Lecture Note
(Based on Fifth Dean Course Curriculum)

Course Title : Fundamentals of Agricultural Extension Education

Course No. : Ag.Extn.3.1

Credit : 2 + 1 = 3

CHAPTER-1
Concepts of Education

1. **Education:** Word **"Education"** is derived from different two words *viz*. **Latin** word ***EDUCARE***, which means to **bring up physically or mentally**and **French** word ***EDUCERE***, which means **leading out or leading forth**.

2. **Education** is the process of bringing **desirable changes** in human behaviour in terms of **knowledge, skill and attitude**.

3. **Knowledge (Knowing behaviour):** Knowledge is **understood information possessed** by an individual.
4. **Attitude (Feeling behaviour):** It means feelings of an individual **towards or against** something; it may be a person, object, institution, thought or idea.
5. **Skill (Doing Behaviour):** Skill is the competency in using knowledge efficacy. There are **two types** of skill, (1) **Mental skill** and (2) **Manual skill or Physical skill.**

Types of Education

1. **Formal education:** A formal education is the process of training and developing people in knowledge, skills, mind and character in a **structured** form (within four walls) and **certified programmes**.

   It includes basic learning, elementary and high school, and post-secondary school (college, trades or technical school, or university).

2. **Informal education:** It is the truly lifelong process whereby every individual acquires attitudes, values, skills and knowledge from daily experience. **Here learning takes placesfrom family, friends, peer groups, market place, training centers, the media and other influences in a person's environment**.Eg. **Son of carpenter learns carpentry from his father while helping his father in his work.**

3. **Non-formal education:** It iswell organized, systematic educational activity which takes place outside the formal system in order to provide certain selected type of learning to the selected group of individuals which includes adults, youth and women**.**Eg. **Training provided to the farmers by extension workers.**

Differences between Non formal Education and Formal Education

Non formal Education	Formal Education
It is also **known as extension education, non-formal education, adult education, end-less education, out of the four walls education, continues education and adult education.**	It is also **known as within four walls education, primary education, school education, and college education and structured education.**
Education that we get out of schools and colleges. It is informal way to educate people, **where rigid formalities are not necessary to follow all the times**.	Education that we get in schools and colleges. It is way to **educate learners following all the formalities.**
In extension education there is no fixed	In this type of education there is a **fixed**

curriculum. Its **flexibility or changeable** depending on the needs of the learners.	**or pre-decided curriculum/content** so there are rare chances to change it.
The **learners/ audiences are heterogeneous** with different goals. They are varying in age, education, needs, problems, interest and other characteristics.	The **learners/ audience are homogeneous** in age, education, experience etc. and have common goals.
Teaching is horizontal and mostly need based and problem oriented. Extension workers and farmers exchange problems and solutions with each other horizontally. It is not possible all the times that teacher is superior to learners.	**Teaching is vertical** and curriculum centered. The teacher teaches and learners receive vertically. It is possible most of the times that teacher is superior to learners.
Extension education **starts from practical field problems and goes up to solutions** to create theoretical understanding.	Formal **education starts from a theoretical or conceptual framework** and leads to practical or actual fieldwork.
Final power of teaching and learning remains with learners. Freedom of choice of subject matter is left to the learners. Learners are not bound to learn. **It is learner centered education.**	**Final power of teaching and learning remains with teachers.** Strictly institutional norms and formalities are followed viz., fixed period, fixed books, examination.
This **education is not class oriented, subject-centered and degree-oriented**.	This education is of a specialized nature. **It is class, subject and degree oriented.**
Teaching is through extension personals and also through local leaders.	**Teaching is only through instructors**
It is **continuous process through - out life of individual.**	**At certain level, there is end of education. It may end with school, college or University education**.
The physical facilities like classroom, laboratory and benches are not required. Education is given at farm, home or wherever learner wants to learn.	Required physical facilities like classroom, laboratory, benches, and fans etc. for lectures. Fixed classroom is required.
Participation is wholly voluntary, free education in matter of learner's choice.	**Attendance is largely compulsory** i.e. no free education according to his choice.
It is given using mass media, farm and home visit, result and method demonstration, training	**Mainly lecture method is used to teach learners.**
It is **more practical and problem solving**.	It is **more theoretical and subject oriented**.

CHAPTER-2

Concept of Extension Education

The word Extension is derived from two **Latin** words ***Ex***and***Tensio***. ***Ex*** means **out and** ***Tensio*** means **stretch or spread**and,thus meaning of **Extension is spread out or stretches out knowledge which is beyond the capacity of school education**.

1. It is the out-of-school process aimed at bringing desirable changes in the knowledge, skill and attitude of farmers, farmwomen, rural adults and youths in order to help them to solve their problems (S. K. Wagmare, 1980).
2. According to Leagans J.P.: Extension education is the process of teaching rural people how to live better by learning ways that improve their **farm, home and community institutions**.

   He also defined extension education as an applied science consisting of content derived from research, accumulated field experiences and relevant principles drawn from the behavioural science synthesised with useful technology into a body of philosophy, principles, content and methods focussed on the problems of out of school education for adults and youth
3. According to Kelsey and Hearne (1963): It is out of school system of education in which young and adult people learn by doing.
4. According to Ensminger (1967): Extension is an education and its purpose is to change the attitude and practices of people with whom the work is done.

Components of Extension: Activity of extension can be made possible by its three important broad components.

These components are **Extension Education**, **Extension Service** and **Extension Work**.

1. **Extension Education:** Education is given to prepare and develop experts for extension jobs. **The State Agricultural Universities (SAUs) and Colleges, ICAR and training institutes generally perform the role of extension education.**
2. **Extension Service:** It is input and service oriented field professional activities done to transfer technology from research station to farmers' fields and transferring farmers' problems to research stations. **The work done by government extension agencies like Department of Agriculture, Animal Husbandry, Forestry, Fishery etc. are the examples of extension service**.
3. **Extension Work:** Many extension activities are done with the feelings of altruism, selflessness or humanity in helping people to help themselves. **The work done by Non-Government Organization (NGOs) or individuals with an inspiration of unselfishness is an example of extension work**.

Objectives of Extension Education:

The general objective of the extension education is to raise the standard of living of the farming community and rural people by helping them in using their resources like land, labors, capital, water and livestock in the right and efficient way to increase their productivity.

The fundamental or main or broad objective of extension education is to bring about all-round development in the life of people.

The specific objectives of extension education are as under:

1. To provide the occupational knowledge of farmers to increase their income.
2. To encourage farmer to be self sufficient in food and other requirements.
3. To help the members of farm family to know, learn and adopt better about the world in which they live.
4. To open-up new opportunities for rural people
5. To develop talents and leadership quality of rural people.
6. To build confidence among rural people and show them better opportunities for their occupation.

Agricultural Extension:

Agricultural extension can be defined as an ongoing process of providing useful information to the farmers and rural people to acquire them knowledge, skill and attitude to utilise effectively these information or technology to improve quality and productivity of their farm, home and institutions.

It makes available to the rural villages, scientific and factual information and training and guidance for the solution of problems of agriculture and rural life.

Agricultural extension is a bridge that fills the gap between agricultural research stations on the one hand and the farming population on the other by establishing a suitable teaching organization at various levels of administration.

Principles of Extension Education

Principle: The meaning of principle is fundamental truth or law or rules or regulation one has to follow as the basis of some actions.

To achieve expected results through any action, action should be carried out based on sound principles. It is necessary for extension worker to acquire a comprehensive knowledge of the principles of extension.

1. Principle of interest and need: Because extension education is informal education, educationists cannot use compulsion on learners to learn or participate in the educational programme. In this situation if educationist carries out educational programme considering the need and interest of the farmers, participation of the farmers in the programme will be possible. Thus, extension work must be based on the needs and interests of the people. These needs and interests differ from individual to individual, from village to village, from block to block, and from state to state and therefore, there cannot be one common programme for all people.

2. Principle of cultural difference: Extension work should be based on the cultural background of the people with whom the work is done. Improvement can only begin from the level of the people where they are. This means that the extension worker should know the level of the knowledge and skills of the people, methods and tools used by them, their customs, traditions, beliefs, values and norms before starting the extension programme.

3. Principle of cultural change: The culture of the people undergoes change while doing extension work. The change is necessary for growth and development of society. There may be a difference between the situation at the time of starting the programme and today's situation. Therefore, with growth and development of social status, the extension work should also to be changed to meet the cultural changes among the people.

4. Principle of participation: Extension helps people to help themselves. Good extension work is directed towards assisting rural families to work out their own problems rather than giving them ready-made solutions. Actual participation and experience of people in these programmes creates self-confidence in them and also they learn more by doing. The high level of interest among the farmers towards any new efforts can be developed if they are involved from planning to evaluation stages of any extension programme.

5. Principle of adaptability and flexibility: People differ from each other, one group differs from another group and conditions also differ from place to place. An extension programme should be flexible, so that necessary changes can be made whenever needed to meet the varying conditions. Thus, when working with people we should not go with our pre-decided content but after knowing their need and problems only content of programmes should be decided. Extension workers must permit flexibility.

6. The grass roots principle of organization: A group of rural people in local community should sponsor extension work. The programme should fit in with the local conditions. The aim of organizing the local group is to demonstrate the value of the new practices or programmes so that more and more people can participate.

7. The leadership principle: Extension work is based on the full utilization of local leadership. The selection and training of local leaders to enable them to help to carry out extension work is essential to the success of the programme. People have more faith in local leaders and they should be used to put across a new idea so that it is accepted with the least resistance.

8. The whole-family principle: Extension work will have a better chance of success if the extension workers have a whole-family approach, instead of piecemeal approach or separate and non-integrated approach. Extension work should be therefore for the whole family, i.e. for male, female and the youth. Each family member of the farmer has their impact in different manners. Involvement of all family members in any new activity provides an opportunity to head of the family to take quick decisions.

9. Principle of co-operation: Extension is a co-operative venture. It is a joint democratic enterprise in which rural people co-operate with their village, block and state officials to pursue a common cause. It has been experience of many countries that people become dynamic if they are permitted to take decision concerning their own affairs, exercise responsibility for, and are helped to carry out projects in their own village. Most members of the village community will willingly cooperate in carrying out a project that they helped to decide to undertake. People should involve in planning programmes, determining objectives, setting up plan of work, carrying out actions and evaluating results. The participation and co-operation of people are of fundamental importance for the success of any educational behaviour. This also develops leadership in the village and increases the confidence of the people. By participation people feel that it is their own programme.

10. Principle of satisfaction: The end product of the effort of extension teaching is the satisfaction that comes to the farmer, his wife or youngsters as the result of solving a problem, meeting a need, acquiring a new skill or some other changes in behaviour. Satisfaction is the key to success in extension work. A satisfied customer is the best advertisement. Thus, satisfaction of the people is very essential in extension work. When a person receives satisfaction as a result of his participation in an extension programme, he seeks further help from an extension agency. This promotes the growth of extension work. The success of the extension work lies in the satisfaction of the people. If participating in the programme does not satisfy the people will not participate in the future.

11. The evaluation principle: Extension is based upon the methods of science and it needs constant evaluation. The effectiveness of the work should be measured in terms of the changes brought about in the knowledge, skill, attitude and adoption behaviour of the people but not merely in terms of achievement of physical targets. The evaluation is the mirror of any extension programme. It gives understanding about degree of success and at the same time base to reformulate next efforts.

12. Principle of applied science: Applied agricultural science is not a one-way process. It does not only give technology but at the same time it also collects problem of the farmers to bring to the notice of the scientists. Two-way approach helps scientist to do the necessary changes in technology to make it adoptable.

13. Principle of democratic approach: Extension work should try to create democratic impression among the farmers while working with them. It can be done through giving opportunity to the farmers to discuss and suggest their feelings. Facts about a situation should be shared with people. All possible alternative solutions should be placed before the participants and their merits are highlighted through mutual discussion. Ultimately, the people should left free to take their own decision.

14. Principle of Learning by Doing: In extension work, the farmers should be encouraged to learn new things by doing and by direct participation. They must be a part of practice the new ideas. It helps in developing the confidence to use the new method in future.

15. Principle of trained specialists: It is very complicated for extension worker to keep himself with all the new latest findings of research and all branches of science he has deal with in his day-to-day activities. To guide farmers in an effective manner he should always take help of well-trained specialists. This kind of involvement of various specialists will clear all the doubts of the farmers in a methodical manner.

16. Principle of bringing variation by the use of extension teaching methods: Extension workers should use proper extension teaching methods while educating the farmers. A combination of a number of suitable extension methods leads to the higher success in the adoption and diffusion of innovations and technology among the people as compared to only lecture method. Different methods must be used under different situations. No single extension method is effective under all conditions e.g. reading material for those who can read, radio programme for those who have radios, puppets for those who believe in traditional way of learning.

17. Principle of gradual efforts: Any extension programmes should be started from where people are. After knowing their existing level of knowledge, interest, availability of inputs and adoptability, any programme should be matched up and initiated.

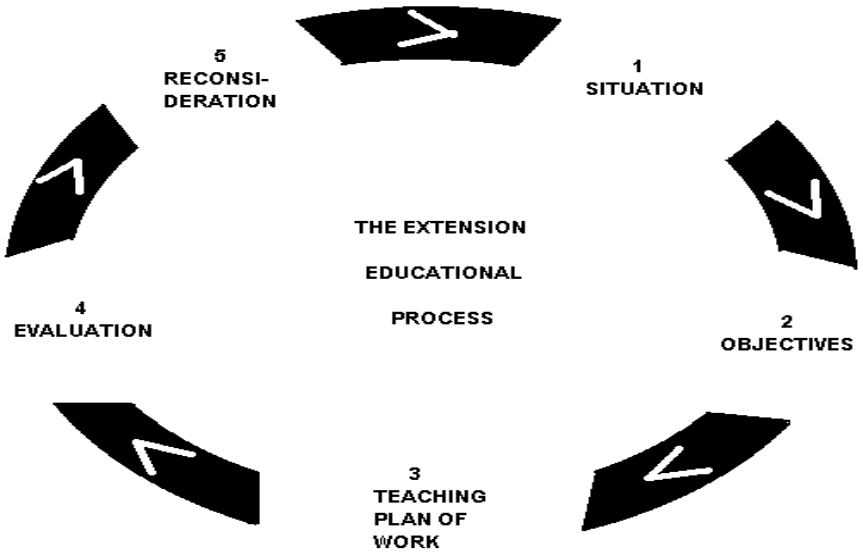
18. Extension education in line with the national policies: For the sustainable results, any programmes should be organized looking to the state and national policy. Thus, any extension work should be based on some working principles. The knowledge of these principles is necessary for an extension worker to get desired results.

The Extension Educational Process

The extension is educational process. The prime duty of an Extension agent or educator is to provide educational programme to clientele. To explain extension educational process, Leagans, suggested five important steps. The sequence of steps in a cycle, expected to result in progress from a given situation to a new or more desirable situation.

1. Situation: The first phase in any extension educational process is analysis of the situation. The main aim of any extension education is to solve the problems of the rural people and fulfill their needs. This is possible by collecting information regarding two situations viz. what is at present and what should be? This requires a large amount of facts about all the aspects of the existing situation. Thus, to collect such factual, extension worker are needed to collect information regarding people and physical situation of the area where extension activity has to be carried out. As far as information on people is concerned, information like peoples' interests, education, need, their social customs and habits should be collected. This information helps us to know what types of new changes are needed in people. The databases are also needed about the physical situation of the area such as types of soil, types of farming, markets and farm size. Some of these facts shape up in to problems; other facts show the resources that are available through any agencies. New facts and research finding should be introduced by extension workers to stimulate a fresh approach to the problem of people.

2. **Decide objectives**: The second phase is to decide objectives. An objective is a direction of the movement. On the bases of analysis of the existing situation, needs and problems should be decided and objectives should be framed accordingly. Objectives can be classified on the basis of requirement of time to achieve viz. short time objective; medium term objectives and long-term objectives. Whatever objectives are decided should be realistic, dynamic and achievable. The objective gives target to the extension worker to achieve.



Steps in Extension Educational Process

3.Teaching: The third phase in extension educational process is teaching. This involves selection of content for the programme and techniques of teaching or communication. To create ideal learning situations, extension educationist must use different methods of communication to stimulate learners considering objectives and audience.

4.Evaluation: The fourth phase is evaluation of the teaching. At this stage extension educationist determines that up to what extent the objectives have been achieved or fulfilled. An evaluation is process by which the values of an activity are ascertained. Evaluation helps to estimate a benchmark survey; it explains, whether we are proceeding in the right direction or not, it helps to know the degree of progress and strong and weak points of the work done. Thus this step is an important element in extension educational process.

5. Reconsideration: Fifth phase is reconsideration. This step consists of a review of previous efforts' results, which expose a new situation. If this new situation shows the need for further work, then the whole process may begin with due modification of objectives. The new situation may be different because of the physical, economic and social changes taken place after the programme. At this stage extension worker tries to recognize new needs and interests for the next programme.

CHAPTER-3

Extension Programme planning

Programme: The programme is a statement of situation, objectives, problems and solutions. It is relatively permanent but requires constant revision. It forms the basis for extension plans.

Planning: Planning is a process of preparing systematic statement of the line of actions to achieve decided objectives based on needs and resources.

Programme Planning: Programme planning is a process of working with rural people in an effort to recognize the problems and determine possible solutions.

Project: Project is an outline of procedure pertaining to some phase of extension work. Specification of work to be done.Procedure to be followed to accomplish the objective.

Problem: It is a condition that people after study, with or without outside help, have decided needs to be changed.

Aim: Aim is a broad objective. It is broad and generalized statements of directions with respect to given activities.

Objective: Objective is direction of movements. It is the direction towards which our efforts are directed. There are three levels of objective: Fundamental objective: All inclusive objective. Eg.People's participation in planning at grass root level. General objective: More definite social objective. Mandatory creation of Panchayeti raj bodies at states.Working or specific objective: enactment of suitable laws relating to panchayet, holding panchayet election in time.

Goal: Goal is the distance in any given direction one expects to go during particular period of time.

Plan of work: it is an outline of activities so arranged as to enable efficient execution of programme. It is a statement of activities to be undertaken by an individual within a definite time. It indicates what is to be done, who will do it, how it is to be done, when it is to be done.

Calendar of work: It is plan of activities to be undertaken in a particular time sequence.It is chronological arrangement of activities.

Importance of Programme Planning:

1. It helps in avoiding future problems. A good planning always identifies and monitors future development that will have a major impact on performance of results.
2. It helps to get institutional support of local areas.For proper implementation of the plan, the involved person must be in substantial agreement with the plan. Planning will help to justify the appropriations by public bodies and to obtain support of the key personnel.
3. It gives reliable information about situation where we have to work.When and whatever information is required about the programme, situation and resources, it is easily available from the records.

4. It offers assistance. Programme planning makes sure about what is to be done and why, establishes objectives, gives direction for carrying out work and helps in evaluating results.
5. It prevents wastage of resources: Programme planning helps to reduce the wastage of time, money and resources and provides general efficiency. Optimum results can be accomplished under the prevailing circumstances and conditions.
6. It provides continuity to efforts. Programme planning presents continuity to the programme because of availability of plan in black and white.
7. It helps in leadership development: Development of leadership is one of the keys to success and planning is one of the best methods of developing leadership.
8. It helps to get local support: A programme planned with the cooperation of the people and based on their needs will get full support from them.
9. It minimizes conflict. Many conflicts like conflict of resources, personalities etc. may arise while executing a programme and these can be easily removed at planning stage. A good programme planning can avoid unnecessary conflicts.
10. It helps in fulfilling people's needs and wants.
11. Shares commitment and responsibilities.
12. Ensures a balanced but varied programme.
13. Provides opportunity each member to feel important in the community.
14. It gives specific job to each member involved in.
15. Ensures ample preparation time.
16. It provides maximum involvement.
17. It provides better communication.
18. It helps to learn how to cooperate and compromise.
19. It provides opportunity of learning how to plan.
20. It encourages members of society to look forward to meetings

STEPS OF PROGRAMME PLANNING

1. Assessing the situation: Sound plans are based on availability of relevant and reliable facts. This includes facts about the village people, physical conditions, existing farm and home practices, trends and outlook.

- **Basic information about village:** To study the situation one should collect information about village like population, total number of families, farm families, occupation of the villages, and facility of communication, transport, health, schooling and drinking water.
- **Information about farming:** like total area under cultivation, size of landholding, types of crops grown, cattle feeds, utilization of grassland, diseases and pests control, position of labour and financial position.
- **Information about characteristics of local people:** like their existing knowledge, skill, understanding, attitude, interest, education level, social participation, level of scientific orientation, ability etc.

After assembling the facts pertaining to local situation, it is important to analyze these facts to understand situation of the area where extension work has to be done.

2. Determination of objectives: Based on information on the situation and urgency of the problem, need and solution of the problems, extension worker decides objective to satisfy problems and needs of the community.

- The objectives are the direction of movement. The objectives can be of different types. **Fundamental objectives**, **General objectives and Specific or working objectives.**

- The objectives can also be classified on the basis of period of achievement like **Long term objectives**: (achievable in more than 10 years), **Medium term objectives** (achievable within the period of 3 to 5 years) and **Short term objectives** (achievable within one year or one season).
- The objectives must be well defined, clear and achievable, according to the need, interest and problems of the people.
- Objective should be SMART. Which means: S= Simple, M= Measurable, A= Attainable, R= Realistic and T= Time bound.

3. Identification of problem: At this stagethe problems leading to a situation are selected to solve.

The problems are then classified according to their nature.

- **Many problems can be solved by the villagers with their own resources** e.g.Kaccha road preparation
- **The problems that can be solved using community cooperation** e.g. village cleanliness **and**
- **Problems that require assistance from outside sources because of need of high costs and technicalknowledge** e.g. Locust control, construction of school building, creating irrigation facilities.

4. Decide priority of the problems to solve: As a result of the analysis of data the important gaps between 'what is' and 'what should be' are identified. The problems which need urgent solution should be identified to find its solutions.

I. Drinking water

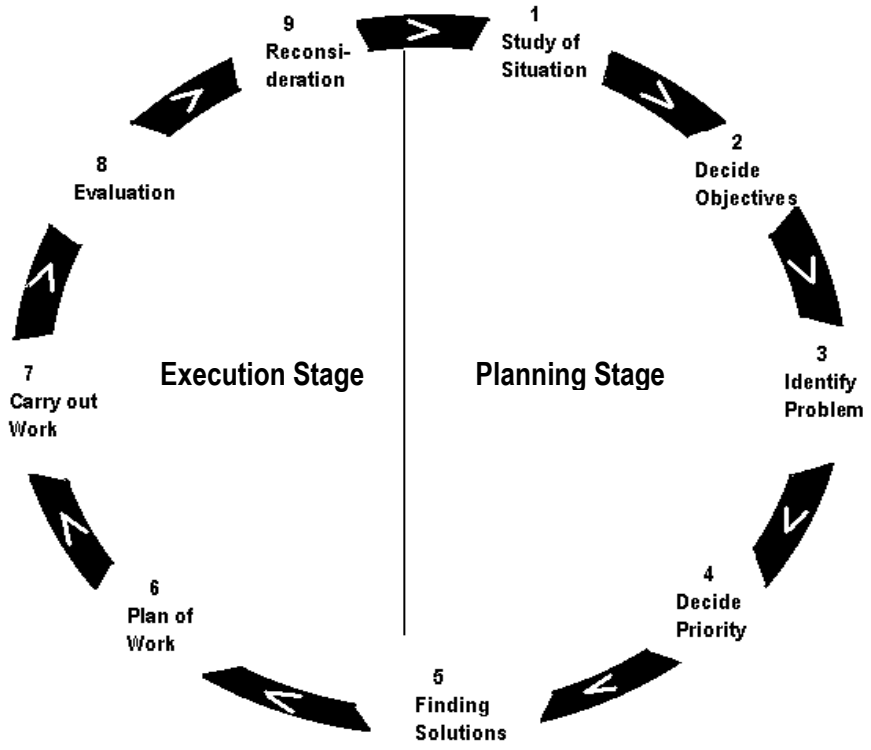
II. Lighting

III. Sanitation

IV. Digging of pond

V. Afforestation

5. Finding solution to problems: The extension worker has to consult their superiors keeping the villagers with them in finding out proper solutions of the problems.



Steps of Programme Planning

6. Developing the plan of work: In order to achieve the stated objectives planners should convert them in to goals. Conversion of objective in to goal includes time limit to achieve decided objectives.

- The means and methods attaining each objective are selected and the action plan in terms of the calendar of activities is developed.
- It includes planning of **WHAT (Subject), WHICH (Major part of Subject), WHEN** (Year, Month, Date, Time), **WHERE** (Place of activity) and **HOW** (By which method of teaching such as demonstrations, discussion, meeting) to do the activities. The plan of work may be seasonal, short-term, annual or long-term.

7. Carrying out the plan step by step: In this step whatever planner has decided in 6^{th} steps are to be implemented practically by using inputs like; **MAN, METHODS, Material, TIME,** and process like **MOTIVATION, COORDINATION**, and **MANAGEMENT**.

During the execution (implementation) of the plan of work people should be involved at every step to make sure the success of the programme.

8. Evaluation of results: It is done to measure the degree of success of the programme in terms of the objectives and goals laid out. **It can be done at three levels by collecting information before the programme, during the programme and at the end of programme**.

- This is basically done to know the changes in the behaviour of the people as a result of the extension programme.
- Evaluation shows whatever way we go is in the right direction or not?
- Evaluation shows how far our plans have progressed.
- Evaluation indicates the effectiveness of a programme.
- Evaluation helps to locate strong and weak points in any programme or plan.
- Evaluation improves our skill in working with people.
- Evaluation helps to determine priorities for activities in the plan of work.

- Evaluation brings confidence and satisfaction to our work.
- Evaluation gives bench mark information for next programme.

Extension worker and village institutions should do evaluation of programme jointly. An effective evaluation requires adequate records of each activity. Each future programme should be based on the results of evaluation of the previous programmes.

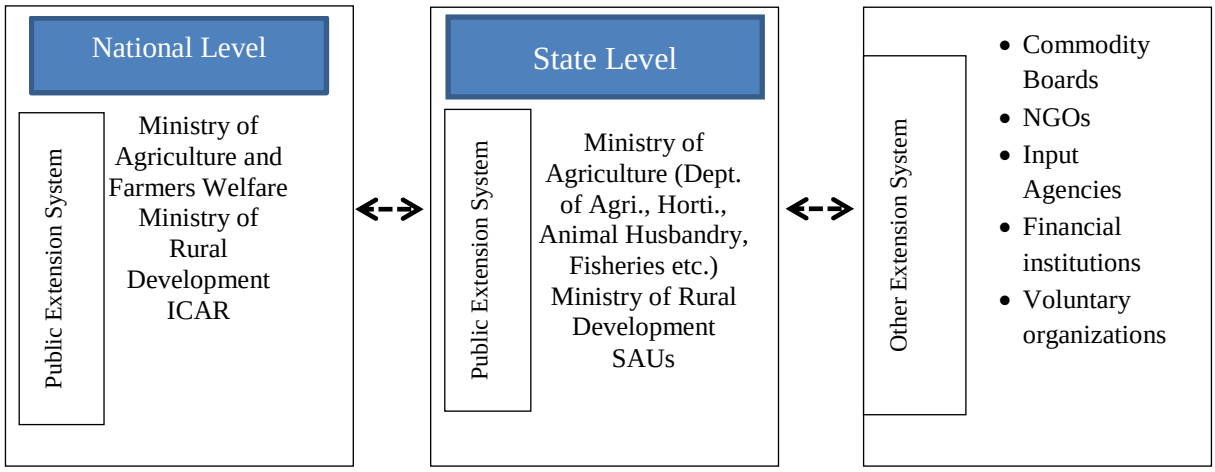
9. Reconsideration: The systematic and periodic evaluation of the programme will reveal the weak and strong points of the programme. Based on these points the programme is reconsidered and the necessary adjustments and changes are made in order to make it more meaningful and sound.

Programme planning is not the end product of any extension activities but it is an educational tool for helping people to identify their own problems and make timely and judicious decisions. From the above-mentioned cycle, it is clear that the planning of an extension programme comprises a logical series of consecutive steps.

CHAPTER-4
Extension System in India

India has made significant achievement in agriculture by increasing production by four folds during last six decades. Among many drivers to accomplish this task, the policy, research and extension support have played crucial role. Public extension played a major role in ushering green revolution in Indian agriculture.

However, considering the varied agro-ecological situations under which farmers operate and variations in the resource base of farmers, the extension system envisaged to achieve desired growth in agricultural sector has to be pluralistic in nature and hence multiplicity of extension systems are operating in India.



Agriculture development in India is basically a state subject. The Union Government plays a major role in formulating national policies that has direct bearing on the growth of agricultural sector. The Union Government mainly provides road map through its policies, programmes and budgetary support to the sector. The programmes conceived at national level are mainly implemented by the states through its development departments. Besides, states also formulate region specific development programmes. Similarly, Indian Council of Agricultural Research (ICAR) is an apex body at the national level that supports and coordinates agricultural research, extension and education activities to evolve effective Transfer of Technology (TOT) models. The State Agricultural Universities (SAUs) also develop region specific extension models suitable to take up transfer of technology besides implementing the models evolved by ICAR system. All the systems maintain coordination among them for proper functioning and avoiding duplication of effort.

Public Extension System - National Level

At the national level the main extension service is provided by Ministry of Agriculture & Farmers Welfare, Government of India. The ministry has 3 departments, Department of Agriculture Cooperation and Farmers Welfare, Department of Animal Husbandry, Dairying and Fisheries and Department of Agriculture, Research and Education. All these three departments maintain a close coordination among them and perform their research and extension activities. The Department of Agriculture Cooperation and Farmers Welfare has the main responsibility for developing and implementing various schemes for central government. The Ministry maintains a close relation with Indian Council of Agricultural

Research (ICAR), which is a registered, autonomous body at the national level for conducting and coordinating agricultural research. The Ministry of Rural Development also undertakes many developmental programmes for social welfare.

The various programmes implemented at national level are as follows:

Post-independence period: The first planned attempt started with the launching of Community Development Programme in 1952, followed by the National Extension Service in 1953. These programs were able to educate farmers to take up improved methods of farming across the country. The other important Area-Based Special Programmes were; Intensive Agricultural District Programme (IADP, 1960), Intensive Agriculture Area Programme (IAAP, 1964) and High Yielding Varieties Programme (HYVP, 1966) besides Farmers Training Centers (1967) to train farmers on high yielding varieties and improved methods of fanning to back up the above programs. The cumulative effect of these programs resulted in increased productivity, which made possible the 'Green Revolution' in Indian agriculture. In 2004 the Government launched Kissan Call Center to provide telephonic advisory services to the farmers in local language. To sustain agricultural growth rate at 4 per cent and more investment in agricultural and allied sector the national government implemented Rashtriya Krishi Vikas Yojana in 2007. To make the country self-sufficient in pulse production National Food Security Mission was introduced in the same year.

However, these programs widened gap between resource rich and resource poor farmers. In order to enable resource poor farmers to take benefit of improved farm technology, many client-based programs were introduced. The most important ones being; Small Farmers Development Agency (SFDA, 1970), Marginal Farmers and Agricultural Labourers Programme (MFAL, 1970), District Rural Development Agency (DRDA, 1978), Integrated Rural Development Programme (IRDP, 1978), etc. Although, these programs were able to improve the socio-economic conditions of beneficiaries, they were isolated in a given time and implemented in a phased manner.

Initiatives of ICAR: The Indian Council of Agricultural Research (ICAR) took up numbers of extension programmes over the years. The first programme was All India Coordinated Project on National Demonstration (1964) initiated to demonstrate the genetic production potentiality of major crops in the farmers' field. Then the Operational Research Project (ORP) was started during 1974-75 to identify technological as well as socio-economic constraints and to formulate and implement the problem solving technology modules on area/watershed/ target group basis in operational area. Then in 1974 the Krishi Vigyan Kendra was introduced to provide need based vocational training to the farmers, farm women, farm youth and extension personnel. Lab to Land programme was launched during 1979 to transfer low cost technologies for small and marginal farmers and agricultural laborers in agriculture and allied enterprises. Institute Village Linkage Programme was launched during 1995. Under innovation in technology dissemination component of National Agricultural Technology Project (1998), the ICAR established Agriculture Technology Information Centre (ATIC) in each State Agricultural Universities and ICAR institutes to work as single window support system linking the various units of research institution with intermediary users and farmers in decision making and problem solving exercise through availability of technology inputs, products, information and advisory services under one roof. Since 2006-07, ICAR is implementing National Agricultural Innovation Project (NAIP), in a consortium mode.

Public Extension System - State Level

Extension Approach of State Development Departments: Agricultural development being the state subject, the major responsibility of implementing all the programmes of central and state governments goes with state department of agriculture/horticulture/animal husbandry/fishery. The major State Development Departments (Departments of Agriculture, Horticulture, Sericulture, Animal husbandry and Fisheries) having focus on development of agriculture and allied activities do undertake outreach activities. The effective extension activity is visible mostly for Agriculture department, which was one of the major partners in implementing Training and Visit System at state. Some of the states have suitably modified T and V system (like Broad Based Extension System in Tamil Nadu) to suit their local needs. Presently the state department of Agriculture is a nodal agency to implement Agriculture Technology Management Agency (funded by Ministry of Agriculture and Cooperation, GOI) at the district level. The coordination and integration of activities of other development departments is envisaged under ATMA.

During middle of 1970s it was observed that extension services in the developing countries were suffering from a number of weaknesses, including the engagement of extension workers' energies on low priority tasks; the lack of single as well as clear line of command; and low level of agricultural knowledge and skill among field level functionaries. As a means of reforming and strengthening the extension service, a reorganized agricultural extension system known as 'Training and Visit' (T & V) system was introduced in the country.

Training and Visit System: This system was introduced in India in 1974 with the World Bank assistance. Training and Visit system becamethe dominant method of restructuring the extension services in oversixty countries in Asia, Africa and Latin America, including India. The system aimed toachieve change in production technologies of farmers through professional assistance for the contact farmers from well-trained extension personnel on agricultural research and supported by supply, service and marketing facilities which were earlier lacking in National Extension Service.

Broad Based Extension System (BBES): This system aimed at rectifying the defects of T & V system in some of the Indian states. In the BBE: (a) the role of subject matter specialists was amplified and they were invited to formulate messages suitable to their land based activities (agriculture, sericulture, animal husbandry, horticulture, human resource development, creating agriculture infrastructure etc.), (b) village extension workers had full time job by offering messages during lean season also, and (c) the concept of broad based education laid emphasis on formulating and delivering composite messages to the farmers to meet the needs of their whole agricultural environment.

Agriculture Technology Management Agency (ATMA): In country like India where agro-climatic zones widely differ besides significant variation in socio-economic status of farmers', uniform extension service is not the panacea for all the regions. It was realized that public extension system will have to be placed in new decentralized institutional arrangements which are demand driven, farmer-accountable, bottom-up and have farming system approach. To address these issues, the ATMA was envisaged as alternate public extension institution of all stakeholders at district level. Under the Support to State Extension Programme for Extension Reforms, the extension division of the Department of Agriculture Cooperation and Farmers Welfare makes general policies for ATMAs at national level and

also provides technical and financial supports.

The state department of Horticulture is implementing National Horticulture Mission since 2005. The human resource development through training and demonstrations is an integral part of the mission. Under this programme, training of the farmers, field level workers and officers by both Government sectors (SAUs and ICAR institutes) and Non Government Organizations is being undertaken.Departments of Animal husbandry and Fisheries are conducting a variety of extension activities like discussion meetings, demonstrations, field visits, fairs, field days etc. by the technical field functionaries to transfer the new technologies.

State Agricultural Universities (SAUs): The State Agricultural Universities apart from lending support in implementing ICAR sponsored extension programmes, have evolved several innovative extension models to effectively reach the farming community. The type of extension activities undertaken by SAUs vary from state to state. The four agricultural universities of Gujarat state are undertaking transfer of technologies to farmers and others through Krishi Vigyan Kendras, Extension Education Units, Farmers Training Institute, Sardar Smriti Kendras, Staff Training Unit, Agriculture Technology Information Centre. The SAUs publish agriculture literature (books, booklets, folders and leaflets) in local languages for dissemination of agricultural technologies to the farmers and extension personnel. Some of the universities have their own mobile message services, community radio services and other different services.

Other Extension Systems

Extension activities of Commodity Boards, Financial Institutions, Input agencies, Non Government Organizations and Media Organizations come under this category.

Commodity Boards (Coffee board, Spice board, Tobacco board, Dairy Development board, Tea board, Coconut development board etc.) are extending crop/commodity specific technical know-how to the farmers to a limited extent as many of these boards do not have grass root level functionaries throughout the country.

Financial institutions normally provide assistance in preparation of agriculture project proposals by their technical staff to the farmers and others.

Agricultural input agencies besides providing critical inputs like seeds, planting materials, fertilizes, plant protection chemicals etc., they also sponsor/organize training programme to educate farming community.

The media organizations (print and electronic media) are disseminating timely information on weather, technical information and marketing information.

Various committed Non Government Organizations, Voluntary Organizations and Philanthropists are also rendering rural extension services to the rural community in the field of agriculture and allied sectors, health, sanitation, education, water supply etc., across the country.

Despite the efforts made by public as well private extension systems to put in place an effective extension mechanism, the present extension systems appear to be inadequate to address the challenges faced by the farmers in the context of changing agricultural scenario. There is very little penetration of extension system below the taluka level. The major reason being lack of grassroot level extension functionaries to work at panchayats or village level. The public extension system would continue to play an important role in technology

dissemination to serve the large chunk of small and marginal farmers, besides the other extension service providers to supplement and compliment the public extension service. At the same time, extension mechanism has to be demand driven, location specific and address the diversified demands as well as those of marketing and value addition which calls for organized arrangement of farmers.

CHAPTER-5
Extension Efforts in Pre-independence Era

It was during this period that the Department of Agriculture came into existence in June 1871 under the British rule, and by 1882, agricultural departments in most of the provinces started functioning in skeleton form. Recognizing the need for new and improved methods of cultivation based on agricultural research, the then Government had set up Imperial Agricultural Research Institute at Pusa in Bihar in 1905, which was later in 1936 transferred in New Delhi and now known as Indian Agricultural Research Institute (IARI).

The agricultural and rural development schemes of the pre independence era were mostly started by philanthropist individual person in sporadic manner. There were no proper coordination and participation of other stakeholders in those programmes. The list of those programmes is given below:

Scheme/programme	Year	Initiator	Remarks
Rural Reconstruction at Sundarban	1903	Daniel Hamilton	Developed model village based on cooperative principal
Gurgaon Project	1920	F. L. Brayne	Improving crop production, health, rural economy were the main concern. Concept of *Rural Guidance or Gaaon Sathi* was developed
Sevagram Project	1920	Mahatma Gandhi	Gandhian approach of village self-help by emphasizing cottage industries.
Sriniketan Project	1921	Ravindra Nath Tagore	Developed a spirit of self-help, village leadership.
Marathandam Project	1928	Spencer Hatch, Young Men Christian Association (YMCA)	Three-fold development, spiritual, mental & physical, and economic & social.
Baroda Village Reconstruction	1932	V. T. Krishnamachari	Improvement in standard of living, spread education and industrialization.
Grow More Food Campaign	1942	The British govt.	To fulfill the need of food. This campaign was the first one to be organized on a national level before independence.
Indian Village Service	1945	A. T. Mosher & B. N. Gupta	Started in Allahabad and Aligarh in U. P.
Firka Development Scheme	1946	Madras Govt.	Development of village at *Firka* level. A *firka* is a revenue block consist of 5 -8 villages.

CHAPTER-6
Extension Efforts in Post-independence Era

(Including various agril. developmental programmes launched by Govt. of India and ICAR)

After independence the Government of India lunched many extension/rural developmental programmes/ schemes. From 1947 to 1960 periods mostly rural development programmes were emphasized, after that to achieve the self-sufficiency in food production and make the country self-reliant in food production, from 1960 to 1970 the emphasis of the Government was to increase food production by initiating different agricultural developmental programmes. After that from 1970 onwards the focus of the Government shift to the development of weaker section and started to implement target group specific programmes, employment programmes for the development of rural pore. The various programmes undertaken by the government after indolence of the country are listed below:

Programme	Year	Implemented by	Remarks
Etawah Pilot Project	1948	Albert Mayer	It is the forerunner of CDP. The concept of multipurpose village level worker was planned.
Nilokheri Experiment	1948	S. K. Dey	Also known as *Mazdoor manzil*. Started to rehabilitate the families coming from Pakistan during partition.
Bhoodan Movement	1951	Vinoba Bhave	Started at Pochampally village in Telangana. Earliest land reform programme.
Community Development Programme (CDP)	2nd Oct., 1952	Govt. of India	On the recommendations of Grow More Food Enquiry Committee (1952), 55 community projects were started. Each project area has been divided into three development blocks. A development block consisted of about 100 villages with a population of about 60-70 thousands. Each block was further divided into groups of 5-10 villages. Each such group formed the area of operation for a Village Level Worker (Gram Sevak). The programme emphasized all round development of the village community.
National Extension Services (NES)	2nd Oct., 1953	Govt. of India	It was less intensive than CDP. It is a permanent organization and covers the whole country. It provides the basic organization, official, non-official and a minimum financial provision for development.

Panchayat Raj Institutions	1958-59	Govt. of India	Recommended by BalwantRaiMheta committee (1957).It is village self-governance. It was 3 tire system of Village (Gram) panchayat at village level, Panchayat samiti (taluka panchayat) at taluka or block level and Zila parishad (zila panchayat) at district level. First adopted by the state of Rajasthan in Nagaur district on 2nd Oct., 1959.
Intensive Agriculture District Programme (IADP)	1960	Govt. of India	This programme was also known as *Package Progarmme*. Not only the agriculture production was emphasized in the programme but the credit facility, marketing and value addition were also taken care of.
Intensive Agriculture Area Programme (IAAP)	1964	Govt. of India	It was similar to IADP but less intensive than IADP.
Intensive Cattle Development Project (ICDP)	1964-65	Govt. of India	It was envisaged to locate the breeding tracts of indigenous breeds of cattle and buffaloes and in the milk sheds of large dairy projects.
High Yielding Variety Programme (HYVP)	1966	Govt. of India	Introduction of dwarf wheat variety. Tremendous increase in food grain production. William Gaud termed this as *Green Revolution*. Dr. N. E. Borlog and Dr. M. S. Swaminathan were the two important persons who contributed whole heartedly to the programme.
Small Farmers Development Agency (SFDA)	1970-71	Govt. of India	The scheme implemented by the agency to provide loan from the loan institutions, co-operatives and commercial banks, to study the problems of the small farmers, to arrange small irrigation, provide new agricultural instruments and to build field project after assessing the resources of the farmers. The subsidy under this scheme was 25% (for non-tribal farmer) and 50% (for tribal farmer).
Marginal Farmers and Agricultural Labour Development Agency (MFALA)	1970-71	Govt. of India	The agency provides intensive agricultural methods, loans, and production materials for the increment in income of the marginal farmers and agricultural labourers.

Tribal and Hill Area Development Programme	1973-74	Govt. of India	The identified areas were getting special aid from planning commission for developmental activities, like, best utilization of water and land, providing facility of housing, minimizing the traditional planting of trees and *Jhoom*farming, dairy development, beehive and silk-worm taming.
Drought Prone Area Programme (DPAP)	1973-74	Govt. of India	Only implemented in those areas where rain was scares, drought was frequent and no facility for irrigation. Main activities included was protection of land and water resources, planting of trees, development of dairy, sheep rearing practices and other subsidiary income generating activities.
Command Area Development Programme (CADP)	1974	Govt. of India	Focused on specific area to utilize the available water in proper manner which can be achieved through reducing the wastage of water by over irrigation and drainage.
Desert Development Programme (DDP)	1977-78	Govt. of India	Main aim was integrated development of desert area. Increasing production, level of income, providing the facility of employment and best utilization of the available resources were the thrust areas.
Integrated Rural Development Programme (IRDP)	1978	Govt. of India	It was the largest poverty alleviation programme of the country. The programme was designed to enable the rural poor families to cross the poverty line. The programme was implemented in all the blocks in the country. For effective implementation of the programme District Rural Developmental Agency (DRDA) was created.
Training of Rural Youth for Self Employment (TRYSEM)	15th Aug., 1979	Govt. of India	It was designed to provide technical and basic skills to rural youth (18- 35 years age) from families below poverty line to enable them to take up self-employment.
National Rural Employment Programme (NREP)	1980	Govt. of India	It was designed to significantly increase employment opportunities in rural areas by creating additional gainful employment for unemployed and under employed persons.

Development of Women and Children in Rural Areas (DWCRA)	1982	Govt. of India	Raising the income levels of women of poor households to make them economically self reliance.
Jawahar Rozgar Yojana (JRY)	1989	Govt. of India	The National Rural Employment Program (NREP) and Rural Landless Employment Guarantee Programme (RLEGP) were merged together to form JRY. Every village was to be covered through Panchayati Raj Institutions. The village got aide and support from DRDA.
Employment Assurance Scheme (EAS)	1993	Govt. of India	Provide gainful employment during the lean agricultural season in manual work to adults in rural areas who are in need and desirous of work.
Rashtriya Mahila Kosh (RKM)	1993	Govt. of India	The RKM was established for socio-economic empowerment of women. RMK provides loans to Intermediary Organizations (IMO) which on-lend to Self Help Groups (SHGs) of women. It is an autonomous body for reaching out to the women beneficiaries with easy access of micro credit.
Mahila Samridhi Yojana (MSY)	1993	Govt. of India	Objective was to empowering the rural women through building thrift habit, self-reliance and confidence among them.
Swarnajayanti Gram Swarojgar Yojana (SGSY)	1999	Govt. of India	Provide sustainable income to poorest of the poor people living in rural areas. Provide self employment to villagers through the establishment of Self Help Groups. The programme focused on establishing microenterprise in the village.
Kisan Credit Card	1999-2000	Govt. of India	Helps the farmers to access timely and adequate credit. It was started by the RBI and NABARD. The card is valid for five years and subjected to annual renewal.
Antyodaya Anna Yojana (AAY)	25th Dec., 2000	Govt. of India	Provide highly subsidized food to the poorest families of the country. The beneficiaries can purchase 35 kg of rice and wheat at Rs. 3 per Kg for rice and Rs. 2 per Kg for wheat.
Sampoorna Grameen Rozgar Yojana (SGRY)	2001	Govt. of India	Provide gainful employment to the rural poor. The programme was implemented through the Panchayati Raj institutions.
Agri Clinic and Agri Business Centres (ACABC)	2002	Govt. of India	Promote the establishment of Agri-Clinics and Agri-Business Centres (ACABC) all over the country. The MANAGE provide necessary training to the applicant and NABARD will provide the fund for

			establishing the centres.
Kisan Call Centre	2004	Govt. of India	The call centers were established across the country to deliver extension services to the farming community in local language. A farmer from any part of the country can contact the Call Centre by dialing the toll free No. **1800-180-1551** and present their problems/queries related to farming.
National Project on Organic Farming	2004	Govt. of India	Promote organic farming practices, provide financial and technical support for setting up of organic input production unit.
National Rural Employment Guarantee Act	2005	Govt. of India	The act aims to guarantee the right to work. The primary objective was to enhancing livelihood security in rural areas by providing at least 100 days of guaranteed wage employment to every household whose adult members volunteer to do unskilled manual work. Now this is known as Mahatma Gandhi National Rural Employment Guarantee Act (MNREGA).
National Horticulture Mission (NHM)	2005	Govt. of India	The main objective was to develop horticulture and to augment production of all horticultural products. Food processing and value addition of horticultural crop was also emphasized.
National Food Security Mission (NFSM)	2007	Govt. of India	To increase the production of rice, wheat, and pulses by 10 million tonnes, 8 million tonnes, and 2 million tonnes respectively by the end of the Eleventh Plan (2012).
Rashtriya Krishi Vikas Yojana (RKVY)	2007	Govt. of India	The programme seeks to achieve 4% annual growth in agriculture through development of Agriculture and its allied sectors. It provides the state government more autonomy to draw up plans for increased public investment in Agriculture and allied sector.
National Rural Livelihood Mission (NRLM)	2011	Govt. of India	This scheme is focused on promoting self-employment and organization of rural poor. The basic idea behind this programme is to organize the poor into SHG (Self Help Groups) The SGSY is remolded into this programme.
Programmes of ICAR			
All India Coordinated Project on National Demonstration (AICPND)	1964	ICAR	This nationwide demonstration project was conducted to show the farmers the genetic production potentiality of the crop. The average size of the demonstration plot was 1 ha. It may be 1 acre if bigger plot was not available. The demonstration was

			conducted by the agricultural scientists in association with local extension workers.
Operational Research Project (ORP)	1974-75	ICAR	Disseminate proven technology among the farmers in water shade basis, covering whole village or cluster of villages. It also studies the constraints as barriers to rapid spread of improved technical knowledge.
Krishi Vigyan Kendra (KVK)	1974	ICAR	Designed to impart need based skill oriented vocational training to the farmers, in-service field level extension workers and the youth who wish to go for self employment. KVK provides learning through work experience and concerned with technical literacy. From 1992 all the transfer of technology programmes of ICAR, viz. AICPND, ORP and LLP are merged to the KVK and new mandate for KVK was made.
Lab to Land Programme (LLP)	1979	ICAR	The programme was launched as golden jubilee celebration of ICAR. The overall objective of the programme was to improve the economic condition of the small and marginal farmers and landless agricultural labourers.
Institute Village Linkage Programme (IVLP) & Technology Assessment and Refinement Project (TARP)	1995	ICAR	It is a production system oriented project with agro-ecosystem analysis of the adopted villages, which helps in identify the problems, priorities them and finalize the technological intervention point through assessment and refinement of technologies.
National Agricultural Technology Project (NATP)	1998	ICAR	It was world bank financed project. Innovation in Technology Dissemination (ITD) component was planned in this project. ITD aims to develop a transfer of technology system which will be more demand driven, well integrated with research, financially sustainable and accountable to the stakeholders. Under this programme ATMA, ATIC were conceptualized.
National Agricultural Innovation Project (NAIP)	2006	ICAR	This was also world bank financed project. The project facilitated accelerated and sustainable transformation of Indian agriculture so that it can support poverty alleviation and income generation. The project was implemented in consortium

			mode.
National Innovations in Climate Resilient Agriculture (NICRA)	2011	ICAR	It is a network project which aims to enhance resilience of Indian agriculture to climate change and climate vulnerability through strategic research and technology demonstration.
Attracting and Retaining Youth in Agriculture (ARYA)	2015	ICAR	The objective was to facilitate the entrepreneurial development of youth in rural areas to take up various agriculture, allied and service sector enterprises for sustainable income and gainful employment.
My Village My Pride/ Mera Gaon, Mera Gourav (MGMG)	2015	ICAR	To enhance the direct interface of the agricultural scientists with the farmers. Under this scheme group of scientists will select a village and remain in continuous touch with that village and provide required information to the farmers of that village.

CHAPTER-7
Various Rural Development Programmes Launched by Govt. of India

Sr.	Name of Programmes	Year of Starting	Importance Remark
1.	Panchayat Raj System	1959	• Political will of the Govt. in sharing authority and responsibility with the Panchayats. Enactment of laws relating to PRIs. a basic pattern of • Democratic decentralization with the Gram panchayat (Village Council) at the village level, the Panchayat Samiti at the block level and the Zilla Parishad (district council) at the district level.
2.	Antyodaya Anna Yojana (AAY)	Dec., 2000	• The main objective of the scheme is to ensure food security and to create hunger free India. • 25 kg of food grains were made available to each eligible family at a highly subsidized rate of Rs. 2 per kg for wheat and Rs.3 per kg for rice. This quantity has been enhanced from 25 to 35 kg with effect from April, 2002.
3.	Deen Dayal UpadhyayaGrameenKaushalyaYojana(DDU-GKY)	25th Sept., 2014	• The Vision of DDU-GKY is to "Transform rural poor youth into an economically independent and globally relevant workforce". • The scheme aims to provide skill to the poor youth of the country.
4.	Deendayal Disabled Rehabilitation Scheme (DDRS)	13th July, 2013	• NGOs are provided financial assistance for providing various services to people with disabilities, such as special schools, vocational training centers, community-based rehabilitation etc.
5.	Gramin Bhandharan Yojana Or Rural Godown Scheme,	1st April, 2001	• Government provides supports to an individual, a company, a farmer, local government, NGOs and various associations, if they build or renovate rural godowns. • The scheme has been subsumed into capital investment subsidy sub-scheme "Agricultural Marketing Infrastructure (AMI)" of Integrated Scheme for Agricultural Marketing (ISAM) scheme w.e.f 01.04.2014.
6.	Rural Housing (Indra Awas Yojana)	January, 1996	Rural housing programme started with Indira Awaas Yojana (IAY) in January 1996. IAY addressed the housing needs in the rural areas. To address these need in the rural housing program and in view of Government's commitment to providing "Housing for All''

			by the scheme 2022, the of has IAY has been re-structured into Pradhan Mantri Awaas Yojana –Gramin (PMAY-G) w.e.f. 1st April 2016.
7.	The Integrated Child Development Services (ICDS)	2nd Oct., 1975	The Integrated Child Development Services (ICDS) scheme is a government initiative for the all-round development (health, nutrition and education) of children under 6. Its aim is to reduce infant mortality, child malnutrition and to provide pre-school education.
8.	Integrated Rural Development Programme	1978-79	• Providing self employment to the rural poor to generate additional income on sustainable base. • It is for small and marginal farmers, agricultural labourers and rural artisans living Bellow Poverty Line (BPL), SC/ ST families and physically handicapped person.
9.	Swarnjayanti Gram Swarozgara Yojana	1999	• For rural poor living Bellow Poverty Line (BPL) in rural area for taking of self employment as individuals or in a group.
10.	Livestock Insurance Scheme	2008-09	• To Safe Guard assured protection to the animals of the farmer against eventual losses. • Benefit of subsidy is to be restricted to 5 animals per beneficiary per household for all animals except sheep, goat, pig and rabbit.
11.	Mahatma Gandhi National Rural Employment Guarantee Act	August 25, 2005	• It is an Indian labor law and social security measure that aims to guarantee the 'right to work'. • It aims to enhance livelihood security in rural areas by providing at least 100 days of wage employment to every household whose adult members want to do unskilled manual work.
12.	Pradhan Mantri Awas Yojana (PMAY)	2015	• Pradhan Mantri Awas Yojana has been established by the Government of India to offer affordable houses to various sections of the society.

CHAPTER-8
Rural Development

Rural Development in India is one of the most important factors for growth of Indian economy. India is primarily an agriculture based country and around 96 per cent of its population lives in rural area. The Ministry of Rural Development in India is the apex body for formulating policies, regulations and acts parenting to the development of the rural sector. Agriculture, handicrafts, fisheries, poultry, dairy are some of the common contributors to the rural business and economy. It means it is concerned with economic growth, social justice, and improvement in the living standard of the rural people by providing adequate and quality social services and minimum basic needs.

The present strategy of rural development mainly focuses on poverty alleviation, better livelihood opportunities, provision of basic amenities and infrastructure facilities through innovative programmes of wage and self-employment. This can be achieved by implementing various programmes in partnership with government organizations and various communities, non-governmental organizations, community based organizations, panchayatiraj institutions and industrial establishments.

For better understanding one should clearly understand the following concepts:

Community: A body of people having common rights, privileges or interests or living in the same geographical area under the same laws and regulations.

Development: It is act of improving by expanding or enlarging or refining.

Community Development: It is a process of developing or building up communities of men and women to enable their empowerment, self- sufficiency and control over their environment.

Rural area: It refers to an area where people are engaged mostly in primary activities to produce things first time in co-operation with nature.

Rural Development: Rural development is a process of bringing desirable changes in the life of rural mass in terms of their social, economic, cultural, psychological, technological, health and infrastructural conditions. It is a process of improving the standards of people residing in rural areas.

Objective of rural development:

The fundamental objective of the rural development is to raise the level of living standards of the rural people. The specific objectives are:

- To increase the availability and widen the distribution of basic life sustaining articles such as food, clothes, shelter, health care and security.
- To raise standards of living by providing of more jobs, increasing purchasing power, better education and greater attention to cultural humanistic values.
- To expand the range of economic and social choice of individuals by freeing them from slavery (*gulami*) and dependence.

Importance of Rural Development:

Rural development is a national necessity and has considerable importance in India because of the following reasons.

- To develop rural area as a whole in terms of culture, society, economy, technology and health.
- To develop living standard of rural mass.
- To develop rural youths, children and women.
- To develop and empower human resource of rural area in terms of their skill, knowledge, attitude and other abilities.
- To develop infrastructure facilities of rural area.
- To provide minimum facility to rural mass in terms of drinking water, education, transport, electricity and communication.
- To develop rural institutions like panchayat, co-operatives, post, banking and credit.
- To provide financial assistance to develop the artisans in the rural areas, farmers and agrarian unskilled labour, small and big rural entrepreneurs to improve their economy.
- To develop rural industries through the development of handicrafts, small scale industries, village industries, rural crafts, cottage industries and other related economic operations in the rural sector.
- To develop agriculture, animal husbandry and allied areas.
- To restore uncultivated land, provide irrigation facilities and motivate farmers to adopt improved seed, fertilizers, package of practices of crop cultivation and soil conservation methods.
- To develop entertainment and recreational facility for rural mass.
- To develop leadership in rural area.
- To improve rural marketing facility.
- To minimize gap between the urban and rural in terms of facilities availed.
- To improve rural people's participation in the development of state and nation as a whole.
- To improve scope of employment for rural mass.
- To eliminate rural poverty.
- To solve the problems faced by the rural mass for their development.

Problems in Rural Development

1. People related:

- Traditional way of thinking.
- Poor understanding.
- Low level of education to understand developmental efforts and new technology.
- Deprived psychology and scientific orientation.
- Lack of confidence.
- Poor awareness.
- Low level of education.
- Existence of unfelt needs.
- Personal ego.

2. **Agricultural related problems:**
   - Lack of expected awareness, knowledge, skill and attitude.
   - Unavailability of inputs.
   - Poor marketing facility.
   - Insufficient extension staff and services.
   - Multidimensional tasks to extension personnel.
   - Small size of land holding.
   - Division of land.
   - Unwillingness to work and stay in rural areas.
3. **Infrastructure related problems:**
   - Poor infrastructure facilities like water, electricity, transport, educational institutions, communication, health, storage facility etc.
4. **Economic problems:**
   - Unfavourable economic condition to adopt high cost technology.
   - High cost of inputs.
   - Underprivileged rural industries
5. **Social and Cultural problems:**
   - Cultural norms and traditions
   - Conflict within and between groups, castes, religions, regions, languages.
6. **Leadership related problems:**
   - Leadership among the hands of inactive and incompetent people.
   - Malafied interest of leaders.
   - Biased political will.
7. **Administrative problems:**
   - Earlier, majority of the programmes were planning based on top to bottom approach and were target oriented.
   - Political interference.
   - Lack of motivation and interest.
   - Unwillingness to work in rural area.
   - Improper utilization of budget.

CHAPTER-9

Various Rural Development Programmes Launched by Govt. of India

Sr.	Name of Programmes	Year of Starting	Importance Remark
1.	Panchayat Raj System	1959	• Political will of the Govt in sharing authority and responsibility with the Panchayats. Enactment of laws relating to PRIs.a basic pattern of • Democratic decentralization with theGram panchayat (Village Council) at the village level, the Panchayat Samiti at the block level and the Zilla Parishad (district council) at the district level.
2.	Antyodaya Anna Yojana (AAY)	Dec., 2000	• The main objective of the scheme is to ensure food security and to create hunger free India. • Twenty five kilograms (kg) of food grains were made available to each eligible family at a highly subsidized rate of Rs. 2 per kg for wheat and Rs.3 per kg for rice. This quantity has been enhanced from 25 to 35 kg with effect from April, 2002.
3.	Deen Dayal Upadhyaya Grameen Kaushalya Yojana(DDU-GKY)	25th Sept., 2014	• The Vision of DDU-GKY is to "Transform rural poor youth into an economically independent and globally relevant workforce". • The scheme aims to provide skill to the poor youth of the country, thereby giving them opportunities for growth.
4.	Deendayal Disabled Rehabilitation Scheme (DDRS)	13th July, 2013	• NGOs are provided financial assistance for providing various services to people with disabilities, such as special schools, vocational training centers, community-based rehabilitation, pre-school and initial interference etc.
5.	Gramin Bhandharan Yojana Or Rural Godown Scheme,	1st April, 2001	• Government provides supports to an individual, a company, a farmer, local government, NGOs and various associations, if they build or renovate rural godowns. • The scheme has been subsumed into capital investment subsidy sub-scheme "Agricultural Marketing Infrastructure (AMI)" of Integrated Scheme for Agricultural Marketing (ISAM) scheme w.e.f 01.04.2014. •

6.	Rural Housing (Indra Awas Yojana)	January, 1996	Rural housing programme,as an independent programme , started with Indira Awaas Yojana (IAY) in January 1996. Although IAY addressed the housing needs in the rural areas, certain gaps were identified during the concurrent evaluations and the performance Audit by Comptroller and Auditor General (CAG) of India in 2014. 2. To address these gaps in the rural housing program and in view of Government's commitment to providing "Housing for All'' by the scheme 2022, the of has IAY has been re-structured into Pradhan Mantri Awaas Yojana –Gramin (PMAY-G) w.e.f. 1/04/2016
7.	The Integrated Child Development Services (ICDS)	2nd Oct., 1975	The Integrated Child Development Services (ICDS) scheme is a government initiative for the all-round development (health, nutrition and education) of children under 6. Its aim is to reduce infant mortality, child malnutrition and to provide pre-school education.
8.	Integrated Rural Development Programme	1978-79	• Programme aims at providing self employment to the rural poor through acquisition of productive assets or appropriate skills to generate additional income on sustainable base. • It is for small and marginal farmers, agricultural labourers and rural artisans living Bellow Poverty Line (BPL), Scheduled Caste/ Scheduled Tribe families and physically handicapped person.
9.	Swarnjayanti Gram Swarozgara Yojana	1999	• For rural poor living Bellow Poverty Line (BPL) in rural area for taking of self employment as individuals or in a group- which called as Self Help Group
10.	Livestock Insurance Scheme	2008-09	• To Safe Guard assured protection to the animals of the farmer against eventual losses. • Benefit of subsidy is to be restricted to 5 animals per beneficiary per household for all animals except sheep, goat, pig and rabbit.
11.	Mahatma Gandhi National Rural Employment Guarantee Act	August 25, 2005	• The "Mahatma Gandhi National Rural Employment Guarantee Act", MGNREGA), is an Indian labor law and social security measure that aims to guarantee the 'right to work'. • It aims to enhance livelihood security in rural areas by providing at least 100 days of wage employment in a financial year to every household whose adult members volunteer to do unskilled manual work.

12.	Rashtriya Krishi Vikas Yojana(RKVY) National Agriculture Development Programme	29th May, 2007	• To orient agricultural development strategies, to reaffirm its commitment to achieve 4 per cent annual growth in the agricultural sector during the 11th plan.
13.	National Food Security Mission	October, 2007	• For stagnating food grain production and an increasing consumption need of the growing population, Government of India has launched this Centrally Sponsored Scheme. • The aim is to bridge the yield gap in respect of these crops through *dissemination of improved technologies and farm management practices.*
14.	National Rural Livelihood Mission	June, 2011	• It is a poverty alleviation scheme implemented by Union Ministry of Rural Development.
15.	Pradhan Mantri Awas Yojana (PMAY)	2015	• Pradhan Mantri Awas Yojana has been established by the Government of India to offer affordable houses to various sections of the society. This scheme offers interest subsidy on the home loans taken by individuals belonging to EWS (Economically Weaker Section), LIG (Low Income Group), and MIG 1 & 2 (Middle Income Group 1 & 2).

CHAPTER-10
New Trends in Agriculture Extension: Institutional reforms

Krishi Vigyan Kendra

The vigorous attempt was realized by the Education Commission (1964-66) to establish a specialized institution to provide vocational education in agriculture and allied fields at the pre and post matriculation levels to cater to the training needs of a large number of boys and girls coming from rural areas. The recommendation of Education Commission was thoroughly discussed during 1966-1972 associating the Ministry of Agriculture, Ministry of Education, Planning Commission, ICAR and other institutions. Finally, the Indian Council of Agricultural Research (ICAR) mooted the idea of establishing Krishi Vigyan Kendra (Farm Science Centre) as innovative institutions for imparting vocational training to the farmers and field level extension functionaries. As a result of this, in 1973 a committee headed by Dr. Mohan Singh Mehta of Seva Mandir, Udaipur (Rajasthan) was constituted and based on its report in 1974 it was decided to have Krishi Vigyan Kendra (KVKs) as Farm Science Centers for speedy transfer of technology to the farmer's fields.

The first KVK was established in 1974 at Pondicherry under the administrative control of the Tamilnadu Agricultural University, Coimbatore. In Gujarat 1st KVK was established in Deesa during 1976 which is working nowadays under the administrative control of the SDAU, Sardarkrushinagar. At present total 694 KVKs including 30 KVKs of Gujarat are established and functioning in the country.

The Mandate of the KVK's is

The final revised mandate of KVK is Technology Assessment and Demonstration for its Application and Capacity Development. (TADA-CD)

It includes:

1. Conducting on-farm testing to identify the location specificity of agricultural technologies under various farming systems
2. Organizing frontline demonstrations to establish production potential of various crops and enterprises on the farmers' fields
3. Organizing training for capacity development of farmers and field extension personnel to orient them in the frontier areas of technology development
4. Creating awareness about improved technologies to larger masses through appropriate extension activities
5. Work as resource and knowledge centre of agricultural technology for supporting initiatives of public, private and voluntary sector for improving the agricultural economy of the district
6. Production and supply of good quality seeds and planting materials, livestock, poultry and fisheries breeds and products and various bio-products to the farming community

Objectives:

1. To demonstrate the latest agricultural technologies to the farmers as well as the extension workers of the State Department of Agriculture / Non-Governmental

organizations with a view to reducing the time-leg between the technology generation and its adoption.

2. To test and verify the technologies in the socio-economic condition of the farmers and identifying the production constraints.
3. To get first-hand scientific feedback from the fields and passing it to the research system in order to keep the scientists abreast with the performance of the technologies and the farming problems, so that they re-orient their research, education and training programme accordingly.
4. To impart training to the farmers, farmwomen, rural youth and field level extension functionaries by following the principles of "Teaching by doing" and "Learning by doing".
5. To provide training and communication support to the line department of the State/NGOs.
6. To develop extension models to be adopted by general extension system for large scale multiplications.
7. Organizing farm science clubs in rural areas for young farmers.
8. Developing and maintaining demonstration unitsonKVK farm in scientific lines.

Activities of Krishi Vigyan Kendra:

Based on mandate, the following activities are performed by the KVKs.

1. On farm testing.
2. Front line demonstrations.
3. Vocational training of practicing farmers, farm women and rural youths.
4. In service training of extension functionaries.
5. Serve as knowledge center in the district.
6. Farm advisory other extension activities.

The above said activities are performed every year by the Krishi Vigyan Kendra, through specialist of six disciplines *viz*., Extension Education, Agronomy, Horticulture, Plant Protection, Animal science, Agriculture Engineering (the specialist can be changed as per location specific need), which are most relevant taking into consideration national resources and infrastructure facilities of the district.

Features of Krishi Vigyan Kendra:

1. Powerful technical support
2. Real experience as training
3. Need based training courses
4. Flexibility with farmers
5. Concept of integrated training
6. Real field oriented course content
7. Specific area of operation
8. Informal training without certificate or diploma
9. Powerful institutional linkage
10. Practical training
11. Frequent follow up measures
12. Training interaction and reporting systems

13. Impact study of the trainings, demonstrations and all extension activities

Organization of KVK:

The project is sponsored by the ICAR and implemented by its Research Institutes, State Agricultural Universities (SAUs), NGOs and State Department of Agriculture. In selecting host institutions preference is given to institutions/agencies having agriculture base and experience of rural development and training.

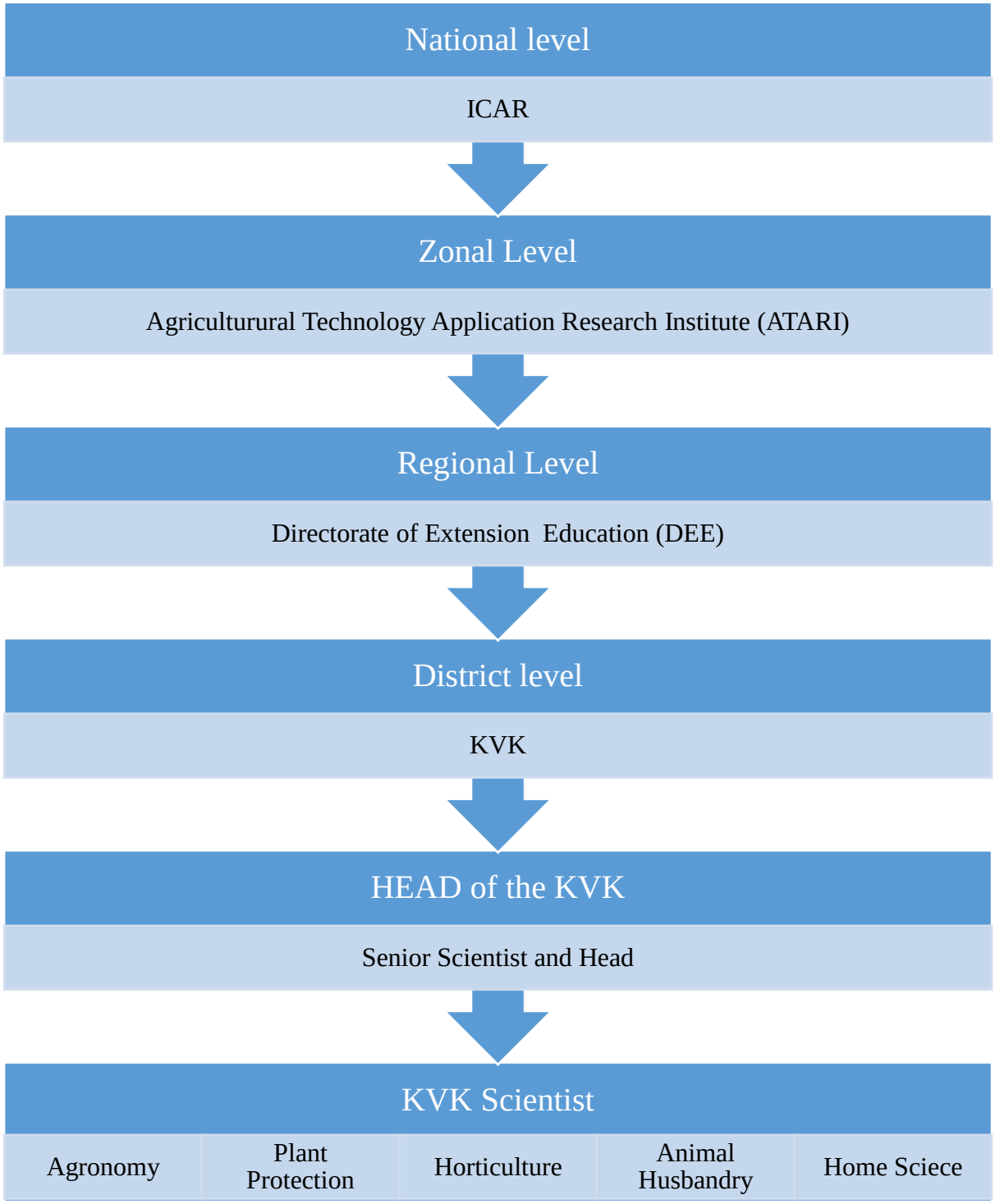
The KVK is headed by a Senior Scientist of the rank of an Associate Professor designated as Programme Coordinator with sufficient field experience in the field of agricultural extension or agronomy. The head is supported by scientists (Training Associate) in field of Extension, Agronomy, Horticulture, Home science, Agricultural engineer, Animal science, Soil science, Fisheries, Plant protection etc. (according to regional requirement). The head is also supported with three technical staff designated as Training Assistant (Computer programmer, Farm Manager, Training).

The Local Management Committee, which is now renamed as Scientific Advisory Committee in each KVK, is an important instrument of management. This committee is devoted to constantly review the progress of the KVK, provide guidance for organizing training programmes and follow-up extension activities and redress, whereas possible. This is strong mechanism for functional linkage with other sister organizations/institutions.

Chairman of SAC: Head of the host institute

Other Members of SAC: DEE, Director ATARI, Representative ICAR institute, Associate Director of Research of the zone, District officers of the line departments, Representative of NABARD and Lead bank, District information officer, 2 farmer’s representatives among which one should be woman farmers.

The organizational structure of KVK:



Organizational Structure of KVK

Agricultural Technology Management Agency (ATMA)

ATMA is a society of key stakeholders involved in agricultural activities for sustainable agricultural development in the district. It is a focal point for integrating Research and Extension activities and decentralizing day-to-day management of the public Agricultural Technology System. It is a registered society responsible for technology dissemination at the district level. As a society, it would be able to receive and expend project funds, entering into contracts and agreements and maintaining revolving accounts that can be used to collect fees and thereby recovering operating cost.

Why ATMA?

The ATMA at district level would be increasingly responsible for all the technology dissemination activities in the district. It would have linkage with all the line departments, research organizations, non-governmental organizations and agencies associated with agricultural development in the district. Research and Extension units within the project districts such as Zonal Research Station or substations, KVKs and the key line Departments of Agriculture, Animal Husbandry, Horticulture and Fisheries etc. would become constituent members of ATMA. Each Research-Extension unit would retain its institutional identity and affiliation but programmes and procedures concerning district-wise Research-Extension activities would be determined by ATMA Governing Board to be implemented by its Management Committee.

Location of the Office: The registered office of the ATMA shall be located at district collectorate premises.

Objectives:

1. To identify location specific needs of farming community for farming system based agricultural development;
2. To set up priorities for sustainable agricultural development with a Farming Systems Approach;
3. To draw plans for production based system activities to be undertaken by farmers/ultimate users;
4. To execute plans through line departments, training institutions, NGOs, farmers organizations and allied institutions;
5. To coordinate efforts being made by various line departments, NGOs, farmers organizations and allied institutions to strengthen research extension-farmers linkages in the district and to promote collaboration and coordination between various State funded technical departments;
6. To facilitate the empowerment of farmers/producers through assistance for mobilization, organization into associations, cooperatives etc. for their increased participation in planning, marketing, technology dissemination and agro-processing.
7. To facilitate market interventions for value addition to farm produce.

Organization:

Under ATMA, it is proposed to have a governing board which would be a policy making body and provide guidance as well as review the progress and functioning of the ATMA. The management committee would be responsible for planning and reviewing the day-to-day activities.

ATMA Governing Board:

The registered office of the ATMA shall be located at district collectorate premises.

1. District Development Officer (DDO)is the Chairman of governing board
2. Chief Executive Officer /Chief Development Officer (As Vice Chairman)

Members:

1. Joint Director/ Deputy Director (Agriculture)
2. A Representative from ZRS/KVK
3. One farmer representative
4. One livestock producer
5. One horticulture farmer
6. Representative of woman farmer
7. One SC/ST farmer representative
8. A representative of NGOs
9. Lead Bank Officer of the District
10. Representative of the district industries centre
11. Representative of agricultural marketing Board
12. Representative of input supply association
13. One fisheries/sericulture representative
14. Project Director, ATMA-Member Secretary cum Treasurer (Ex-officio)

ATMA Management Committee (AMC):

The management committee would be responsible for planning and execution of day-to-day activities of ATMA.

Project Director, ATMA is the Chairman of the committee.

Members: District head of Department of agriculture, Horticulture, Animal Husbandry, Fisheries, Sericulture, line departments that may important within a district, head of KVK and one representative of NGOs, in charge of farmer organization.

SREP:ATMA management committee conducts PRA and prepares Strategic Research and Extension Plan (SREP) for the district. SREP is a useful document provides the details of problems and technological needs for agricultural development in a district. The basic aim of SREP is to link the research and extension system with the farmers. It is a bottom up planning process carried out at the district level to identify the technological and training need of the farmers. It speaks out the extension and research priorities of the district based on grass root analysis. It is very useful and comprehensive document to understand the whole agricultural scenario of the district.

ROLE OF ATMA:

1. Take steps to ensure that problems, constraints and needs to the farming system based agriculture development are identified and diagnosed periodically.
2. Draw up plans for an integrated research-extension linkage approach for farming systems based agriculture development.

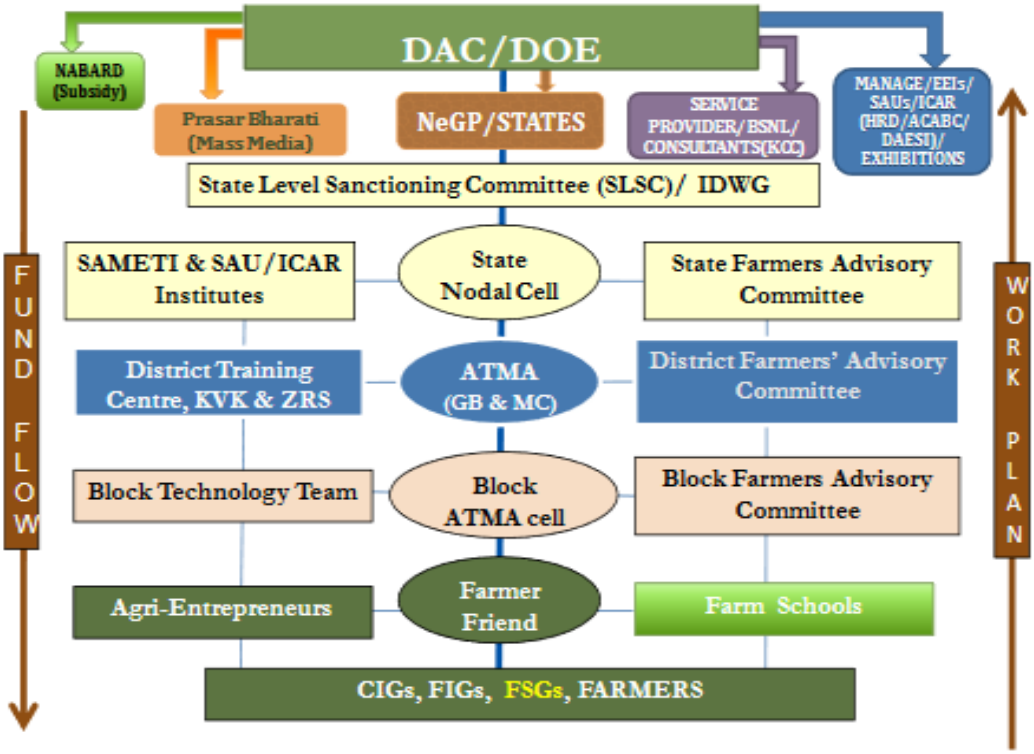
3. Ensure that line departments/institutions draw up integrated development plan based upon resources available with them and incremental/supplementary resources mobilized by the ATMA.
4. Forge or develop systematic linkages between national /state/ district institutions of excellence in the field of agriculture and marketing.
5. Ensure capacity building of manpower engaged in overall agricultural development and strengthen infrastructure support for the benefit of the farmer/producer.
6. Create suitable mechanism to ensure location specific adaptive, indigenous knowledge based research.
7. Ensure adequate linkages and frequent interaction between scientists, extension functionaries technicians and farmers, in order to prepare an integrated plan to effectuate their linkage, support each other, better understanding and appreciation of their problems, means adopted to sort out problems and plans etc., and to develop a mechanism of feedback;
8. Ensure capacity building of the ultimate users- the farmers in terms of physical, financial and skill resources base by way of adequate financial support canalized through credit institutions, private investments and training for skill up gradation.
9. Facilitate farmers' organization to take lead-role on mobilizing support services and resources.
10. Facilitate private investments for infrastructure development, private institutions have to take lead in the delivery of goods and services to ultimate users (farmers).
11. Facilitate the processing and marketing activities of the agricultural, livestock, dairy, poultry, silk and allied produce of the farmers with the help of private sector institutions.
12. Receive and expend project funds, maintain revolving accounts, enter into contracts and agreements, receive donations and provide services and deliver goods to beneficiaries.
13. Accept grants of money, securities or property of any kind and undertake and accept the management of any endowment, trust funds or donations not inconsistent with the objectives of the ATMA, on such terms and conditions as may be fitted with the objectives of the ATMA and be prescribed by the Government of India from time to time.
14. Generate resource in order to bring financial sustainability through charging for selected services rendered to beneficiaries by ATMA.
15. Create administrative, technical, ministerial and other posts in the ATMA and make appointments accordance with the rules and regulations of the State Government.
16. Do all such other lawful acts and things either alone or in conjunction with other organizations or persons, as the ATMA may consider necessary, incidental or conductive to the attainment of the above objectives.
17. All such lawful acts and things whether incidental to objectives in force or not as may be requisite in order to furtherance of the objectives of the ATMA.
18. Sell, lease, exchange and otherwise transfer of any portion and the properties of the society (ATMA).

Farm school:

Among the recent innovative modifications in the ATMA structure the organisation of Farm Schools is the notable one. The teachers of the schools could be progressive/achiever/successful farmers where students are the leaders of Commodity Interest Groups (CIGs), Farmers Interest Groups (FIGs) of different village. The main activity of school is to operationalize "Front Line Demonstrations" on integrated crop management includes filed preparation, seed treatment, IPM, INM, etc. The schools also provide season long technical training to farmers. The knowledge and skills of students and teachers could be sharpening through training, and exposure visits at district/state/national level. The responsibility of students is to provide support to other farmers in their respective or neighboring village. It serves as a mechanism for farmer-to-farmer extension at every block.

Commodity Interest Groups (CIGs), Farmer Interest Groups (FIGs) and Food Security Groups (FSGs)

These are operational at village level to serve as a nodal point for information and technology dissemination among its members. The CIGs, FIGs are organisation of farmers at local level who are come together to form a group on the basis of their common interest. The FSGs are specially created for women to encourage them to participate in activities (kitchen gardening, small scale value addition) which can provide food security of the family as well as community.



Organizational structure of ATMA

Agricultural Technology Information Centre (ATIC)

It is also known as <u>SINGLE WINDOW SUPPORT SYSTEM</u>

The foundation stone of agricultural revolution has been the accessibility of improved varieties of crops, breeds of livestock including poultry and fisheries, horticultural plant materials and improved management practices for improved productivity, sustainability and stability of various crop and livestock enterprises. This has raised the hunt by farmers for future availability of seed, planting materials and other materials, trouble-free accessibility to diagnostic services for soil fertility and plant protection, availability of appropriate information through leaflets and pamphlets and increased scope in sale of consultancy services.

Habitually the farmers are not aware as to whom and where to approach for field problems. It is felt that the facilities of a single window approach will unable farmers to have the required information for the solution to their problems related to the areas in which the concerned institute is involved. With these views, the ICAR has taken decision to set up ATICs as a part of World Bank funded National Agricultural Technology Project. In Gujarat, all SAUs are having such centers.

Agricultural Technology Information Centre (ATIC) a **single window support system** linking the various units of a research institutes with intermediary users and end users (farmers) in decision making and problem solving exercise.

The rationale for establishment of ATIC are

1. To provide diagnostic services for soil and water testing, plant and livestock health.
2. To supply research products such as seeds and other planning materials, poultry strains, livestock breeds, fish seed, processed products, etc, emerging from the institution for testing and adaptation by various clientele.
3. Providing information through published literature and communication materials as well as audio—visual aids.
4. Providing an opportunity to the institutes/SAU/s to generate some resource through the sale of their technologies.

The important criteria of Agricultural Technology Information are

1. Availability (or accessibility) of new technologies,
2. Relevance of new technologies;
3. Responsiveness of new technologies to the needs of different categories of farmers; and
4. Sustainability of such unit within the overall institutional system

By building on the past investment in infrastructures in these institutions considerable farm worthy techniques/ technologies/ knowledge material have been developed in the institutions which can provide the techniques, technologies, seeds and planting materials to the farmers and other organizations for taking up the frontier technologies, to the field. This will facilitate in dealing effectively with the complexity and diversity of information system and channels. Such information will be useful for:

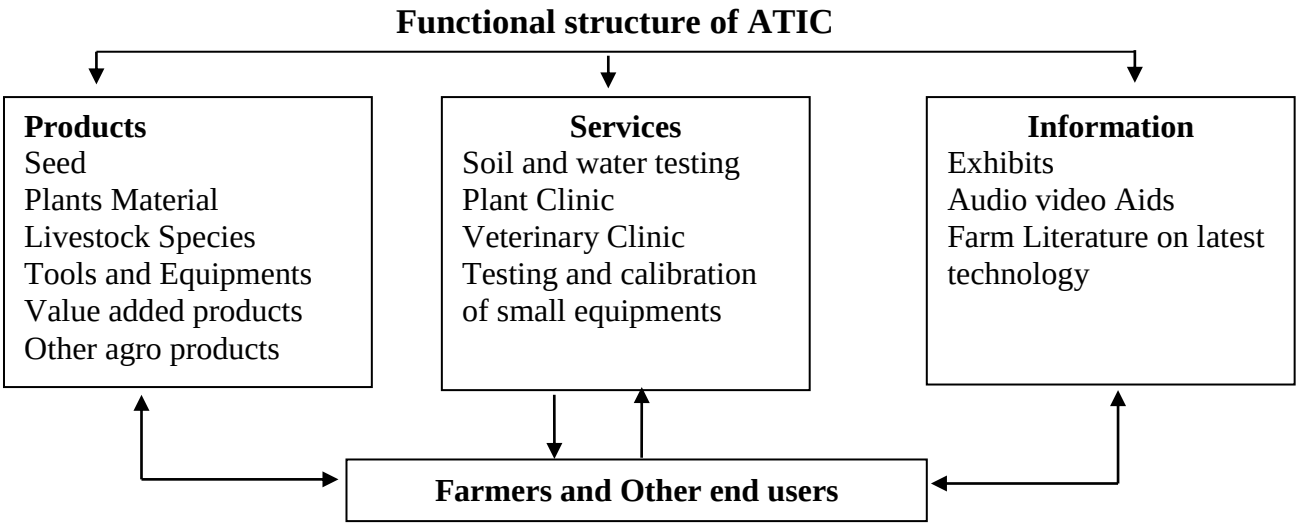
1. Farmers
2. Farmer-entrepreneurs
3. Extension workers and development agencies
4. NGOs and
5. Private sector organization

Objectives of the center:

1. To provide a single window delivery system for the products and species available from an institution to the farmers and other interested groups as a process of innovativeness in technology dissemination at the institute level.
2. To facilitate farmers to access the institutional resources available in terms of technology, advice, technology products etc. for reducing technology dissemination losses.
3. To provide mechanism for feedback from the users to the institute. In addition to supporting individual farmers groups, public and private agencies in supplying quality materials technology, technologies knowledge etc. The information, services and supplies will include:
    - Soil and water sample testing facilities
    - Plant clinic and diagnostic center
    - Biofertilizers and bio-pesticide
    - Bio control agents
    - Seed and planting material, small implements
    - Fertilizer quality testing
    - Insecticide quality testing
    - Tissue culture and plant material
    - Farm literature: leaflets, pamphlets, journal / magazines, booklets, manuals etc.
    - Audio and video on crops and other enterprises.
    - Process products: Cereals, milk, meat, fish, vegetable, fruits, mushroom, honey etc.
    - Cafeteria – (Tea/Coffee/Lassi/Cold drinks/Snakes etc.)
    - Technology Park (Display/Exhibition)
    - Veterinary- Animal clinical service for small as well as large animals
    - Poultry and livestock breads, fish seed etc.

Thus major objective of this system is to supply all the information on technologies, techniques and knowledge and necessary inputs and materials including planting materials, seeds advisory services, diagnostic services from the one place. It receives feedback from the farmers regarding the services of the host institute.

The Functional Structure of ATIC



CHAPTER-11

New Trends in Agriculture Extension approaches

Extension has been, and still is, under attack from a wide spectrum of politicians and economists over its cost and financing. As a result, Extension Systems have had to make changes, by restating the system's mission, developing a new vision for the future, and formulating plans for the necessary transition to achieve the desired change.

1. Privatization of Agricultural Extension Service

Privatization: Process of funding and delivering the extension services by private individual or organization is called Private Extension.

Concept: Privatization of extension refers to services rendered in rural area & allied aspects of extension personnel working in private agencies or organization for which farmers are expected to pay a fee & it can be viewed as supplementary or alternative to public extension services (Sarvanan & Shivalinge 1980).

Privatization approaches

- Share cropping system
- Village extension contract system
- Public extension through private delivery
- Service for vouchers

Strengths of Private Extension System

- More demand - driven rather than supply – driven
- High quality of services in terms of satisfying information needs of clientele, trained manpower, sustained finances and resource allocation
- Provides for an information mix and choices available to farmers
- Enhanced efficiency of staff
- Assure continuous supply and quality agricultural products
- More effective because farmer can select an adviser who is the best able to help
- Healthy competition among service provider will lead to better quality and lower costs for service

Weakness of Private Extension System

- Concentrate on area having favorable physical environment
- More face-to-face contacts (person oriented)
- Increased dependence of farmers and hence exploitation
- No education role
- Deprivation of small farmers
- Hamper the free flow of information

2. Cyber Extension or e-extension

Concepts

Cyber space: it is the imaginary or virtual space of computers connected with each other on Networks, across the Globe.

Cyber extension: it means "using the power of online networks, computer communications and digital interactive multimedia to facilitate dissemination of agriculture technology.

Cyber Extension thus can be defined as the extension over cyber space.

Important tools of cyber extension

E-Mail, Telnet, File Transfer Protocol (FTP), Gopher, Archie and World Wide Web (WWW)

Strengths of Cyber Extension

- Access to the astounding information and continuously available
- Information rich and instantaneously available of information
- Interactive communication
- The information is available from any point on the globe
- Communication is dynamic
- Cut steps from traditional process
- Save money, time and effort
- Multiplicity of purpose

Issues and Concerns of Cyber Extension

- Lack of Reliable Telecom Infrastructure in Rural Areas
- Erratic or no Power Supply
- Lack of ICT Trained manpower (willing to serve) in Rural Areas
- Lack of content (locally relevant and in local languages)
- Lack of Information Services to Rural Clientele
- Low Purchasing power of the Rural communities
- Lack of Holistic Approaches
- Issues of Sustainability

Application of cyber extension

- Village information shops Dr. M.S. SwaminathanResearch Foundation, Chennai
- Information villagers MANAGE in Ranga Reddy District in Andhra pradesh
- Gyandoot net initiative of District Dhar, Madhya Pradesh.
- Warna wired village of National Informatics Center (NIC) in Kolhapur- Sangli Districts of Maharashtra

Some ICT initiatives in India:

Sr. No.	Name of the project	Particular
Web Portals		
1.	aAQUA	Online discussion, archived, multi-lingual and multimedia based.(www.aaqua.org).
2.	KISSAN Kerala	Content processing and dissemination system. Online information, video channel, Tele-advisory, SMS and GIS based agro-services (www.kissankerala.net).
3.	TNAU AGRITECH	Dynamic portal and e-linkage with research stationsand farm sciences centres for agro-advisory services (www.agritech.tnau.ac.in).
4.	AGRISNET	Agriculture Resources Information System Network (AGRISNET) is a mission mode project funded by the Ministry of Agriculture, Government of India to develop a comprehensive online knowledge portal to disseminate relevant information to farmers. Under this scheme most of the State Governments established information rich agricultural websites. For example. Sikkim AGRISNET, Andhra Pradesh agriportal, Uttar Pradesh (UP) Agrisnet, Knowledge Portal (http://agriculture.up.nie.in).
5.	DACNET	In DACNET, 46 web sites and 39 applications are developed, which include web portals on complete information on 9 crop directorates, extension services, Integrated Nutrient Management, Marketing, Mechanisation and Technology, Economics and statistics (www.dacnet.nic.in)
6.	e-Krishi	Web based farm advisory services, market information resource library and online expert advisory (www.ekrishi.org).
7.	ASHA	Relevant and need based agricultural information for the farmers of Assam state of the North-East India. (www.assamagribusiness.nic.in).
8.	India Development Gateway (InDG) portal	Multilingual portal for agriculture and other ruralinformation. Decentralized content management system by 225 institutional partners and others (www.indgdn).
9.	Rice Knowledge Management Portal (RKMP)	Comprehensive information portal on Rice. Separatedomains for farmers, extension personnel and researchers and also e-leaning platform is unique feature of this portal (www.rkmp.co.in).
10.	Agropedia	Agriculture knowledge repository of universal meta models and localized content for a variety of users with appropriate interfaces. Built in collaborative mode in multiple languages. Currently hosts nine thousand pages (agropedia.iitk.ac.in) Web Portals for Market Information and Agri-Business Firms' Portal to Farmers.

11.	AGMARKNET	Market information portal for 2000 markets and 300 commodities in India (www.agmarknet.nic.in).
12.	ITC-e-Choupal	An innovative trading and e-Commerce initiative in agriculture. Reaches 4 million farmers by 6500 e-Choupals spread over 40000 villages of rural India (www.echoupal.com).
13.	EID Parry	Indiagriline Information and knowledge solutions through Cane Management System and also other support services to farmers at seventy Namadhu Parry Mayyam outlets (Our Parry Centres). SMS alerts for farmers and cane field staff to plan their activity. Centre establishment, operating and service charge is recovered from the farmer from the sugarcane payments.
14.	Indiancommodities.com	User fee-based market information on Cotton, Sugar, Oilseeds, Pulses, Spices, Rice, Wheat, Tea, Coffee.
15.	Mahindra Kisan Mitra	Farm Equipment Sector of the Mahindra Group hosted Mahindra Kisan Mitra, a web portal for the Indian farmers to access wealth of information which is updated on a daily basis. Farmers can check daily mandi prices, read weather updates, latest crop advisories, and agri. related news. The site also provides information of other sections such as crop information, loans, insurance, mandi database, coldstorages/warehouses etc.
16.	IFFCO	Agri-Portal Information for farmers in local language. Web portal and 100 farmers' information kiosks in 16 States.
17.	Agriwatch Portal	The agriwatch.com is the largest agribusiness portal in India and enables access to a large amount of agribusiness related information covering more than 15 sub sectors within the agricultural and food industry. The daily, weekly and fortnightly Agriwatch trade research reports are published
18.	i Kissan	It is a Nagarjuna group initiative to provide agriculture information; specific package ofpractices of crops, animal husbandry, aromatic and medicinal plants, agricultural machinery, allied agriculture, sprayers, rural credit, insurance iKisan crop solutions to the farmers. i Kisan has developed easy-to-use diagnostic packages for different crops which will be provided on demand. Further, it also provides local agri news, weather and market information to the farmers.
19.	Village Knowledge Centres (VKCs)	Founded by M.S. Swaminathan Research Foundation (MSSRF). 101 VKCs were established in Tamil Nadu, Pondicherry,Orissa, Andhra Pradesh and Kerala. VRCs and VKCs are working with 315 partners for implementation and location specific content generation. Demand driven information and knowledge with support services, social inclusion, community ownership and partnership proved critical for the success and sustainability of the initiative.
20.	Village Resource Centres (VRCs)	A collaborative initiative of Indian Space Research Organization (ISRO) and M. S. Swaminathan Research Foundation (MSSRF). 473 VRCs have been set up in 22 States / Union Territories in India. The VRCs are connected

		to Knowledge/Expert Centres like Agricultural Universities and Skill Development Institutes (SDI).
21.	Community Information Centres (CICs)	Community information centres in North-East India e-Infrastructure for accessing rural information needs of farmers and others.
22.	Lifelines India	Connectivity by innovative mix of internet and telephony. Reaches 200000 farmers in three states of India
23.	IFFCO Kisan Sanchar Limited (IKSL)	Voice messages in local languages. 10 Lakh activefarmers benefiting from IKSL's Value Added Services and IKSL enrollment crosses 4 million and 40000 cooperative societies as IKSL retailers.
24.	Fisher Friend	QUALCOMM, MSSRF, Tata tele services and Asutesystem technology jointly implemented mobile based advisory services (instant access to helpful information such as weather conditions, where they can and cannot fish and market prices) to fishing communities of costal Tamil Nadu since, 2007.
25.	Reuters Market Light (RML)	Micro-information Services designed specifically for the farming community was launched by RML in 2009. Currently covers over 440 crops and varieties with more than 1400 markets and 2800 weather locations of 15000 villages in 13 States of India. Timely and personalized information and individual farmers have secured significant return on their investment.
Hybrid Projects (Mix of ICTs and conventional extension methods)		
26.	e-Arik	Internet, Offline CDs and farmer-to-farmer communication and conventional extension methods.
27.	e-Sagu	Agro-advisory services by digital photographs and coordinators for farmers. Jointly developed by Media Lab Asia and IIT Hyderabad. Started in Telangana and Andhra Pradesh.
28.	Digital Green	Farmer participatory video production for agricultural extension. 1681 videos produced and 60313 farmers involved.
29.	Knowledge Share Centres	Information by touch screen kiosks, IVRS, bilingualweb portal and awareness created by screening films & CDs by the Central Research Institute for Dry land Agriculture (CRIDA), Hyderabad. Project covered 51 villages in eight districts of Andhra Pradesh.

3. Market-Led-Extension (MLE)

Concepts

Market: A congregation of prospective buyers & sellers with a common motive of trading a particular commodity.

Extension: It is the spreading/reaching out to the mass

Market-led-extension: Agriculture & economics coupled with extension is the perfect blend for reaching at the door steps of common man with the help of technology.

Dimensions of market-led extension

- Marketing mix: A planned mix of the controllable elements of a product's marketing plan commonly termed as 4Ps: product, price, place, and promotion. These four elements are adjusted until the right combination is found that serves the needs of the product's customers, while generating optimum income.
- Marketing plan: A marketing plan is a comprehensive document that outlines a business and marketing efforts for the coming year. It describes business activities involved in accomplishing specific marketing objectives within a set time frame. A marketing plan also includes a description of the current marketing position of a business, a discussion of the target market and a description of the marketing mix that a business will use to achieve their marketing goals.
- Market Intelligence: It is the information relevant to a company's markets, gathered and analyzed specifically for the purpose of accurate and confident decision making. Market intelligence includes the process of gathering data from the company's external environment, whereas the business intelligence process is primarily based on internal recorded events – such as sales, shipments and purchases.
- Market oriented production
- Use of Technology

Strengths of market-led extension

- SWOT analysis of the market
- Organization of Farmers' Interest Groups (FIGs)
- Enhancing the interactive and communication skills of the farmers
- Establishing marketing and agro-processing linkages
- Advice on product planning
- Educating the farming community
- Direct marketing
- Acquiring complete market intelligence
- Publication of agricultural market information

Production of video films of success stories

- Challenges to market-led extension
- Gigantic size of extension system
- Information technology ט Diverse conditions
- Market intelligence
- Reforms in agricultural extension system

Government Initiatives

- Central warehousing Corporation-1965
- MSP by Commission for Agricultural Cost and Price (CACP)
- Food Corporation of India
- Then some others as: Cotton Corporation of India (CCI), Jute Corporation of India (JCI), National Dairy Development Board (NDDB), Agriculture and Processed food Export Development Authority (APEDA) etc.

4. Farmer--Led-Extension (FLE)

Farmer--led-extension is defined as "the provision of training by farmers to farmers, often through the creation of a structure of farmer promoters and farmer trainers" (Scarborough et al., 1997).

Philosophy and principles

- Farmers and local institutions (e.g. producer organisations or village leaders) should play a key role in selecting farmer-trainers and monitoring and evaluating them. This helps make the programmes more accountable to the community or groups that they serve.
- Farmer-trainers are 'of the community'; they communicate in local languages and are more sensitive to local cultures, mannerisms, farming practices, and farmers' needs.
- Farmer-trainers should be selected on the basis of their skills and interest in sharing information, not just on their farming expertise.
- Farmer-trainers need strong linkages with and support from development agents (whether government, non-government organisation (NGO), or private), the people who train and backstop them. Farmer-trainers generally serve as a complement to existing extension systems, rather than being a substitute for them.
- Facilitating organisations and local institutions need to be proactive in ensuring that women as well as men become farmer-trainers.
- Simple and appropriate reference materials should be made available to the farmer trainers.

Essential Elements of Farmer--led-extension

- The group
- The Field
- The Facilitator
- The curriculum
- Programme leader
- Financing

Special features of Farmer--led-extension

- All learning is field based & it is primary venue for learning
- FLE group learning constantly over the experimentation period
- FLE promotes healthy decisions & quality decisions
- Farmers conduct their own field studies with comparisons or treatments
- Facilitates Farmer-to-Farmer communication

- Field staff serve as facilitators
- FLE is a unique way to educate farmers
- It is an effective platform for sharing of experiences and collectively solving agriculture related problems.

5. Expert system

Expert system is an intelligent computer program that uses knowledge and inferences procedures to solve problems (Daniel Hunt, 1986).

Objectives of developing expert system

- To enhance the performance of agricultural extension personnel and farmer
- To make farming more efficient and profitable
- To reduce the time required in solving the problems
- To maintain the expert system by continuously upgrading the database

Advantages of expert system

- Solves critical problems by making logical deductions without taking much time
- It combines experimental and conventional knowledge with the reasoning skills of specialists
- To enhance the performance of average worker to the level of an expert

Limitations of expert system

- Expensive computer program
- Mostly developed not in regional languages
- Requires AC power and internet connection all the time
- Complex software requires computer skilled personnel

Modules of expert system in agriculture

- COMAX: Integrated crop management in cotton
- SOYEX: Soybean oil extraction expert system
- PLANT/ds: Diagnosis of soybean diseases
- MAIZE: Maize expert system for field crop management
- SEMAGI: Weed control decision making in sunflowers
- Rice Crop Doctor: Developed byNational Institute of Agricultural Extension Management (MANAGE)

Difference between conventional and expert system of extension (Bahal *et.al.,* 2004**)**

Conventional Extension	Expert System of Extension
➢ Universal approachability of same information is a problem	➢ Universal approachability of same information is possible
➢ Information is given whatever is available without considering needs and resources	➢ Information is chosen based on their needs and resources
➢ No Cost benefit analysis	➢ Cost benefit analysis
➢ Information flow depends on availability of agent	➢ Information through Cyber Cafe at any place at any time
➢ Require users to draw their own conclusion from facts	➢ Conclusion is drawn based on the decision given by the expert

CHAPTER-12
Monitoring and Evaluation

Concept

Monitoring and Evaluation are the two management tools that help in keeping a control on the business activities as well as raising the level of performance. **Monitoring** refers to an organized process of overseeing and checking the activities undertaken in a project, to ascertain whether it is capable of achieving the planned results or not. Conversely, **evaluation** is a scientific process that gauges the success of the project or program in meeting the objectives.

Definition of Monitoring

Monitoring is the systematic process of observing and recording on a regular basis, the activities carried out in a project, to ensure that the activities are in line with the objectives of the enterprise.

Monitoring takes into account optimum utilization of resources, to assist the managers in rational decision making. It keeps a track on the progress and checks the quality of the project or program against set criteria and checks adherence to established standards.

The information collected in monitoring process helps analyse each aspect of the project, to gauge the efficiency and adjust inputs wherever essential. It keeps track of project inputs and outputs such as:

- Activities;
- Reporting and documentation;
- Finances and budgets;
- Supplies and equipment.

Definition of Evaluation

Evaluation is defined as an objective and rigorous analysis of a continuing or completed project, to determine its significance, effectiveness, impact and sustainability by comparing the result with the set of standards. It is the process of passing value judgment concerning the performance level or attainment of defined objectives.

In short, evaluation is a process that critically assesses tests and measures the design, implementation and results of the project or program, in the light of objectives. It can be conducted both qualitatively and quantitatively, to determine the difference between actual and desired outcome.

Difference between Monitoring and Evaluation

Indicators	Monitoring	Evaluation
Meaning	Monitoring refers to a routine process that examines the activities and progress of the project and also identifies bottlenecks during the process.	Evaluation is a sporadic activity that is used to draw conclusion regarding the relevance and effectiveness of the project or program.
Related to	Observation	Judgment
Occurs at	Operational level	Business level
Process	Short term	Long term
Focuses on	Improving efficiency	Improving effectiveness
Frequency	Continuously throughout the life of a project	In the middle and at the end of a project
Main Action	Keeping track of progress	Assessment of progress
Main participants	Project staffs, partners and stakeholders	External evaluators, facilitators, project staffs, donors and stakeholders
Information Sources	Internal documents monthly/ quarterly reports, work plans, travel logs, minutes	Both internal and external documents policy documents
Undertaken By	Often done by internal staffs, project Managers, field officers and supervisors	Often done by external evaluators, Project staff, or participatory
Relation to Design	Usually accepts design	Usually free to challenge design
Answer for	Answers what activities were implemented	Answers why and how results were achieved. Contributes to building theories and models for change

CHAPTER-13
Transfer of Technology (ToT)

There is increasing use of the term transfer of technology (TOT) by extension practitioners now a day. Can technologies be transferred mechanically in linear fashion? Do the terms ‘extension’ and ‘TOT’ mean one and the same thing? TOT includes more than mere dissemination of information. There are many conceptual model of TOT emphasizing on different elements of process. Extension can play crucial role in preventing imbalances caused due to input intensive of new agricultural technology among resource poor farmers. In fact, extension can create awareness and equip both farmers and scientists to work together to generate technologies appropriate to the local situation. It requires new methods and perspectives to work in close touch with people. It is in this context that new concepts like Farming System Research and Extension, Participatory Technology Development, Participatory Rural Appraisal, Rapid Rural Appraisal, Indigenous technological Knowledge, etc. are becoming more meaningful.

Technology refers to ways to making or doing thing. The term 'technology' derived from the Greek word*'tekhne'* meaning 'art' or 'craft' and logia, meaning an 'area of study.

In past, technology often ran ahead of science. Things were often done without precise knowledge of how or why they are done except that they were effective. Technology is as the means by which material / things are being produced. It is the application of science and technical advance to the production of materials to serve human needs. The technology is a replaces of human energy by mechanical energy, using natural sources of energy.

The degree of acceptance of a technology depends on five criteria: (i) relative advantage, (ii) compatibility, (iii) minimum complexity, (iv)trialability and (v) observability.

The concept of technology can be defined simply to mean the application of science in the development, production, utilization or application of materials or things or methods of undertaking a certain activity or work (Hashim, 1978).

Technology is scientific knowledge which is being utilized to solve various practical problems experienced by mankind.

Samanta (1985) defined agricultural technology as a body of systematically organized knowledge and materials applicable to local production problems to help to boost thepresent level of productivity and or extend the existing range of production.

What is Transfer of Technology?

Transfer of technology can be defined as the movement of relevant agriculture information from a research (source of technology) or an innovation system through extension system (which acts as an interpreter, disseminator and facilitator) to the client (consumers of technology) system, i.e., the target group of farmers who are expected adopt and integrate the new technology into the existing farming systems and practiced (Samanta, 1985).

Extension vs ToT

One of the goals of extension is to transfer technology and in the process the extension agent is involved in education of farmers as well as arranging for the technical inputs and services, and hence, many people consider extension and transfer of technology as one and the same. However, Swanson and Claar (1984) argued that though extension is an essential and major part of technology transfer the terms are not synonymous. Transfer of

technology includes additional 'function of technical input services. On the other hand extension is concerned mainly with education of farmers on management of resources and decision-making skills, which may contribute to technology transfer. Hence, it is necessary to understand that the focus of extension is on education of the farmers rather than supply of technical inputs and services. Because of the misconception about the role of extension, many institutions lay emphasis on supply of inputs and technical -services, which are included as extension activities. However, extension agencies 'frequently engage in activities that are not directly connected to extension education such as provision of inputs, supervising credit repayment, enforcing 'government regulations, providing statistical information, organizing cooperatives etc, (Arnon, 1989). Whether supplying of technical inputs and services is a part of 'extension' or not is still a debatable issue.

Models of TOT

1) **Top-down-Model (Conventional Model)**

Salient features of Top-down Model

- Farmers were seen as passive recipient of technologies.
- There was little or no contact between farmers and scientists.
- Role of extension was to persuade farmers to adopt new technologies.

Such approach was evident in green revolution. In this model/approach client's problems and views were not given due consideration for solving their problems. The T & V syatem is one of the examples of top down ToT model.

2) **Feedback Model**

This model has become popular with the growth of FSR and incorporation of on farm experimentation into agricultural research methodology.

Salient features:

- Researcher values identification of target group, his problems and reaction.
- Close interaction between research and extension system.
- Researches are carried out both on research farm as well as farmers fields.
- Team of researchers included extension personnel as well as social scientists to have a holistic understanding of farmers' problems.

3) **Farmers Participatory Models:**

There is recent need trend to strengthen farmers‟ capacities for research and extension for enhancing sustainable development in rural areas. The new model is based on several observations about the research and extension initiatives in many areas of the world. By virtue of keen interest, strong affiliation with vocation and experience, farmers have inherent interest in experimentation with new way of farming. Their indigenous wisdom and understanding of agroecological conditions are great resources for evolving appropriate technologies. Thus new model had taken a stand that researches must begin and end with farmers.

The characteristics of such approach are as given below:

1. Farmers are seen as active partner in research and extension.
2. Indigenous wisdom possessed by farmers are valued and considered.
3. Research is seen a joint endeavour involving farmers and researchers to solve problems being faced by farmers.
4. Establishment of physical infrastructure and educational facilities for strengthening local experimentation is an essential aspect of participatory model.

5. It emphasis on the need for scientists to become more sensitive to understand, communicate and collaborate with farmers.

ATMA is an example of this type of ToT model.

4) Farmer-back-to-Farmer Model

An alternative to the above two models is the ‘Farmer-back-to- Farmer' model (Rhodes and Booth, 1982). The underlying assumption of the model is that research must begin and end with the farmer. It turns the top-down model completely on its head by starting with the farmers. This means that farmer must be incorporated as fully active members of the problem solving team.