Organic Farming for Sustainable Agricultural Production

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Lecture – 04
Organic Farming Concepts and Principles

So, I welcome you all for the lecture 4, Organic Farming Concepts and Principles. So, we have discussed earlier regarding the introduction to organic farming and components of organic farming. So, in this lecture, we will discuss the fundamental concepts of organic farming and principles of organic farming.

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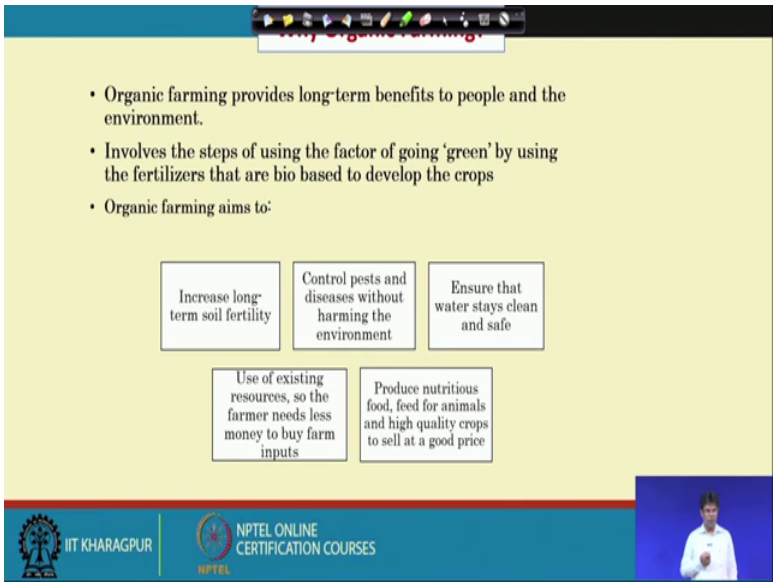

If you think; the why you go for organic farming, the organic farming provides long term benefit to people and the environment. It involves the steps of using the factor of going green by using the fertilizers that are bio based to develop the crops, grow the crops in a green environment.

In general, organic farming aims to increase long term soil fertility. As you know soil fertility that decides the growth and development of the crops. So, maintenance of soil fertility on long term basis very essential to have a better production through increased productions in a sustainable environment.

And the organic farming aims to control pests and diseases without harming environments as we discussed last class because the yield effect of the chemical pesticides; how that affects human health? How the organic farming can be helpful in minimizing the pest residue in crops and without minimizing or without affecting the crop yield?

Thirdly organic farming ensures that water stays clean and safe. So, you know, we the we want a good air to breath at the same time, we want a good quality of water drink, through organic farming as we minimize or we eradicate the use of chemical pesticides or fertilizers. So, it can ensure a good quality water and clean water for drinking.

Fourth one, it produces nutritious food, feed for animals and a high quality crops to sell at good price. Organic farming as we discussed so the quality of the foods are better as we discussed last class; because of the balanced nutritions, supplying both macro and micro nutrients. At the same time the stress physiology that increases the quality of the crops through the increase in a concentration of polyphenols in the plant. And finally, this aims at use of existing resources.

So, the farmers needs less money to buy farm to buy the farm imports because if you recycle the resource available in the farm that can minimize the external use of inputs. So, this is we are aiming for this say organic farmings.

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So, in earths in grew, you see the objectives; the number 1- produced food with higher nutritional quality, this is the main objective of the organic farming. So, better quality of the produced healthy foods, healthy diets that can be achieved through organic farming. And secondly, we work closely with the natural systems. We do we work in a harmony with the natures that is a work with natural systems.

Number 3- maintain and increase soil fertility. So, as you discussed, this is because soil fertility to be maintained on long term basis. Because soil provides the physical support of the plants and also that helps in the nutrient release part in the soils in the that can be available for the crops for its proper growth and development. Number 4; use the renewable resources as far as possible. So, that is your one of the components of organic farming.

So, we natural resources are use the renewable resources in this through for the nutrients managements in organic farming. So, this avoids all sorts of pollutions at the air pollutions, soil pollutions and the water pollutions that is avoided through organic farming.

Number 6- wider social and ecological impact of farming system .Through organic farming, we say the nature farming. So, this is socially acceptables and it has a ecological harmony the farming community. And number 7 allows satisfaction to agricultural producers. So, farmers friendly. So, farmers gets own satisfactions by using organic farming. So, this is in brief, say this is the objectives organic farming and these are the each objectives that is based on the concept that give the concepts.

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Concepts

- Work as closely as possible in closed cycles and use local resources
- Preserve the natural fertility of the soil
- Avoid all forms of pollution that arise from farming practices
- Promote tillage practices that show most concern for the environment and Nature
- Produce foods of optimal nutritional value

So, this is the concepts you say the in describing the concepts work as closely as possible in closed cycle and use local resources; the twins as you discussed in last class too.

So, this is a zero emission concept, integrated farming system concept where there is no waste in organic farming. The output of one component that becomes input of another components. So, that is a in a closed cycle, the closed chain say as a organic farming integrated farming systems and use the local resources or natural resources as far as possible. We avoid the use of off farm or the external inputs should be reduced in the organic farming.

Then preserve the natural fertility of soil. So, the soil fertility has to be maintained or that may be improved through this the concept of the organic farming where we maintain the fertility and improve the soil fertility on long term basis or diseases.

There is a concept of organic farming avoid all forms of pollution that arise from farming and this either air pollutions, water pollutions or the soil pollutions. Then promote tillage practices that show most concern for the environment and nature. So, in other countries, I can say the developed country like a US, their tillage practices has been changed from the conventional through minimum tillage practices.

So, that we can minimize the emission of greenhouse gases. So, called the carbon dioxide from the soil that atmosphere because by rapid opening or the opening of the soils through conventional tillage. So, more that causes more emission of carbon dioxide to the atmosphere. So, in organic farming, we need to go for the minimum tillage; so that we should minimize the global warming potentials.

Then produce foods for of an optimal nutritional value; of course, there is a discussed ah. So, in organic farming that ensures high quality or the better quality of fruits.

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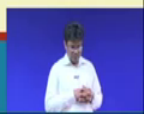
Concepts

- Reduce the use of non-renewable resources in agriculture, including fossil fuels
- Work to ensure that the waste products from towns and food industries achieve a quality that allows their re-use as fertilisers in agriculture
- Provide all animals with living conditions that satisfy their natural behaviour patterns and needs
- Do everything possible to ensure that all living organisms that the farmer works with are allies, (be they micro-organisms, plants or animals).



And reduce the use of nonrenewable resource in agriculture include the fossil fuels. So, by doing the; so, organic farming we can minimize the use of nonrenewable resources. We can encourage the use of the renewable resources in organic farming. Then work to ensure that the waste products from towns and the food industries achieve a quality that allows their re-use as fertilizers in agriculture. So, when eco organic farming. So, the food industry waste or the industrial waste that can be converted to bio fertilizers that can be converted to useful manures

and that can be used in organic farming.

Provide all animals with living conditions that satisfy their natural behaviour pattern and needs because as animal is an integral component of organic farming. So, we must provide the animals with living conditions that satisfy their natural behaviour and pattern.

Then do a breathing possible to ensure that all living organisms that farmers works with are allies; that means, both microorganisms plants and animals. So, they are the components of the organic farming in the Bezier circles. So, they should be proper harmony between all the components, all the living organisms.

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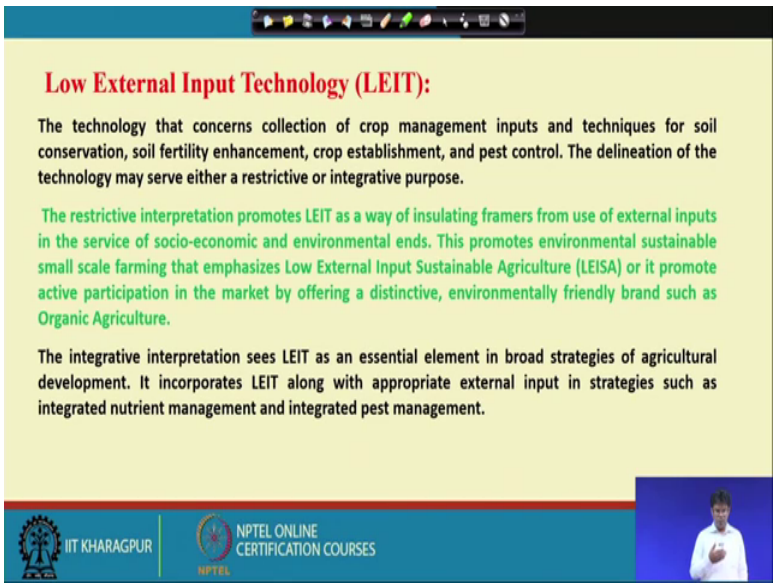

So, now if you go for the organic farming in the concept came that say we want to avoid the use of the off farm inputs. So, you want to use the in farm on farm inputs that is a called low external input technology. So, what is low external input technology? This technology that concerns collection of crop management inputs and technique for soil conservation, soil fertility enhancement, crop establishment, and pest control. The delineation of the technology may serve either a restrictive or integrative purpose.

So, a low external input technology where use only the inputs of the farms, they are recycled back the organic farming. So, minimum are the no use of farm inputs in organic farmings. So, the for the practices, we can use low external input technology soil conservation, soil fertility enhancement, crop establishment, pest control; this was the components.

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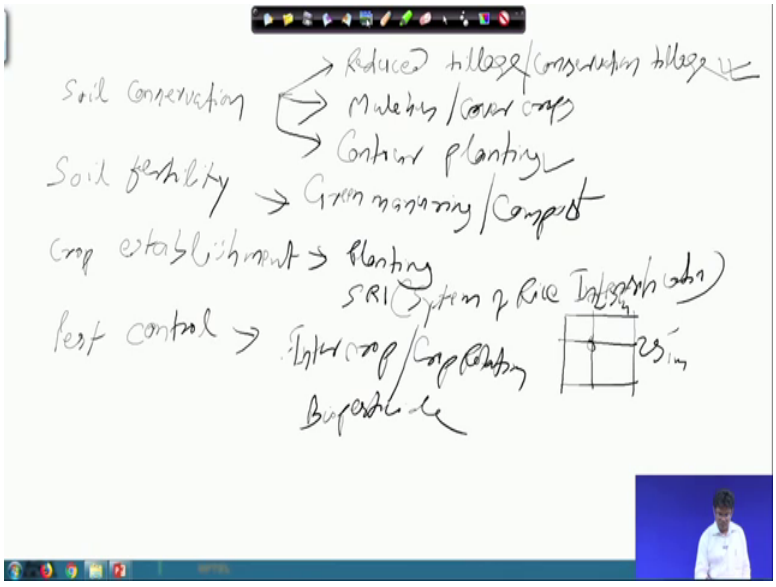

We had link for soil conservation; soil conservation, soil fertility enhancement, soil fertility crop establishment, pest control. So, low external input technology for soil conservations, we can go for reduced tillage or you say as conservation tillage mulches or cover crops.

So, physical measures as a contour planting. So, when a purpose is soil conservations either for the to protect the soil from wind or water erosions, then you go you go for the contour planting is a physical method as we plant the crops across the slopes. So, that the soil loss can be minimized through contour planting.

And reduced tillage or conservation tillage, this is also one of the method of the the tillage practices that can minimize soil losses. So, through minimum tillage the less opening of the soils, there is arows on tillage that tillage care] operation can be performed only in the row zones where the crop has to be a planted. So, the in that case we can build the soil fertility on long term basis.

We can minimize the emission of carbon dioxide atmosphere also we can increase the soil microbial populations through minimum tillage and the say conservation tillage ah. So, this has one the minimum tillage or you can have a stubble mulch tillage where these stubbles can be left on the soil surface. So, it can add thus fertility value to the soils and also it can increase the water in filtrations the water holding capacity of the soil. Then mulches and the cover crops; so, you can have the bio mulches and the cover crops like short growing crops can be growns and the legume crops can be growns and also they can be that the straw that the left or materials can be incorporated in the soil. So, it is your soil conservation where you for where are the techniques for the LEIT; the low external input technology.

Similarly, soil fertility enhancement; it can be either the green manures green manuring or compost; that means, we can go for the green manuring and the compost of applications. So, that we can maintain soil fertility on in long term basis.

And the crop establishment; that means, how we can establish crop in the seedbed; so, either the planting for example, I can give your if you go for the planting in case of rice example that is SRI; System of Rice Intensification; that means, the planting technique the plant population of seedbeds and the water management.

So, in case of SRI. So, you are using only one seedling and you are the wider spacing around 25 centimeter and 25 centimeter; row to row and plant to plant spacing wider spacing; with the wider spacing of social in the centers. So, spacing is o 25 centimeter and one seedling per heal and only shallow water saturations in that case, it enhances the more healer formations

and the better uptake of the nutrient by the crop less competitions among the seedlings and that is one of the component that leads to higher productivity.

So, crop establishment by providing the proper space, optimum spacing, crop geometry; their spacing must be maintained during planting or the swing of the crops and the proper conditions soil moisture should be maintained. So, that the initial establishment of the crop can be well performed.

Then the pest controls; so, as you discuss pest controls, inter crops intercrop or crop rotation or bio pesticide. So, these are the ah pest control inter crop or crop rotation. So, that we can minimize the pest populations and the bio pesticides as a ah bio control agents those can be used for minimizing the pest and disease and the weed population of course, in the field. So, these are the some of the soil conservation, soil fertility enhancement, crop establishment or pest control low external input technology.

So, this low external input technology, those can be as a as part of the organic farming; as you say these are the two purposes: one is called the LEIT as you say, L low external input technology.

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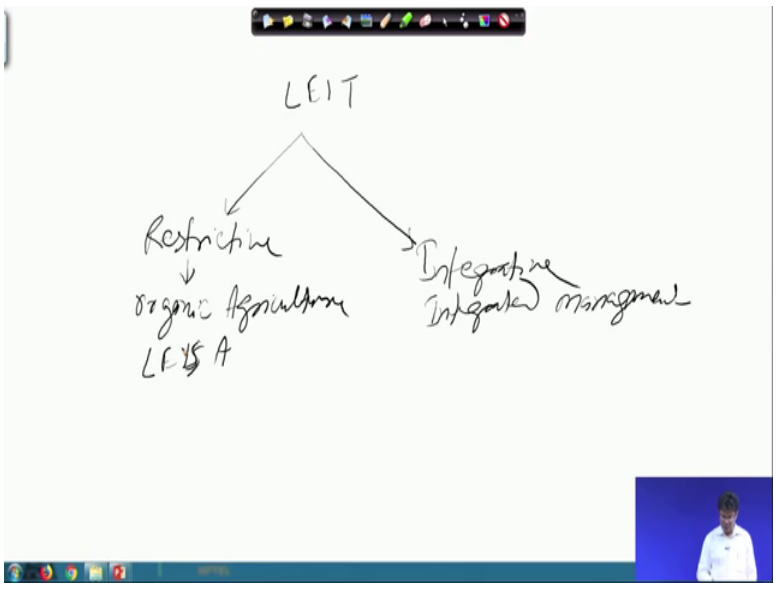

So, either it is a restrictive or integrative or this may be integrative. So, low external input technology restrictive means, it insulates farmers from use of any insecticides or chemical pesticides or chemical fertilizers. That is a fully organic farming that is a branded as organic agriculture.

In case of integrative So, here so, the farmers usually use the part of the some parts of chemical fertilizer or the chemical pesticides are allowed. So, it is known as the integrated management that includes the use of the both chemical and organic sources that is integrative and restrictive means; so, there is no use of any chemical fertilizersor the chemical pesticides that is complete purely branded as a organic agriculture or integrative purposes means the of the total nutrients some parts may be organic and some parts may be chemicals or the integrate pest management also that includes different methods of pest management that integrative pest management.

So, these are the low this is in restrictive known as low external input sustainable agriculture is a restrictive one, there is no use of any chemical fertilizer pesticides. There is no low external input sustainable agriculture. So, this is a low external input technology. So, the restrictive purpose and the integrity purpose.

The restrictive interpretation promotes LEIT as a way of insulating farmers from use of external inputs in the service of socio economic and environmentally ends. This promotes environmental sustainables, small scale farming that emphasizes low external input sustainable agriculture or it promotes active participation in the market by offering a distinctive environmentally friendly brand such as organic agriculture.

So, as we discussed this is a low external input technology, small scale farming where the it completely insulating farmers from use of external inputs. So, only on farm inputs and organic inputs are used that is low external input sustainable agriculture.

The integrative interpretation since LEIT as an essential element in broad strategies of agricultural development, it incorporates low external input technology along with appropriate external inputs in strategies such as integrated nutrient management, integrate pest management. In cases so, there is an issues when the some crops we need to go for the integrated managements. Specially the cereals where the crop nutrient requirement is very on the specific growth stages in that case. ah You want to supply nutrients in a particular amount at the particular growth stages and some crops like non deterrent crops like legumes crops where they require nutrients as a at the continuous.

So, depend upon the crop type. So, what type of management should be there the purpose is not to minimize the loss in crop yield to maintain the crop yield using the through the organic farming.

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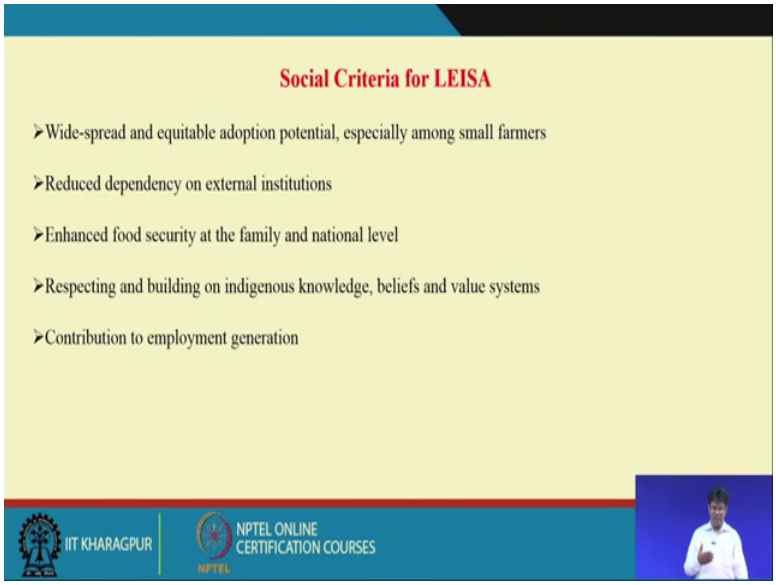

So, the social criteria for the low external input sustainable agriculture is widespread and equitable adoption potential especially among the small farmers reduced dependency on external institution, enhanced food security at the family and national level, respecting and building on indigenous knowledge beliefs and value systems, then contribution to employment generation. So, usually a organic farming as you discuss the ecological farming the traditional farming. So, farmers they have their traditional knowledge say before the use of the insecticides or the pesticides, the farmers use to control use to take care of the crops against the insect pest and disease and they used to grow the crops as a normal practice form using only farm and manures. So, there are some the indigenous knowledge. So, that should we considered toward the knowledge in the agricultural field. So, they have also some scientific findings. So, linkage of indigenous knowledge to scientific finding that should be looked into too.

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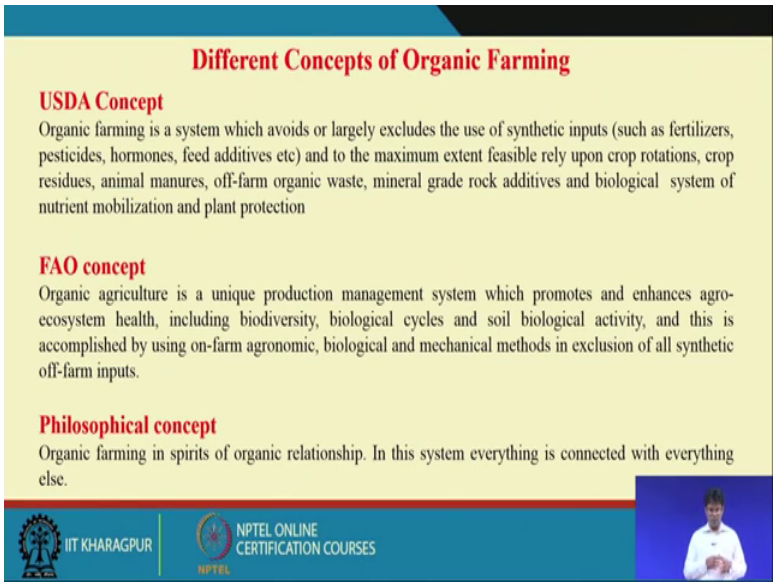

So, there are different concepts of organic farming, I have say the USDA concept; that means, organic farming is a system which avoids or largely exclude the use of synthetic inputs and to the maximum extent feasible rely upon crop rotations, crop residues, animal manures of farm organic wastes, mineral grade rock additives

and biological systems of nutrient mobilizations and plant protections the food and agricultural organization concept.

Organic agriculture is a unique production management system which promotes and enhance agro ecosystem health including biodiversity, biological cycle and soil biological activity and this is accomplished by using on farm agronomic biological

and mechanical methods in exclusion of all synthetic off farm inputs. Then philosophical concept organic farming in spirit of organic relationship that is in this system everything is connected with everything else. So, you can say these and the different concept also will be discussing the other class continuing classes the how this different type of organic farmings

and then the principles of organic farmings based on the concepts. We have the principles ,we have we will discuss different type of organic farming based on this concept ecological farming, biodynamic farmings and how the HOMA farming also that is as discussing the indigenous knowledge. They are link to the scientific understanding.

So, as farmers we are doing their the cultivations in the primitive ages when there was no pesticides, no fertilizers. So, we look into this and the continued class we will discuss in detail this farming concept and also these principles of organic farming.

Thank you.