROWERS OF BANASKANTHA DISTRICT OF GUJARAT STATE


The present study was undertaken in Palanpur taluka of Banaskantha district of Gujarat state. There are 40 villages in the taluka where fennel crop is being grown by majority farmers. Ten villages were randomly selected for the present study. From each of the selected village, twelve fennel growers were randomly selected, making a total random sample of 120 fennel growers.

Knowledge level of the respondents about fennel production technology was determined by using the teacher made test based on the scale developed by Jha and Singh (1970). Extent of adoption of recommended fennel production technology was measured by using adoption quotient the formula developed by Sengupta (1967). Technological gap was determined with the help of the formula developed by Dubey et al. (1981).

A simple ranking technique was applied to measure the constraints in adoption of fennel production technology. The data were collected with the help of structured interview schedule. Majority of the fennel growers had medium level of knowledge regarding the recommended
fennel production technology. Majority of the fennel growers were found to have medium extent of adoption. The maximum technological gap was observed in plant protection measures and nursery raising. The overall technological gap was found 36.80 per cent. Major constraints perceived by the fennel growers were lack of technical guidance, more problem of disease and insect, non-getting remunerative price of the produce and long duration crop.

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INFORMATION NEEDS OF THE RICE GROWERS FOR SUSTAINABLE AGRICULTURAL DEVELOPMENT

Chauhan N.M. & Chauhan N.B. & Thakor R. F.

Rice is predominantly grown in Kheda district as it is the staple food crop of this region. The investigation conducted to study the gap exists between the how to knowledge and their application in the fields. Thus, there is a wide scope for increasing production of rice per unit area. In order to increase the level of adoption, farmer must be made aware of the improved technologies.

Acquisition of information has always been regarded as a factor playing an important role in moulding human behavior leading to decision for adopting of innovation. Mass dissemination of information may play an important role in increasing the adoption of technology. The preparation of good content of information of rice farming is possible based on the real information needs of the farmers. The content based on actual needs of the users will create interest among them to apply it in practice (Mehta, 2003). With a view to supporting larger group of rice growers with agricultural information in future, the present study was carried out with specific objective to ascertain the information needs of the rice growers.

The present investigation was confined to Anand district of Gujarat state. The information need of the 100 rice growers was measured using three point continuum. Major area of information needs as expressed by the rice growers in descending order of rank were plant protection measures, marketing, schedule of water supply
by canal, fertilizer management, water management, preparation of seedlings, variety, land preparation and sowing, supportive facts, harvesting and post harvesting technology and weed management

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A SCALE TO MEASURE THE KNOWLEDGE OF DAIRY FARMERS REGARDING IMPROVED ANIMAL HUSBANDRY PRACTICES

Bhatt P. M.‘, Patel H. B.‘ & Patel K. F.‘

The availability of latest scientific knowledge of dairy farming, which is based on four pillars namely, innovative breeding, balanced feeding, excellent management and well supervised health control of cattle and buffaloes, are the major elements to create ideal and expected conditions in animal husbandry. With this in view, an attempt has been made to develop a scale which can scientifically measure knowledge of dairy farmers toward improved animal husbandry practices. The present study was taken up to develop a scale which can scientifically measure the knowledge of dairy farmers towards improved animal husbandry practices. From the 91 statements 49 statements were selected. The final format of the scale to measure knowledge of the dairy farmers consisted of the 49 statements. The reliability co-efficient is 0.96, which is highly significant.

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ATMA project was launched in Gujarat in December, 2005. Initially in first phase, 8 districts were selected and Dahod is one of them. The Dahod district falls in middle Gujarat region of agro-climatic zone. The majority of population is tribal and engaged in farming. The major crop of this region is Maize and cultivated in nearly 12 thousand ha. It was observed that the productivity is very less as compare to recommended productivity i.e. 3000 kg/ha. It means there is a wide gap in productivity of Maize crop.

Dahod has four Agri Ecological Situation (AES) and from each, one village was selected which represented the identical situation of AES for developing the Strategic Research & Extension Programme (SREP), Participatory method used for data collection by the multidisciplinary team.

The result shows that there was a full gap in seed treatment, micronutrient application and insects and disease management while method of showing, use of varieties, seed rate, application of organic manure, chemical fertilizers and weed management practices were found in partial gap category.

To fulfill the gap in practices and yield, the farmers were proposed the extension strategies, viz., (i) training (ii) demonstration (iii) soil testing and application of fertilizers as per recommendation.

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TELEPHONE - A SOURCE OF AGRO-TECHNOLOGY INFORMATION

Pandya C.D., Timbadia C.K. & Mehata H.D.

The present study was conducted to know the usefulness of Telephone Help Line Service implemented by ZARS-Krishi Vigyan Kendra, NAU, Vyara of Surat District to transfer Agronomical technology among the farmers of its operational area. All the phone calls received through Help Line Service and were recorded in a register were analyzed. Samples of 100 phone calls were taken to know the farmer's response regarding Help Line Service was studied. The findings of the study revealed that the responses on the Help Line Service was lower in its starting having average 20 phone calls per month and it was increased during the study period. The total phone calls received during the study period was 314. The analysis of recorded phone calls on the basis of nature, it was found that 27.07 per cent had inquired regarding plant protection followed by high-tech agriculture (22.92 per cent). The information requirement of farmers on Help Line Service was on crop varieties, aromatic and medicinal farming, organic farming, agro-based enterprises like mushroom cultivation, vermincomposting, etc. and fruit and vegetables farming. Farmers response towards Help Line Service perceived, it was found that 76.00 per cent farmers who made phone calls for help were satisfied with the services provided while 24.00 per cent farmers were not satisfied by the information provided through help line service. This may be due to farmer's inability to clarify the problems or scientists unable to provide proper solution for the farmers' problems on phone. The study found that the telephone could provide to be an effective and efficient medium for communicating agro-technology among the farmers and hence, it was recommended its further extension to other Krishi Vigyan Kendras functioning in different parts of the State.

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Agriculture has been started as an activity very close to nature and in harmony with all living and non-living things on earth. It was dependent on the natural cycle of seasons and was sustainable in the past. But now crop production is in crisis. With the development of the technologies especially after the green revolution, things have been changed drastically in human life. Man claims to have control over nature. To combat the increasing mouths of Indian population within a shorter time, the indiscriminate use of chemical fertilizers and pesticides were made serious damage to the soil and in ecosystem. Eco friendly cultivation practices are organic which provides balance environment in which the maintenance of soil fertility and control of pest and diseases were achieved by the enhancement of natural processes and cycles with moderate inputs of energy while maintaining optimum, sustainable production.

Navsari zone of Gujarat Agricultural University was purposely selected for the study. The list of the employees beyond the class two level was obtain from the administrative office and by using simple random sampling method 50 respondents were identified. The views were obtained through personal contact. A schedule was prepared to see the level of knowledge whereas, teachers made scale was developed to measure the attitude towards eco friendly system. Lastly, collected data were analyzed by using percentage, mean and standard deviation to get right inference Majority of the respondents were possessed medium level of knowledge and medium level of favourable attitude towards eco friendly agriculture system. The probable reason of this finding would be due to their educational level and a soft corner feeling towards farming community.
A STUDY ON AWARENESS OF SOIL HEALTH CARD

Patel H.B., Bhatt P.M. & Patel P.P.

Gujarat government had launched soil health card programme with a view to increase agricultural production by the year 2003-2004. Since inception of soil health card programme, about 2,00,000 soil health cards were given to the farmers. In order to know the awareness of soil health card, the present study was carried out. All the beneficiaries were aware about various soil health card aspects like, major nutrients (N, P & K), soil pH and Soil Ec. While, 74.00 per cent were aware about irrigation water analysis, whereas only 20.00 per cent were aware about analysis of Sulphur. A less percent (2.50) of farmers were aware about analysis of micro nutrient namely Mn. Different projects/schemes run by Department of Agriculture, Department of Horticulture and Department of Animal Husbandry were least aware by the soil health card holders.

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CORRELATES OF MASS MEDIA EXPOSURE OF DAIRY FARMERS

Bhatt P. M., Patel H. B. & Patel P. P.

With a view to measure the mass media exposure of dairy farmers of Anand district and to understand the relationship between selected characteristics of dairy farmers the study was conducted with a sample of 200 dairy farmers. The results indicated that the majority of the dairy farmers had medium level of mass media exposure about improved animal husbandry practices. The analysis of correlation of personal, socio-economic, communicational and psychological variables reflected that variable like education, social participation, occupation, annual income, extension contact,
cosmopoliteness, economic motivation, scientific orientation, planning orientation, production orientation, market orientation, management orientation, credit orientation, achievement motivation, extent of knowledge of improved practices of animal husbandry, and extent of adoption of improved practices of animal husbandry and their extent of mass media exposure were found significantly and positively related with their extent of mass media exposure.

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ORGANIC FARMING YESTERDAY, TODAY & TOMORROW: AN ANALYSIS OF RESOURCES UTILIZATION

Patel C. D., Kanani P. R., Kamani A. B., & Trada V.K.

After the green revolution was launched in India, substantial increase in the production of food grains was achieved through the use of improved crop varieties and higher levels of input fertilizers and plant protection chemicals. But it has now been realized that the increase in production was achieved at the cost of soil health. In fact, about 60 per cent of our agricultural land currently under cultivation suffers from indiscriminate use of irrigation water and chemical fertilizers. Most of the growth in the food production during the green revolution period is attributed to the higher fertilizers use. India is one of the world’s most agriculturally significant countries. The highest organic cultivation area is in Australia around 12.2 mil ha followed by Europe 6.5 mil ha (www.sole.de). The total area under organic cultivation in Asian countries 4.1 mil ha and India have 1, 14,037 ha which is ranking 31 under the organic cultivation (www.fibl.org). It ranks among the world’s largest producers of rice, tea, fruits and vegetables, various spices, pulses, medicinal plants, and cashew nuts. Its first internationally certified organic products began emerging in the mid 70’s, supported by UK’s Soil Association.

Increasing consciousness about conservation of environment as well as health hazards associated with agrochemicals and
consumers' preference to safe and hazard-free food are the major factors that lead to the growing interest in alternate forms of agriculture in the world. Organic agriculture is one among the broad spectrum of production methods that are supportive of the environment. The demand for organic food is steadily increasing both in the developed and developing countries with an annual average growth rate of 20–25%.

The existing knowledge of organic farming should be consolidated and put together and the advantages of these practices that should be brought to light. When many of the imported modern agricultural technologies were found to have adverse effects on soil, plant and atmosphere and in the long run on the eco-system balance, our researchers started to look back our old farm, farmer and eco-friendly system of organic farming. Respondents of more than 50 years were selected to study this objective.

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CYBER EXTENSION THROUGH ICT IN THE TRANSFER OF AGRICULTURAL TECHNOLOGY DURING THE MILLENNIUM

Jadav N.B.¹, Kamani A. B.², Kanani P.R.³ & Kapopara M.B.³

Due to the permanent process of change within the agricultural extension system, a definition of the clear purpose, extension should be accompanied by a serious analysis of the methods and means to increase the income from agricultural production and raise living standards in rural area. Rapid development of electronics, telecommunications, and computer
multimedia and internet technologies has created possibilities for quick gathering, processing, transmission and presentation of information. Different forms in information technologies and their applications in planning, selling and production are useful to achieve the same (Grudzinski and Panasiewicz, 2000). Information technology will become important due to a need for a higher precision in the use of chemicals and in the care of farm animals, and use of demands for food documentation.

It is assumed that the future agricultural extension will be greatly affected by new technologies for diffusing information like CD-ROM Internet etc., therefore fundamental research should be in order to quantify the parameter of agriculture-systems, which can be used in applying computer technology. To enrich different database in warehouse it should be regularly updated, active participation of farmers using World Wide Web technologies. Information should be self-explained contains, video, photo, sound to raise interest among clientele. The allover development will require infrastructure and sufficient computer literacy among farmers and extension workers, for that government or non-government agencies need to establish infrastructure and training for the same. After the advent of globalization, liberalization, disinvestments, WTO etc will definitely accelerate the rate of diffusion for the agricultural innovations. This paper highlights the Importance of information technology in agriculture at the global level, shortcomings towards information technology and suggestions.

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ROLE OF DISTANCE EDUCATION AS AN EXTENSION STRATEGIES FOR SUSTAINABLE AGRICULTURE

Kamani A.B., Kanani P. R., Chavda Haresh & Tarpara V.D.

Education is a powerful and pervasive agent for a change. Education is a process of empowerment through imparting
knowledge, skill and values to the individual and an instrument of social change by providing opportunities for upward mobility for social and economic changes. Agricultural education in its broadcast sense covers all human endeavors in the acquisition, transmission and application of knowledge of the better means and understanding of the processes, which lead to the scientific farming. Distance education in agricultural development is gaining momentum to cater to the needs of the vast majority of the farmers and other rural people who constitute about 75 per cent of the total population in India. Here, it is worth mentioning that socio-economic, cultural and location constraints have made the distance education approach to transfer of technology more relevant and appropriate to enhance agricultural production and income at farm level and simultaneously to promote employment opportunities both on farm and off-farm.

The name under distance education in agriculture where extension will run as an attractive label, which will delude many into believing, that at last, something is being done to ensure sustainable agricultural and extension education systems. To reinforce this new media offer extraordinary new tools which have the potential to transform in open and distance education from second choice to the first choice for lone term study especially when population is expanding nearly everywhere and pressure on the land is heavier than ever before.

Here, we are intending to offer various distance education programmes such as Farm school transmission on radio/television, correspondence course, dissemination of techniques and technologies through audio and video cassette lessons and television.

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The recent developments in information technologies have given rise to new and urgent concerns for developing nations. This paper is an attempt to view the scope of the latest information technologies for agricultural development in Third World Countries, as these nations are far behind economically and socially as compared with their developed counterparts, the use of new information technologies for agricultural development may result in problems of unequal development. However, these technologies offer great speed, capacity and versatility in transporting and processing of information.

The proliferation of new information technologies, as instruments of social change has been visualized nations by both developed and developing nations. The industrialized nations are utilizing these technologies not only for development but also for multifarious activities.

The national economy is based on agricultural production. In India, 70 % of the population is dependent on the land for its existence. Consequently most if uplifting rural communities and modernizing agriculture by scientific and technical means. Various attempts have been made to reach rural people through development projects, Extension services and media technologies. Agricultural developments will not be seen as a means for producing more food but at the improvement in quality of life of the people engaged in agriculture by raising their standard of living, through self-awareness and self-consciousness.
Lent (1986) perceived that information through new technology is an economic good, which is out of reach to a large majority of people, thereby widening the gap between few information rich and many information poor.

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E-LEARNING EDUCATION: A TOOL OF COMMUNICATION FOR DISSEMINATION OF AGRICULTURE INFORMATION

Kamani A. B.; Kanani P. R.; Chavda Haresh & Trada V. K.

Traditionally the learning process involves face-to-face interaction between the students and the teachers along with organizational infrastructure such as schools, colleges and universities. Here the print media helped the students to undertake learning activities staying far away at their homes. The modern information and communication technologies such as computer, Internet, satellite, etc., have made it possible to deliver education through a variety of ways. This is a new era of e-Learning education in sustainable agriculture. The e-Learning Education is “a metaphor for the electronic teaching, learning and research environment created by the convergence of several relatively new technologies including, but not restricted to, the Internet, World Wide Web, computer mediated communication”. E-Learning is gaining momentum and expanding all over the world and is also called as online education”, ‘virtual education’ and ‘distributed learning’.
Communication is the essence of extension, which provides knowledge and information for rural people to modify behavior in ways that provide sustainable benefits to them and to society in general. These communications technologies serve both as direct information channels to farmers and as indirect channels improving extension agents, agribusinesses, and other intermediaries access to information resources. Most extension programs have yet to effectively integrate ICTs into systems for supporting extension staff and making information available to clients.

The development of e-Learning and communication in sustainable agriculture has been possible not only due to increased application of information and communication technologies for educational purposes but also due to the demand for improving one's capacity through life-long learning. This paper highlights the attributes of E-learning.

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EXPECTATIONS OF THE FARMERS ABOUT COMMUNITY INTRANET CENTER AT VILLAGE LEVEL FOR AGRICULTURAL DEVELOPMENT

Chauhan N.M. & Chauhan N.B.

Farmers are more desirous and become anxious to get quick, exact and authentic information in the changing scenario of agriculture at global level. Dissemination of the required and recent agricultural information to the farmers in scattered villages at the variegated geographical situation in India is very difficult task.

Transfer of technology to the level of farmers is not a one time exercise because new farm technology is being constantly evolved. A
continuous flow of technologies in an appropriate manner is vital to provide quick benefit of this development to the farmers. There has been a technological explosion in the field of agriculture. This demands that the farmer has to know all aspects of technology prior to its adoption. It can only be possible through the use of satellite based technologies.

The number of satellite based Internet connection in Indian has crossed the two million mark and the number of telephone connections is over 320 million. Internet connectivity has touched almost all the districts in the country and is moving down up to the village levels (Aditya, 2003). Many pilot projects to connect rural community to cyber-space are underway at various locations. The initial response of the rural people, particularly farmers has been very encouraging; many organizations are trying to establish internet connectivity to make best use to satellite based communication technology. Keeping all the things in mind the present study has been undertaken with a view to know the Expectations of the farmers regarding Community Internet Centre (CIC) at village level.

The investigation was carried out in four villages of Anand district of Gujarat state because the district is agriculturally one of the more advanced districts. A list of progressive farmers was prepared with the help of village level worker from all the selected villages. Finally, 25 farmers were selected from each villages using simple random sampling technique. Thus, the study was confined to 100 farmers. The results revealed that most of the respondents was expected the Community Internet Center (CIC) facilities at panchayat office of the village. They were also expecting six sets of computer with agriculture graduate having computer knowledge as operator at CIC. They expect that Government should bear expenses to run CIC. The information on farmers’ related sites was expected by most of the farmers in Gujarati language that too in the audio-visual form. The major purposes to have CIC explained by the respondents were to collect agricultural information, to collect information on government’s programmes, and to know more about market prices. Majority of the respondents expressed their desire to use Internet daily or twice in a week by their own. All of them expressed positive response to have proper training about the use of Internet facility through government agency, at CIC.

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APPLICATION OF INFORMATION TECHNOLOGY: SPECIAL REFERENCE TO THE RURAL DEVELOPMENT

Patel D.V., Kanani P.R. and Tarpara V.D.

The present days of hi-tech. information and communication technology creates the phenomenon of “Global-Village”. This phenomenon has several interconnected dimensions. One of these dimensions is “Rural Development” which can be achieved by providing a sound platform to sell the products, produced by farmers and other rural communities in such a way that they procure better return of their products. In the sphere of Rural Marketing Information Technology that will be useful in promoting transparency, accountability, responsiveness and above all citizen’s empowerment. This is to be happened through: (i) E-Commerce in which, creation of online store to sell the products over internet in the artisan sector, Web-hosting and advertising services are also offered along with popular consumer handicrafts platforms, Creating online Links to fair trade group in developed nations. (ii) Establishing the Web-Sites and Kiosks/Telecasters which provides the assistance to farming community – in terms of developing knowledge-base, fostering special skills and seeking online solution to the specific/unanticipated problems during the growth cycle of the crop. Use of web-camera to transmit the precise nature of pest attack online to Agricultural University / Research Station. Availability of medical service to livestock through web-camera facility at information Kiosks connected to veterinary service, A free telephone service in local-language was recently started in several states of our country that are the examples of use of Information Technology in Agricultural activities. Interestingly, in India a variety of models have been experimented to market rural products, which are different from each-other in terms of product range and operational modalities. Some of the examples are: (i) E-Choupal Model of Indian Tobacco Company (ITC) (ii) Drishtee- A Network Management Company in rural India (iii) Bhoomi- A project of Department of Revenue, Government of Karnataka (iv) Gyandoot- A community based state of the art information technology center project located in Dhur
District of Madhya Pradesh. This paper also highlights the obstacles in using Information Technology for Rural-Development.

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INTERNET: A FARM MAKING TOOL

Thakker B.N. & Patel S.T.

Internet becomes an important means of delivering a vast array of information for marketing. The growth rate of internet use continues at a phenomenal pace. The presence of World Wide Web addresses on product labels, advertisement and stationary, provides evidence that many business have recognized that value of the internet as an informal resource and marketing tool. Internet plays a key role in cost control and supply chain management. Internet technologies are enhancing agricultural marketing strategies and improving possibilities for farm profitability. Expanded application and use of internet technology by farmers provides valuable information to assist with making farm business decisions. The computer age has lowered the cost of obtaining, producing and delivering information while increasing the quantity and rate at which information flows.

In the changed environment of today the internet has to be given due weightage as a very powerful information technology (IT) tool for marketing. For this, every organization should try to explore the Internet resources and achieve Internet connectivity and make the people aware of the important resources and the services available. Agriculture Extension Officer / Village Development Officer should be exposed to internet for search of information of marketing and other related aspects.

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The farm magazine is one of the important media to disseminate agricultural information to the farming community. *KRUSHIGOVIDYA* is the oldest farm magazine in Gujarat. The circulation of *KRUSHIGOVIDYA* was 10352 copies per month during the year 2004-05.

Two villages of each selected talukas of Anand and Vadodara were purposively selected. Forty subscribers and non-subscribers were selected proportionately from each village. An interview schedule was prepared in vernacular language and data were collected by personal interviews.

Educated farmers had higher number of subscribers of *KRUSHIGOVIDYA*. The subscribers opined that, their knowledge and adoption of selected agriculture technology increased significantly, which was resulted in significant techno-economic change. The significant impact was also observed on many characteristics of subscribers, viz., socio-economic status, cropping intensity, farm machinery and implements possession, annual income, market intelligence, scientific orientation, innovativeness, risk-preference, economic motivation, overall modernity, reading behaviour, attitude towards farm literature, mass media exposure and extension participation.

The study implies that more and more farm literature should be published and distributed among the farming community to increase the knowledge and adoption level of the farmers for getting higher crop production.

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A STUDY ON PERCEPTION OF FARMERS REGARDING SELECTED ASPECTS OF TRAINING PROGRAMME

Patel H.B., Bhatt P.M. & Patel P.P.

Since inception of Sardar Smruti Kendra, many training programmes are organized every year for farmers, farmwomen and farmyouth. The study was conducted to find out the perception of trainees regarding selected aspects of training programme carried out by SSK, AAU, Anand. The trainees were highly satisfied with accuracy to subject matter, knowledge of subject and audio-visual equipment with respect to subject matter, quality of trainer and physical facility aspects of training, respectively. The average score in view of different aspects of subject matter was more than one (the scores given to satisfactory response) so it indicated that trainees were satisfied with all the aspect of subject matter. It was also noticed that majority of the trainees opined that the training was based on their needs and interest.

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ROLE OF IT IN BRIDGING THE SCALE OF EPISTEMOLOGIES OF VERMICOMPOST

Kanani P. R., Kamani A. B., Tarpara V.D. & Patel D.V.

The name under distance education in agricultural and extension will run as an attractive label which will delude many into believing that at last, something is being done to ensure sustainable agricultural and extension education systems. To strengthen this new system offer extraordinary new tools which have their potential to expose in open and distance education from second choice to the first choice for long term study especially when peasantry population is increasing nearly everyone and pressure on the land becoming heavier than before, the paper has been carefully devised to discuss
the issues in providing open and distance education as a quantum extension. Here the emphasis is laid on the new forms of electronic media or on line education in terms of extension learning, but owing to the fact that the field is still very new, conventional print based forms of distance education are also reviewed in order to draw the principles of effective distance education in general and how they may work as a quantum extension to on line education. It is also mentioned in the paper that technology without the context will be just a tong. Regardless of the technology, good designs of instructional materials together with a relevant and appropriate curriculum are still the key to an effective distance education and learning programme.

Distance education is means of acquiring knowledge and qualification without attending the college study on a regular basis. It is meant for those who could not afford normal education due to many factors like non-availability of admission, finance, geographical location, suitable time etc. Earlier this was mainly through correspondence but in recent years, multimedia approach made it more effective in terms of curriculum delivery, contact lectures, audio-video conferencing, etc. In times to come, it would be one of the most effective ways for upgradation of skills and qualification.

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FARMERS' PERCEPTION REGARDING TRAINING METHODS & OPINION ABOUT INSTITUTIONAL TRAINING

Kalsariya B.N.¹, Karkar B.R.², Popat M.N.³, Bharad N.D.⁴ & Gardhariya H.B.⁵

Extension teaching methods are the devices used to create situation in which communication can take place between trainees and trainers. Teaching methods are the effective tools to impart
knowledge. The present research effort was made to study the farmers' perception regarding training methods and opinion about institutional training at Sardar Smruti Kendra, Junagadh Agricultural University, Junagadh. The study was undertaken to participate in training programme, whose were selected with 76 farm women who receiving the training at Sardar Smruti Kendra, Junagadh Agricultural University, Junagadh. The result of the study indicated that the regarding opinion of the trained farm women, the most appropriate method were lecture with discussion and demonstration secured first rank followed by lecture with discussion and audio visual aids and lecture with audio visual aids obtained second and third rank to make training more effective and beneficial, respectively. Opinion about training environment, curriculum, good interaction and group discussion were expressed by more than 60.00 per cent of trained respondents. More than 90.00 per cent of the farm women have got full satisfaction about hostel and boarding facilities.

Trained farm women were suggested their opinions to make training programme more effective that the venue should be at training centre (SSK) (67.10 per cent), duration of training should be of three days (56.57 per cent), time should be during slack season (55.26 per cent), trainees group should be of 25 members (61.84 per cent), training method should be lecturing with discussion and demonstration (85.52 per cent), stipend should be increased (75.00 per cent) and preferred female teacher trainer (81.57 per cent).

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GAIN IN KNOWLEDGE TO THE LIVESTOCK INSPECTORS THROUGH REFRESHER TRAINING

Gardharia H.B., Savaliya B.D. & Thakrar D.M.

Training is an integral part of any development activity. It aims at improving the behaviour of the participant which leads to better organizational efficiency and output. Training plays an important role in transfer of improved technology/knowledge to the users. Training is directly linked with the production out comes and hence, its effectiveness must be measured on the ultimate increase in productivity and production.

Livestock Inspectors Training Centre, Junagadh was established in 1986-87 by Gujarat Agricultural University with main objective of offering diploma course for Livestock Inspectors. Training from 1996-97 many short and long terms training courses were started at this centre. Livestock Inspectors Training Centre has to give the advanced animal husbandry practices training to the Livestock Inspector in the field of veterinary science and animal husbandry knowledge, who serve at village level. In order to assist for improving their efficiency in job performance an in association/collaboration should made with (veterinary department) Government of Gujarat. Total 235 Livestock Inspectors in sixteen batches were given refresher training of 10 to 13 days duration, has been conducted in the year of 1998-99 to 2001-2002 at the Livestock Inspectors Training Centre Junagadh. In all 235 Livestock Inspectors who were engaged in animal husbandry services, like vaccination, artificial insemination, de-worming, primary treatment, veterinary extension programmers and other activities. The trainees were evaluated by providing questionnaires before and after training to measure the impact of training as Livestock Inspectors. The collected information were tabulated and analyzed. Livestock Inspectors were classified in to three categories, viz, Low (up to 33 score), Medium (34 to 66 score) and High (above 66 score).

The result of the study indicated that more than half of the livestock inspectors (58.3 per cent) had high level of knowledge after training, whereas, only 11.06 percent of Livestock Inspectors had a
low level of knowledge after training. While in the case of before training about one half (48.93 per cent) of the Livestock Inspectors had low level of knowledge and only 14.92 per cent of Livestock Inspectors had a high level of knowledge of improved animal husbandry practices of veterinary science.

The calculated value of chi-square ($X^2$) = 117.74 was found statistically significant at 0.01 level of probability. Means that after training Livestock Inspectors had significantly more knowledge of improved animal husbandry practices.

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**CORRELATES OF TRAINING NEEDS**
**ASSESSMENT OF TOBACCO GROWERS ABOUT RECOMMENDED TOBACCO PRODUCTION TECHNOLOGY**

Patel S.T., Patel B.B., Zala P.K. & Thakker B.N.

Tobacco is one of the most important cash crops grown in India as well as in Gujarat. The important districts of Gujarat that cultivate tobacco are Amdavad, Vadodara, Kheda, Mehsana and Punchmahal, among them Kheda district is the highest in area and production. The average productivity of tobacco of our country and our state is much lower than the yield obtained at demonstration plot and research station. Low productivity of tobacco as compared to demonstration plot may be due to poor knowledge about recommended tobacco production technology. The gap in productivity can be reduced through training and education. Training need is a foundation on which entire training programme rests. The study was conducted in twelve villages of Mahudha taluka of Kheda district by simple random sampling method. The data were collected...
by personal contact method. Analysis of the study was carried out by using knowledge index, standard deviation and correlation coefficient. Identification and control of insects/pests; manure, fertilizers and irrigation management and identification and control of diseases are major areas of training. More than half of the tobacco growers belonged to "some what needed" group of training needs. The independent variables such as age, education, occupation, land holding, annual income and social participation have played a significant role in training need of the tobacco growers.

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In rural area more than 65 per cent population dependents on agriculture and the major part of agriculture in India faces scarcity of water which is main resource for agricultural development. Due to the resources depletion, there has been a major shift in cropping pattern and life style in rural area. There is no scope for alternative enterprise for income generation in majority area. There is need to think about suitable extension strategies for sustainable development of rural India. Peoples' institutions which are the groups or association formed by villagers are the suitable alternative, which play a pivotal role in rural development.

With consistent efforts by NGOs, Line Departments, Banks on peoples institution (the village committee formation from formal, informal groups, which is a focal point for efforts to be done) offer efficiency, effectiveness and equity of developmental activities.

If we see it as a process module, it consist three components:
1. Village committee {i) Self Help Groups, ii) Interest groups, iii) Volunteers},
2. Non Government Organizations and
3. Line Departments / Bank.

Strengthening of peoples' institution with regular meeting and training is the process and efforts for development. Coordination and a good combination of bank staff, committed NGO, Line Department and enthusiastic SHGs, interest groups and village committee would produce results in terms of Natural resource management, improvement in agriculture, availability of water and fodder, animal husbandry enterprise, micro enterprises, recognition of gender roles, change in social status, capacity improvement of farmers.
Participatory irrigation management refers to participation of farmers in the big, medium and small irrigation projects of government at all levels and aspect of irrigation management. It includes farmers participation from initial project formulation to all further developmental activities like joint management with officers, monitoring and evaluation of irrigation system, maintenance and construction, supervision and distribution, resource mobilization, financing and conflict resolution.

This study asses the benefit of participatory approach of irrigation management through irrigation co-operatives working in Dharoi command area project, it focus efficiency of irrigation co-operatives working in Dharoi command area project. It focuses on efficiency of irrigation, improvement in water distribution system, assurance of water for to the tail enders collection and repayment irrigation charges to the government, increase in agriculture production and conflict resolution. Further the study reviews that farmers are willing to pay more water charges than that of charges fixed by irrigation department for timely and adequate supply of water through out cropping season.

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The perception plays an important role for success or failure of extension system. At present various extension education programmes are being implemented by State and Central Government, non-Government Organization and State Agricultural Universities and Private agencies. The success or failure of the extension system depends upon how far its clients perceived the same. There are limited options to achieve more agricultural production because area under agriculture cannot be increased further. Increase in agriculture production would have to be necessarily obtained by appropriate agricultural technology and its speedy transfer to farmers through efficient extension system. In the present context of globalization and liberalization a shift is taking place in agriculture from more subsistence to commercial level. The liberalization of Indian economy made farmers to compete at international level. The intensive cultivation of land without conservation of natural resources resulted into unbalancing of economy. This has also resulted in to various atmospheric changes, leading to form new farming situations. To meet these emerging issues, problems and challenges in agricultural sector, it feels necessary to have a strong and efficient extension system.

About two-thirds (53.89 per cent) of the respondents perceived the existing extension system as useful whereas, one fourth (25.00 per cent) of the respondents perceived the existing extension system as less useful and 21.11 per cent respondents perceived the existing extension system as more useful. Five independent variables viz; Education, reading habit, overall modernity, mass media exposure, communication behavior and extension participation were found positive and significantly correlated with perception about usefulness of extension system. While, age was negative and significantly correlated with perception about usefulness of extension system.
The perception plays an important role for success or failure of extension system. There are limited options to achieve more agricultural production because area under agriculture cannot be increased further. Increase in agriculture production would have to be necessarily obtained by appropriate agricultural technology and its speedy transfer to farmers through an efficient extension system. In the present context of globalization and liberalization a shift is taking place in agriculture from more subsistence to commercial level. The liberalization of Indian economy made farmers to compete at international level. The intensive cultivation of land without conservation of natural resources resulted into imbalancing of economy. This has also resulted into various atmospheric changes, leading to form new farming situations. To meet these emerging issues, problems and challenges in agricultural sector, it feels necessary to have a strong and efficient extension system.

The important shortfalls faced by more than 60.00 per cent of respondents were viz; i) Unavailability of services of VEWs’ as and when required, ii) Lack of technical competence with grass root level extension functionaries, iii) Information pertaining to location specific problem is lacking with VEWs’, iv) Latest technologies did not fulfill the farmers need, v) Lack of timely information about latest technology. The important expectations to overcome the shortfalls in present extension system faced by more than 60.00 per cent of respondents were viz; i) Provision of VEWs’ in each village, ii) On the spot solution to farmers problem be made available, iii) New technologies must be evolved as per the needs of the farmers, iv) Before transmission of any new technologies it must adequately refine on farmers field under close supervision of researchers, extension personnel and farmers, v) Appointment of grass root level extension personnel on the basis of their qualification, aptitude test and physical fitness.

USEFULNESS AND OPINION OF FARMERS REGARDING KRUSHI MAHOTSAV PROGRAMME IN MIDDLE GUJARAT

Patel H.B., Soni N.V. & Patel P.P.

The Government of Gujarat celebrates the ‘Krushi Mahotsav Programme’. The main aim was to boost up the agriculture and allied production. Under this programme, various extension activities carried out in all the villages of Gujarat state with the support of all line departments.

The study was undertaken to know the usefulness and opinion of farmers regarding the programme in middle Gujarat covering Anand, Ahmedabad, Dahod, Kheda, Panchmahals and Vadodara districts. Total 3060 farmers from 153 villages of 16 talukas of Dahod district were randomly selected. Data were collected through interview schedule and analyzed with simple statistics. The great majority of farmers perceived that the information given by scientists during programme on water conservation techniques, animal husbandry, use of biofertilizers, crop planning based on soil health card, integrated pest management and drip and sprinkler irrigation system were useful. The great majority of farmers opined that Government is working for farming community, Government officers become active for farmers through programme,

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EXTENSION STRATEGY FOR IMPROVING THE PRODUCTIVITY OF COW IN DADOD DISTRICT UNDER ATMA PROJECT

Soni N.V., Bhatt M.R., Machhar R.G. & Patel J.B.

Initially in first phase of ATMA project, 8 districts were selected and Dahod is one of them. The Dahod district falls in middle Gujarat region of agro-climatic zone. Dahod district possessed
second largest cow population in Gujarat state. The average daily milk production of Dahod district was 0.849 liter/day which was nearly 1.5 times less than Gujarat state (2.11 liter/day). The recommended milk productivity is 2 to 3 liter/day. From the above data, it is clearly indicate that there is a wide gap in milk yield.

Dahod has four Agri Ecological Situation (AES) and from each, one village was selected which represented the identical situation of AES for developing the Strategic Research & Extension Programme (SREP), Participatory method used for data collection by the multidisciplinary team. The results shows that there was a full gap in breed upgradation, feed management, washing and cleaning of cows, whereas the partial gap was observed in practices like health care, housing, drinking water facility and inter calving period.

To bridge the gap, the following strategies were proposed; (i) provide technical awareness (ii) provide technical staff (iii) making availability of fodder and fodder seeds (iv) timely availability of concentrate at low cost.

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<td>Share Capital</td>
<td>7,25,63,304</td>
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- DISTILLERY-CUM-ETHANOL PLANT
  Contributing our Nation's Industrial Development and progress by manufacturing
  Best quality
- WHITE CRYSTAL SUGAR, RECTIFIED SPIRIT & ETHANOL

Dilipbhai B. Bhakta
Chairman

Sureshbhai J. Patel
Vice-Chairman
SHREE CHALTAN VIBHAG KHAND UDYOG SAHAKARI MANDLI LIMITED
CHALTAN - 394 305, TAL. PALSANA, DIST. SURAT (GUJARAT)
PHONE: 02622 - 281050 / 281112 / 282312 / 281912
E-mail: chalthansugar@sify.com
GRAM: KHANDUDYOG, CHALTAN
ESTABLISHED IN 1964
REGISTRATION NO. S8 DTD. 31/3/1964

WHITE CRYSTAL SUGAR SWEETNING THE LIVES OF MILLIONS

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<th>UNITS</th>
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<td>SUGAR</td>
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<tr>
<td>DISTILLERY</td>
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<tr>
<td>ANHYDROUS ETHANOL PLANT</td>
<td>30000 LPD</td>
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-: SALIENT FEATURES :-

- Marching towards the socio-economic and educational development of area of operation.
- Upliftment of the Society - Sanjivani Hospital, Chalthan.
- Village Road Development and Maintenance.

MANHARBHAI M. PATEL          RAMANBHAI N. PATEL   JAYANTIBHAI C. PATEL
MANAGING DIRECTOR            VICE - CHAIRMAN       CHAIRMAN

Valsad Jilla Fal Ane Shakbhaji Sahakari Sangh Ltd., Gandevi.

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MANGO PULP  TOMATO KETCHUP  FRUIT DRINKS  JAMS  PICKLES  SQUASHES

We export our products major in U.K., U.S.A., Canada, Pakistan and Gulf countries.

Hemantbhai B. Naik            Satishchandra R. Naik
Hon. Manager                 President
SOCIETY OF EXTENSION EDUCATION, GUJARAT
IS VERY MUCH THANKFUL FOR YOUR
CO-OPERATION AND FINANCIAL HELP FOR ORGANIZING THE
STATE LEVEL SEMINAR
ON
EXTENSION STRATEGY FOR AGRICULTURAL DEVELOPMENT

SHREE KHEDUT SAHAKARI KHAND UDYOG MANDLI LIMITED
P.O. SARDAR BAUG, BABEN - BARDOLI - 394 602
DIST. SURAT (GUJARAT)

FAX : (02622) 220443

-:: PHONES ::-

CHAIRMAN : 220706
COMMERCIAL MANAGER : 221331

MANAGING DIRECTOR : 221335
PBX : 220172, 220173

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- WINNER OF 2000 - 2001 FINANCIAL MANAGEMENT AWARD
- WINNER OF 2003 - 3004 MAXIMUM SUGAR EXPORT AWARD
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MANUFACTURER OF BEST QUALITY WHITE CRYSTAL SUGAR

RAMANLAL S. PATEL MANHARBHAI L. PATEL R. C. PATEL
CHAIRMAN VICE - CHAIRMAN MANAGING DIRECTOR

SAHAKARI KHAND UDYOG MANDAL LTD., GANDEVI
VIA. BILIMORA, DIST. NAVSARI.
GUJARAT STATE
396 360

Telephone : 02634 - 262344, 262346
E-mail : gandevi_sugar@sanchamet.in

ALWAYS INSIST FOR BEST WHITE SUGAR OF
GANDEVI

SHRI JAYANTILAL B. PATEL
CHAIRMAN

SHRI MAHENDRAKUMAR P. PATEL
VICE - CHAIRMAN
SHREE VALSAD SAHAKARI KHAND UDYOG MANDALI Ltd.
PARNERA-PARDI

SHREE KAMREJ VIBHAG CO-OPERATIVE FRUIT & VEGETABLE GROWER'S SOCIETY Ltd.
KAMREJ

INDIAN POTASH Ltd.
KAMREJ

GUJARAT NARMADA VALLEY FELTILIZERS COMPANY LIMITED.
NARMADANAGAR - BHARUCH
Surj-Amee Corporation
Ahmedabad


Shree Narmada Khand Udyog Sahakari Mandali Ltd.,
At: Dharikheda Post: Timbi Tal. : Nandod
Dist. : Narmada Pin : 393 140 State : Gujarat

E-mail : nar_sugar@satyam.net.in
narmadasugar_dharikheda@yahoo.com

Phone No. : 02640 - 249711 / 249712
Fax No. : 02640 - 249660

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2. Recovery wise third in Gujarat state.

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Shri Harishkumar S. Naik
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S.E.E.G.
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