Organic Farming for Sustainable Agricultural Production

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Lecture - 37
Organic Standard

So, good morning to all. So, I welcome you to the lecture 37, the last week of this lecture organic standards. So, we have discussed earlier. So, with respect to the organic farming for sustainable agricultural productions; we discussed about the principles and the concepts of organic farming, as a introduction to organic farming. In the nutrient management or the productions of the organic fertilizers like a vermicompost or enriched vermicompost. The plant protection measures how you can prepare the bio pesticides, botanical pesticides from the plant extracts, that can be used for protecting pest and is a crops. And also we discussed about the management practices of field crafts, horticulture crops and plantational crops in organic farming.

The nutrient management lamb preparations, production practices and the pest and its controls in for the organic crop protections. We also discussed the organic means the how the organic foods can lay to the better health, antioxidant capacity of the foods and vegetables, how the produce of the organic or origins are the better than the produce of the conventional products. Today will be discussing about organic standards, because no as I have gone through the classes, you know the how you can produce crops organically, how can you manage your crops, and also the crop planning transition to organic farming. So, the some sets of rules or the standards are established for the organic productions.

By knowing this standards, so this helps in building a trust between the producers and the consumers because bringing transparency between the producers and the consumers and also it can help in a better marketing of the organic foods and bringing the brand of the organic foods and having the consumer confidence on the organic foods by having some set of organic standards.

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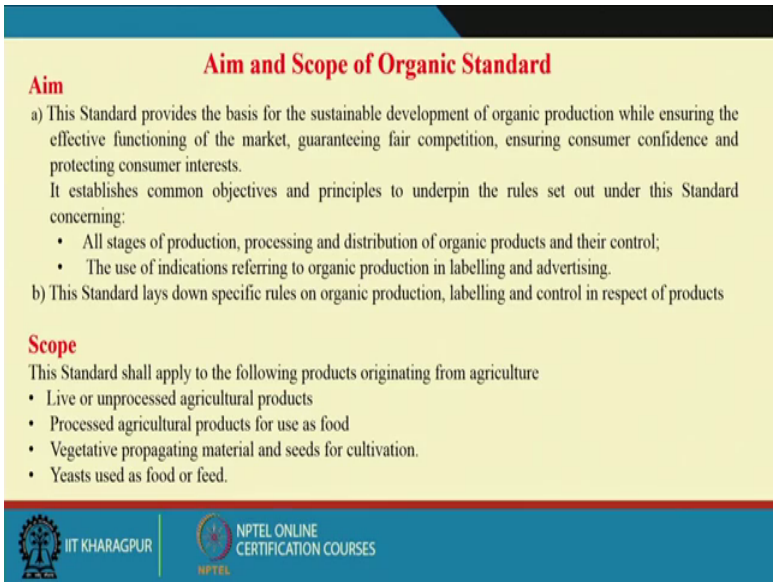

So, in this the, what is the aim of this and the scope of this organic standards. Means this standard provides the basis for sustainable developments of organic productions while ensuring the effective functioning of the market. Because as you are going for the organic market this is a challenge because unlike the European countries or the developed countries were this has gained a momentum already is established organic farming, organic products are the better preferred by the consumers and the consumers want to pay the premium price for the organic products pickers. So, already is a trust building because certification is very strong and if the produce is organic the consumer have assurance is a organic foods.

So, that type of marketing or the organic foods and guaranteeing fair competition some with the conventional products. And ensuring consumer confidence that is very very important the consumers should be satisfied about this produce and protecting the consumer interest. So, it establishes the common objectives and principles in the, to underpin the rules set our under this standards concerning that means, all stages of productions, processing and distribution of organic products and their control.

So, there is a setup standards governing as you have discussed earlier the organic productions principles and practices, and this the including your land preparation, nutrient management and plan protection measures, and the transition plan how you can follow for the organic certification process that is from the productions, and the

processing, till up to the market distribution; then, the use of indications referring to organic productions in labelling and the advertising also.

So, these are the aims of the organic standards this, also the standard lays down the specific rules on organic productions, labellings and control in respect of products. And the scopes this can standards are applied to the following products originating from agricultural productions that a live or unprocessed agricultural products then, processed agricultural products for use as a food, then vegetative propagating materials, and the seeds for the cultivations, then the yeasts used as a food or the feed material. So, this can be included for the organic standard purpose.

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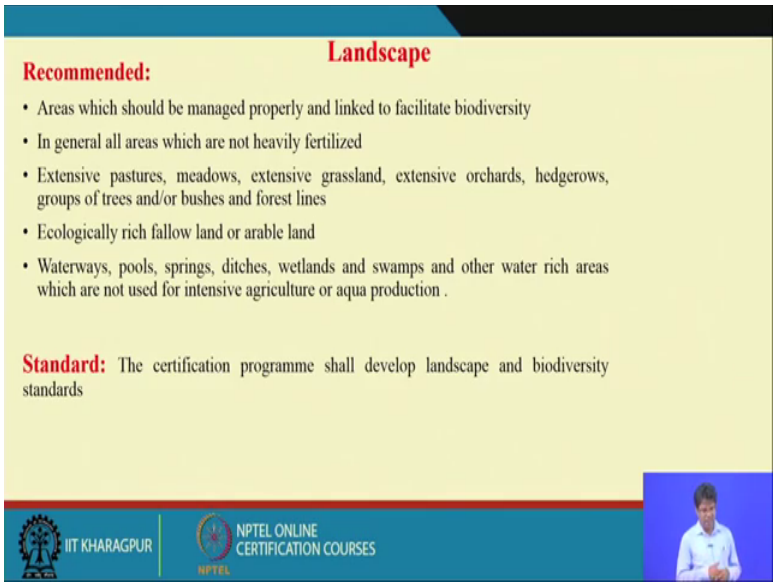

So, for this if you go for the organic standard starting from the land preparations up to as we are dealing with the harvest and the post harvest processing, will deal with our standards involved for the organic certification process for the landscape, the land resource recommended thing. So, which is recommended for the organic production, these are areas which should be managed properly and linked to facilitate by facilitated the biodiversity.

So that means the growing different crops of many varieties of crops. So, the accommodate as a rule of principles of organic farming. So, maintaining the genetic biodiversity, various property many crops and many varieties of a particular prop can be grown. In general the area should not be heavily fertilized, usually can choose the land

which is less fertilized or layer not intensely fertilized or may be the land which is not cultivated earlier that can be used for the organic farming purpose.

Extensive pastures meadows and grasslands, extensive orchards, hedgerows, trees and the forest line also can be used for this organic from productions. Ecological rich fallow land or the arable land that is a fallow lands, the land which was not cultivated for longer periods remaining fallow and the arable lands land can be cultivable arable lands. So, those can be used for the organic productions standards. So, the water ways or the pools the springs, ditches, wetlands, swamps and other watery areas which are not used for the intensive agriculture and aqua culture production that also can be converted to organics. The standard the certification programs are developed landscape and the biodiversity standards.

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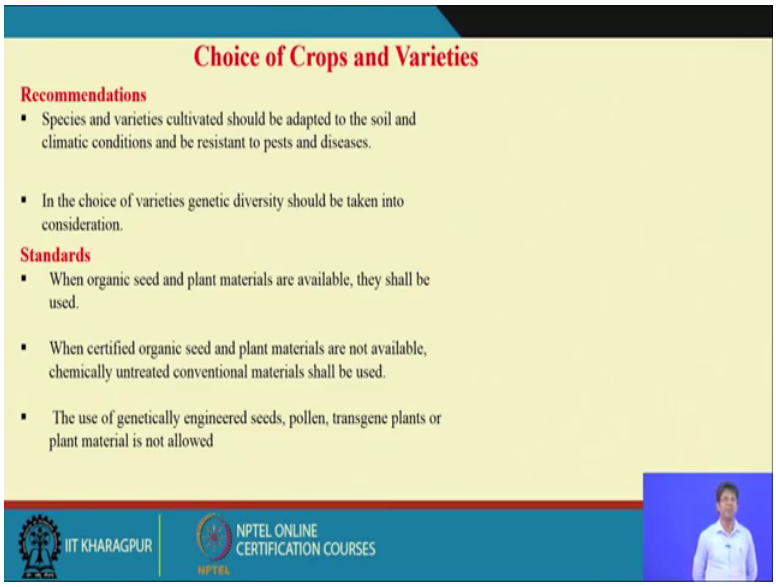

So, then we go for the once should the lands. Lands should not be heavily manure or heavily fertilized, the land should be very fallow lands which because (Refer Time: 07:38) or the fallow for the last several years, can be used for the organic productions. And the arable lands, that is a suitable for a cultivation of crops for growing of the crops those lands can be chosen for the organic, organic production. So, one chose the lands then you can see the varieties or the crops or the varieties which can be selected for the organic farming or the organic production purposes.

So, there are some recommendations, and that means, the spices and varieties cultivated should be adapted to the soil, and climate conditions and we resistant to several phase and this is a that means, the spices or the cultivars we are choosing so that should that should suitable for particular soils and particular climatic conditions. And also that cultivar should have the resistant to many pests and diseases. And the choice of varieties of genetic diversity should be taken into consideration because that is as a bad diversity we consider, as a bad diversity as a components of the organic farming.

Standards: when the organic seeds and the plant materials are available, they must be used for the organic production practices. In case when the certified organic seeds and the plant materials are not available, so chemically untreated conventional materials can be used; it may not be perusable all the times to get the organic seeds or the organic plant materials for the purpose of the growing of the crops. So, when there is a this organic seeds and plant materials are not available, then conventional seeds are the plant materials are allowed. We can use provided this should not be treated with any chemicals.

The use of genetically engineered seeds pollens, transgene plants or the plant materials are not allowed in organic production. So, this materials are prohibited specially the genetic G or GMO, genetically modified organism they are strictly prohibited from the use of the organic farming.

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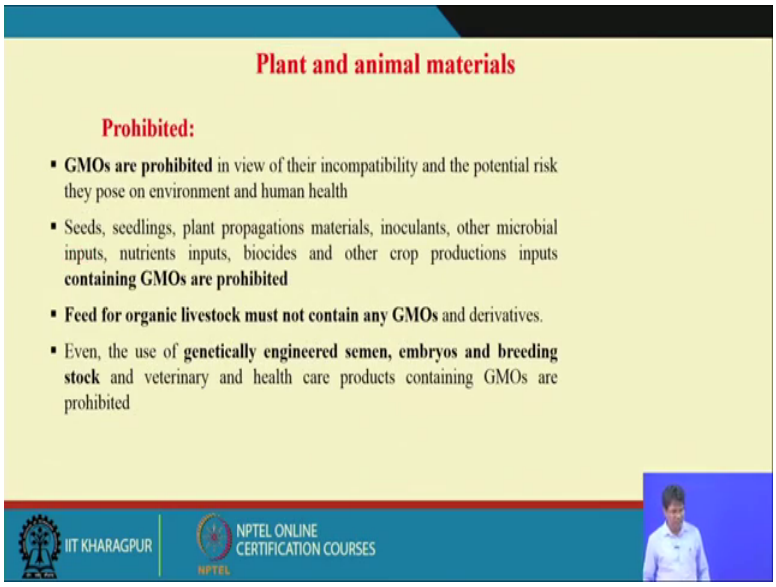

So, the plant materials those are prohibited are not allowed the GMO such a genetically modified organisms which have discussed the classes also. Then we incompatibility and the potential risk they pose on environment and the human health. So, they are not allowed the seeds, seedling, plant propagations materials, inoculants, other microbial inputs, nutrient inputs, and the biocides, and other crop production inputs containing GMOs are strictly prohibited from use of the organic productions.

Feed for organic livestock must not contained any GMO and their derivatives. Even, the use of genetically engineered semen, embryos and breeding stock and veterinary and the health care products containing GMOs are prohibited. So, GMOs they are not used, though we are now the in Europe also some (Refer Time: 10:56) they allow for the GMO crops because there is a high yielding to increase the production and protect from the use of pesticides and the fungicides. So, they allow, but in India. So, in organic farming as a natural farming we do not permit do not allow GMO crops because it has a potential health risk to avoid here the health risk or the to avoid the adverse effect on the human health. So, we must have a GMO seat, GMO in organic production.

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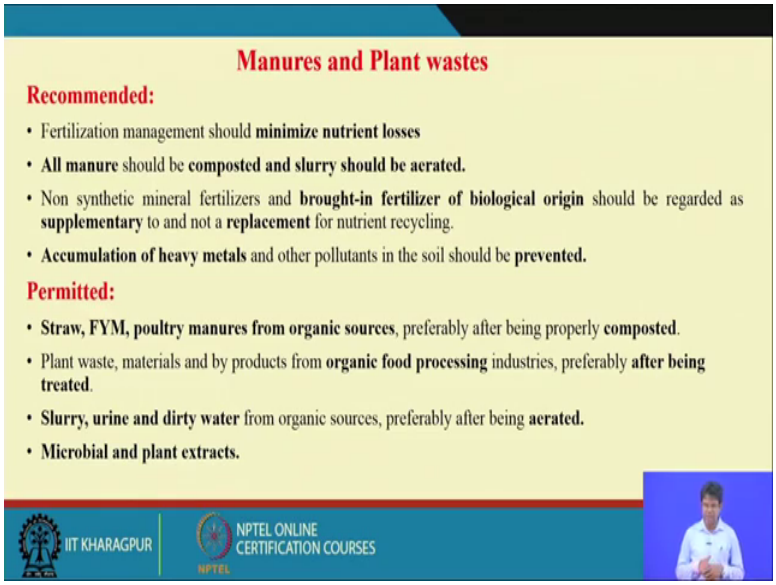

Manures and plant waste more about the GMO crops unless until you establish because you this is a the because the potential health risk may happens as a cumulative after few years you can have the adverse effect of the GMO crops on human health. So, once you have this seed material of the planting stocks and the know the lands for the organic

farming, then next comes your the manures, the inputs and the plant waste are the inputs for the organic productions.

So, what are the inputs are recommended? The manures and plant wastes; so fertilizers and management should minimize the nutrient losses because when you go for the manure management or the fertilizer managements, we have discussed in the production practices what is the time of applications and method of applications, how we can properly incorporate in the fields. Even if the organic manures are the vermicompost there should be well incorporated in the field at proper depth so that the loss will be minimum to the atmosphere and also that can be a better utilization by the crops.

So, that is a minimum loss to the nutrients all manures should be composted and slurry should be aerated. We should not use any on uncomposted undecomposed manures in the field, because if you are using the fresh manures I will say fresh waste materials are the fresh cow dung you been applying in the field that has a adverse effect on crop growth and development because the microbes are used for the decompositions of this waste materials in the field itself.

So, the crop may suffer from the lack of nutrients from the in the field. So, to avoid that one the all the manures should be properly composted before their application to the crop field and slurry also should be aerated. So, because it can removed by (Refer Time: 13:13) the can be odorless to minimize the odor and also to minimize the emission of greenhouse gas to atmospheres.

Non-synthetic mineral fertilizers and brought in fertilizers of biological origin those should be regarded as supplementary to and not a replacement of nutrient recycling because as you say that for organic farming principles also we have discussed. So, should be it should be originated from the farm itself all the waste materials should be composted, in the farm itself and the brought in materials should be avoided as much as possible.

Then accumulation of heavy metals and other pollutants in the soil should be prevented. So, these are the recommendations for the manures and the plant waste. What are the permitted for the organic farming? As you have discussed earlier straws that means, the proper residues farmer manures, poultry manures from organic sources preferably after

being properly composted. So, whatever the organic waste we are using they should be well decomposed and well composted before applications to the crop field.

The plant waste materials and the plant bi-products from organic food processing industries preferably after being treated they can be used for the field slurry, urine and the what dirty water from organic sources preferably after being aerated, slurry aeration must then microbials and the plant extracts they are permitted for the organic productions.

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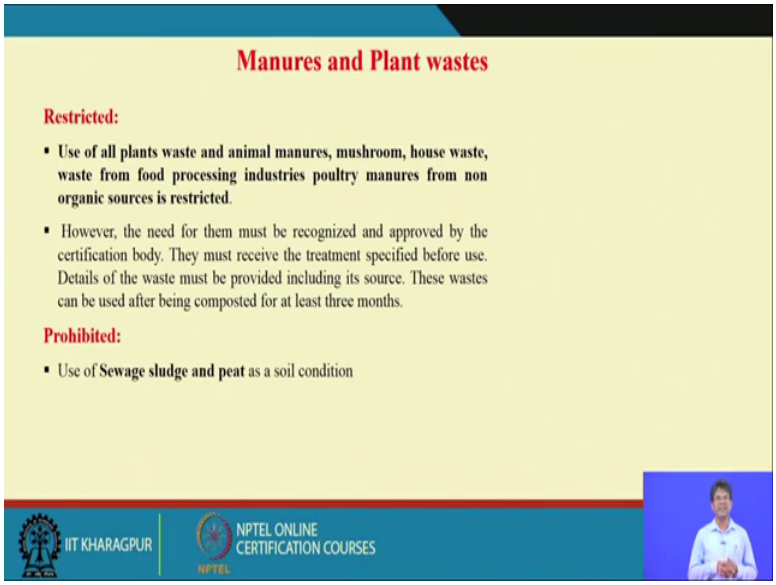

What are restricted? The restricted means the limited use. So, some materials are restricted means they can be used with proper permissions from the certification agency. So, the restricted materials use of all plant waste and animal manures, mushroom, house waste, waste from the food processing industry, poultry manures from nonorganic sources they are restricted for use that means, know they can be used, but there some restrictions.

However, the need of them must be recognized and approved by the certification body. So, they can be used with proper approval from the certification agency. And they must receive the treatment specified before they use details of the waste must be provided including its source of origin should be should be known these waste can be used after being composted for at least 3 months.

So, these waste materials they are originated from the non-organic sources. So, they can be used with proper approval from the certification agency and also those waste materials should be composted for at least 3 months before their application. So, those are prohibited, those are sewage sludge and from the cities or the city waste or the waste water sewage sludge or the municipal waste and the peat soils. So, they are prohibited from the use of the organic productions. They contains most the heavy metals and contaminants are there, so unless they are, so those are sewage sludge and the peats they are not allowed for the organic productions.

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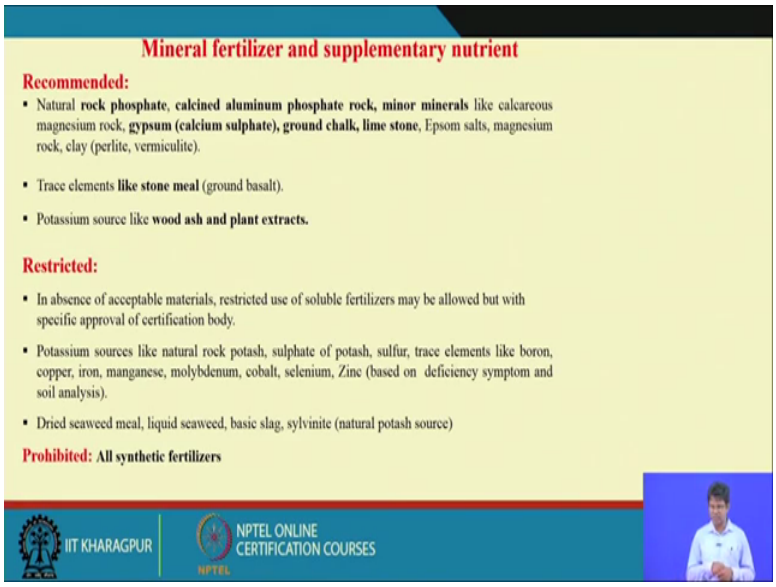

The mineral fertilizers and the supplementary nutrients as we have discussed because no for this a enriching the organic fertilizers like vermicompost, if you want to have a enriched vermicompost productions, enriched specific nutrients either the nitrogen or the phosphorus potash then you have to are some natural minerals rock minerals during the composting process. So, recommended the mineral fertilizer they can be used for the composition process or they can be directly applied to the field also for the organic productions. Natural rock phosphates, calcined aluminum phosphate rocks, minor minerals like calcareous magnesium rock, gypsum, ground chalk, lime stone, Epsom salts, magnesium rock, clay. So, these are allowed for the organic productions.

Then trace elements like the stone meals or this a ground basalts, these are this allow. Potassium source like wood ash and plant extracts, that can be used for the organic

productions. And the materials which are restricted because they can be used limited use or they can be used with proper approval from the certification agency. So, in options have the accepted materials this can be used soluble fertilizers, is allowed with specific approval from the certification body.

And also the potassium sources like natural rock potash or the sulphate of potash sulfur trace elements like boron, copper, iron, manganese, molybdenum, cobalt, selenium, zinc. So, these are micro elements micro nutrients they can be used as a spray as we observed the deficiency symptoms of these elements that can be used in organic productions.

Then dried seaweed meals, liquid seaweed, basic slag and sylvinite, natural potash source there also used with proper approval from the certification agency which are not used all the synthetic fertilizers as you see prohibited, all the synthetic fertilizers are not allowed in the organic production.

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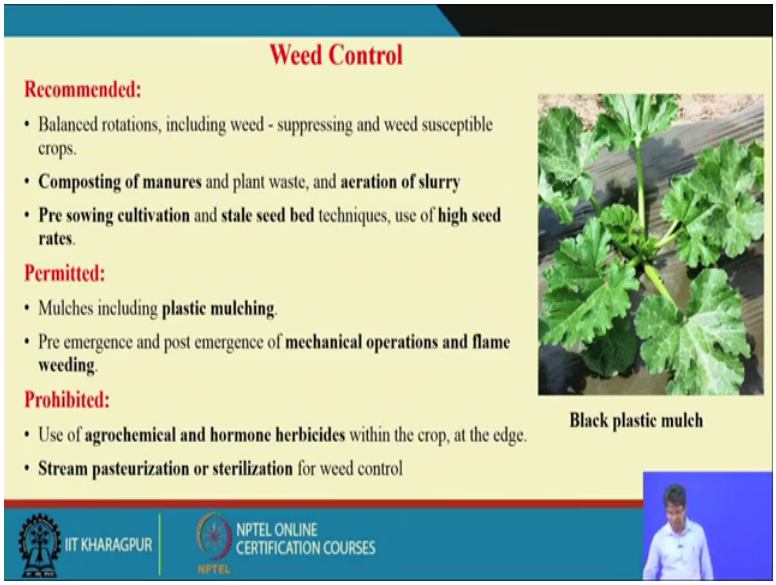

To see the weed control usually when we talk about the weed control, so you will go for the physical method or the mechanical methods or the may be cultural methods of weed control. So, what is recommended? The balanced rotations including weed suppressing and weed susceptible crops.

So, this a cultural practice we have discussed in the lectures. So, what the rotations should be followed for different type of rotations? Same crops should not follow, same

crops in the rotations, so where this same types of weeds does not ha proliferate does not grow in the year after years to avoid that one go for cultural practices cultural controls. So, balanced rotational crops including the crops which can suppress weeds and they can susceptible crops so that the weeds can be can be controlled.

Then composting the manures and the plant waste and aeration of slurry that means, the by proper composting we can sum up weed seeds are destroy the inactivated in the process of compositing the high temperature, and the microbial decomposition process. And pre-sowing cultivations, this also planning one of the practice for the cultural method of weed control by doing summer planning, so you can increase the soil temperatures as compared to the ambient temperatures, by raising the soil temperature this spoils some weed seeds at the same time also this also inactivate or the kills some of the harmful insect pets and the pathogens also.

So, pre-sowing cultivation is required to remove the weeds and stale seed bed technique, this is a new one stale seed bed technique means, we need to irrigate the field and we do allow the weeds do germinate. So, what about the weed population there? They do germinate by allowing the by putting the proper water or providing the proper moisture and the temperature so that the seeds whatever the weeds itself they do germinate.

So, after they come up we do go for the manual method of weed control by the remove the weeds. So, by the way; so we can control the weeds for the crops and use of high seed rates, so this is usually sometimes you know we do follow, we may not follow also using high purpose is if a high seed rate. So, this increases the population density of the crops so that the weed seed may not be able to grow may not compete with the crop. Usually what happens in some cases having the high the population density of the main crops may affect the yield of the crops because of the competitions between the seeds of the same crop.

So, you must try to avoid high seeded, but we should go for the other methods please pre sowing cultivation and the stale seed bed techniques by the cultural practices we follow for controlling weeds. And what are the permitted for the organic standards? Mulches, plastic mulches (Refer Time: 21:23) the black plastic mulches you can see. So, this can be used for the controlling weeds as this does not allow these solar radiation

interceptions in the ground surface. So, weeds, weeds cannot grow here on the dark condition conditions. So, this can control on the weeds black plastic mulch.

Then pre-emergence and post-emergence mechanical operations and the flame weeding also permitted. What is prohibited? Use of agrochemicals, and hormone herbicides in the crops or the edge of the crops it is not allowed in organic productions, and steam pasteurization are the sterilization for this for the weed control is also not allowed because by using the stream sterilization will be killing most of the beneficial microbes also, gets affected, gets eliminated from the field that is why we do not allow the sterilization of the soils for this weed control.

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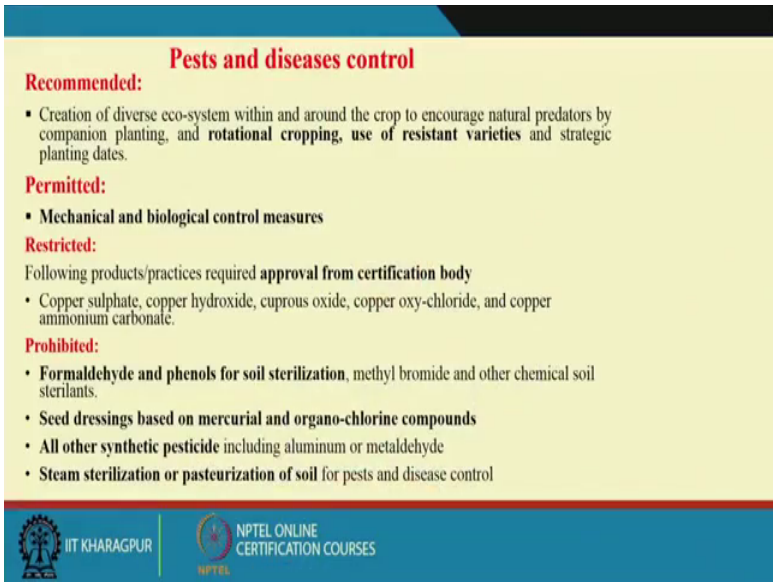

Then pests and disease the recommended is creation of diverse eco-systems and within an around the crop to encourage natural predators by companion planting and the rotational cropping, use of resistant varieties and strategic planting dates. So, these are all the preventive methods say the cultural methods of pests and the disease management having crop rotations, growing different crops in rotations or choosing the crops specially the resistant to some type of the test and diseases.

And going for inter crop inter cropping so that it can take different crops so that would the pest population can be minimized; as we have discussed growing of this (Refer Time: 23:05) as seen the in the boundary of this the rice plant it can minimize the brown plant

to attack. Similarly marigold also grown the boundary to protect the crop from the (Refer Time: 23:17), many other pest, pest antigens.

So, these are the cultural methods for the pest and its management organic farming. So, in addition to this the permitted have the mechanical and the biological control measure. We have discussed in detail the mechanical control measure and the biological control pesticides. Then restricted use of some chemicals are used that, the following products practices required approval from the certification body those are the copper sulphate, copper hydroxides, copper oxides, copper oxy chlorides, and copper ammonium carbonates. So, these are used, can be used for this pest and its management provided you need to take approval from the certification agency for use of these products.

Then what are prohibited? All this synthetic pesticides like formaldehyde and phenols for the soil sterilization, so methyl, bromide and other chemicals soil sterilants. So, they are prohibited. The nut used for the organic productions. Seed dressing based on, mercurial and the organo chlorine compounds that is also prohibited, all other synthetic pesticides including aluminum or metal metaldehyde, those are prohibited steam sterilization or pasteurization of soil for the pests and disease also prohibited. So, synthetic pesticides, the chemical pesticides because the centrally government of India has banned many of the pesticides, pesticides for use from the agricultural purposes.

So, now because now it is a very high time to minimize the use or not restrict the use of the synthetic pesticides, for use in agricultural production because you know this creates say this ling to the food and health they as we discussed is a quite link well linked because whatever the health problem do we face today. So, mostly they regulated what about the food we take regularly and there is a food you know that contains the many the pesticide residues or the insecticide residues are there. So, they goes to food chains. So, you are suffering the toning diseases like the cancers or the cardiovascular disease or many other disease are very common due to the heavy intake of the pesticides which are highly carcinogenics and that you see the effect on the adverse effect on human health.

So, this, so these are the pesticide or the synthetic pesticide should be many are banned now, but those should be restricted or banned from agricultural purposes and more of the farmers should become dependent on the bio pesticides or the cultural methods mechanical methods or the bio pesticides. And you can use the natural sources like cow

dung, as we discussed cow dung, cow urines and many of the pulse force can be used for as a combinations to prepare the pesticides for controlling the pest and disease organic farming.

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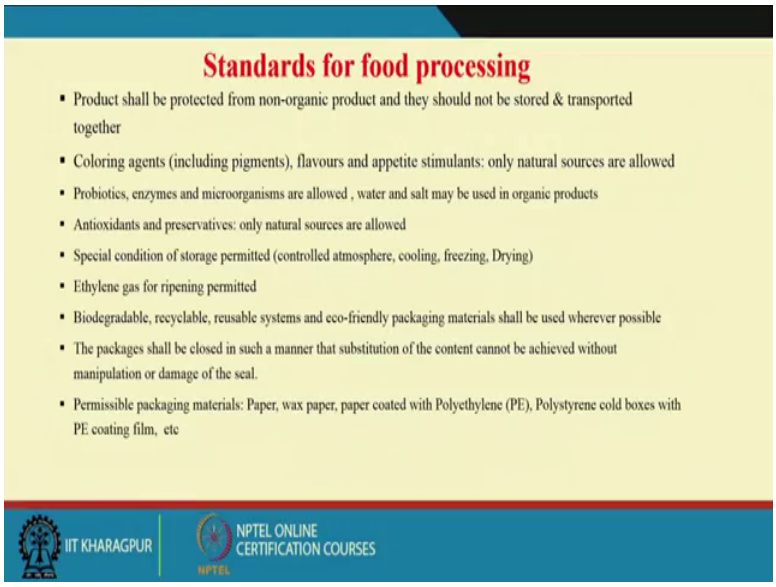

So, these are the some of the production practices. How we can do at the field labels we have discussed in detail in classes, but this a standard as per the national program for organic productions in POP standards.

So, standards are the guidelines when the any business man or any entrepreneur want to go for the organic productions, so guidelines set to them. So, they have to follow the guidelines for the organic production because as you are going for the business modes to brand their product as a organic and to bring their product to consumer as a organic and to have a trust to the and the building the confidence between the producer and consumers organic products. So, they have to follow some standards, before they go for the certification process for the organic produce.

So, after the production from the field of course, the product should go for the should follow minimum standards for the processing as well so that it can be labeled as a organic products. So, standards for the food processing after harvest re-products. So, what have the in brief what are the practices we must follow so that the product can be labeled as organic in processing queue. The products shall be protected from nonorganic and products and they should, should not be stored and transported together. So, after the

harvesting the post harvest processing when you are this storing at the products are the transporting products like you are may be rice or the wheat or the grain products. So, this should be operation done should be separately not in the same baskets. So, that should be the non-organic products should not mix with the organic products, during the storage or during the transport operations.

Then when go for the food processing we have some coloring agents. So, when we go for food processing of these products then the coloring agents like the flavors and the appetite stimulants, they should be only from the natural sources, chemical sources should not be allowed for the organic certification or the organic products. And the probiotics, enzymes, micro organisms they are allowed. So, probiotics are the good for health for the digestion process they are present in our (Refer Time: 28:30) also.

So, the probiotics, enzymes of the microbes benefits are the for the health point of view they have the health benefit point of view. So, they are allowed in organic products. Water and salts may be used in organic products. So, they are allowed in organic products. Antioxidants and the preservatives only natural sources are allowed, so not chemical sources or any antioxidants or any preservatives.

Special conditions for the storage, they like your control atmosphere storage cooling, freezing, drying or maintaining the desired humidity is allow in organic productions or organic processings. Ethylene gas is permitted for ripening of the foods, for the organic. Then by for the packaging usually we must use the biodegradables, recyclable, reusable systems and eco friendly packaging materials shall be used in organic food processings.

The package shall be closed in such a manner that distribution of the contents substitutions of the contents cannot be achieved without manipulation of damage of the seals, because no while packaging the organic products the sealing should be very perfect it because the take out of the materials from the inside cannot be possible without breaking the seal of the packaging materials. So, this sealing should be very perfect that means, the substitutions for the contents should not be possible without breaking the seals.

So, this packaging, my packaging the then the permissible packaging materials are the paper, wax papers, paper coated with polyethylene, polystyrene and cold boxes with the

polyethylene coating film. So, these are allowed for the permissible packaging materials for the organic foods.

So, from this lecture we can see this is the while say as we discussed previous lectures are the organic managements, organic input managements, organic pest managements and handling the products while ruing the organic. So, this is a brief about those lectures as standards, these standards by the national program for the organic productions.

So, they have shared some standards when you go for the initially for the organic conversions or the organic food productions we must follow the standards by meeting the standards. So, we will that make a assurance that your products are of the organic quality so that makes a connections between the producers and the consumers. So, consumers has a trust where the trust building and the producers, and once the linkage is well established then it facilitate better marketing of this organic foods.

So, to have a better marketing of the organic foods, to have the expansion of the organic food market, and bring the awareness among the farmers for conversion of the land from the conventional to organics, so this standard is a must. So, farmers the entrepreneurs they must follow this standard to have a organic productions and to have a linkage better linkage between the producers and the consumer. With this I close lecture.

Thank you very much.