Soil Fertility and Fertilizers
Professor Somsubhra Chakraborty
Agricultural and Food Engineering Department
Indian Institute of Technology, Kharagpur
Lecture 45
Fertilizer Quality Control, Fertilizer Adulteration and Fertilizer Testing (Contd.)

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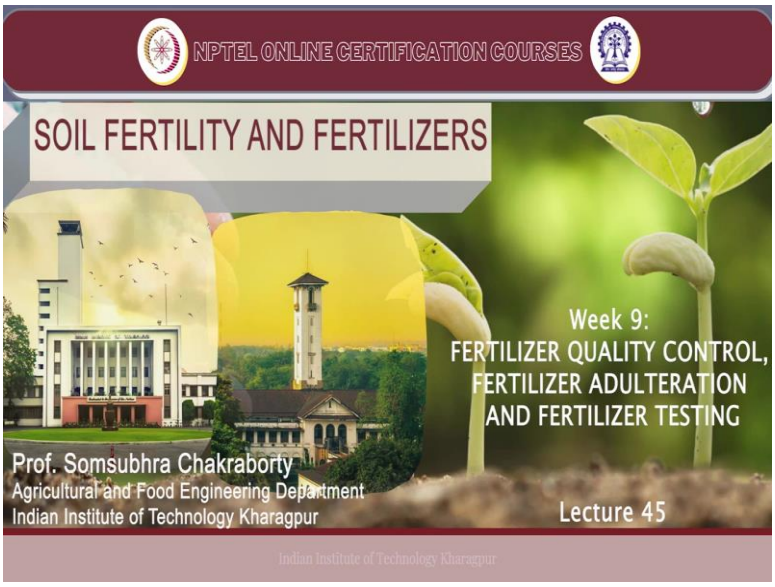

Welcome friends to this 45th lecture of NPTEL online certification course of Soil Fertility and Fertilizers. And in this week, we are talking about fertilizer quality control, fertilizer adulteration and fertilizer testing. Now, in the previous lectures we have discussed about several slow release fertilizer, customized fertilizers and also, we have discussed about controlled release micronutrient fertilizer and also, we have discussed about the specification as per the fertilizer control order for different fertilizers. Now, we have also discussed fortified fertilizers also. Now, in this lecture number 45, we are going to discuss these following concepts.

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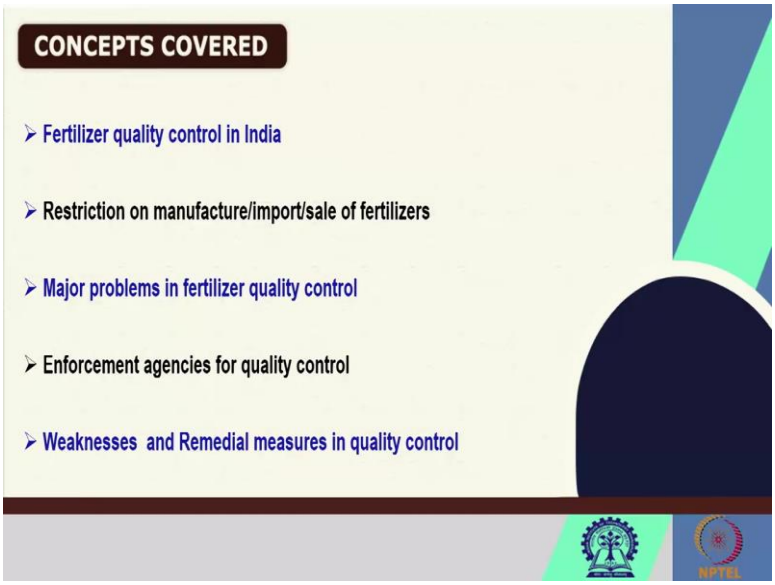

First of all, we are going to discuss about the fertilizer quality control in India. Secondly, we are going to discuss the restriction on manufacture, manufacture then import or sale of fertilizers and then we are going to discuss major problems in fertilizer quality control, then enforcement agencies for quality control and finally, we are going to discuss what are the weaknesses and remedial measures in quality control of fertilizers.

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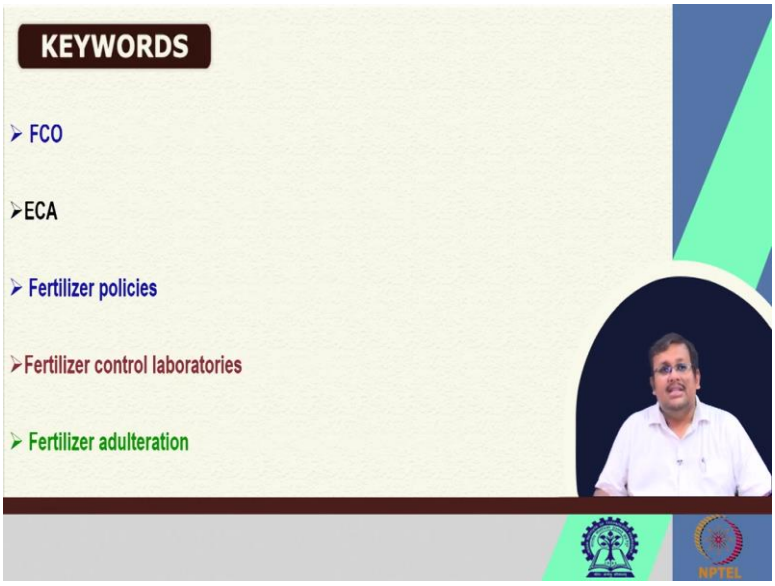

These are some of the keywords for this lecture. First of all, fertilizer control order FCO then essential commodity act or ECA then fertilizer policies then fertilizer control laboratories and fertilizer adulteration. We are going to talk about these terms in this lecture.

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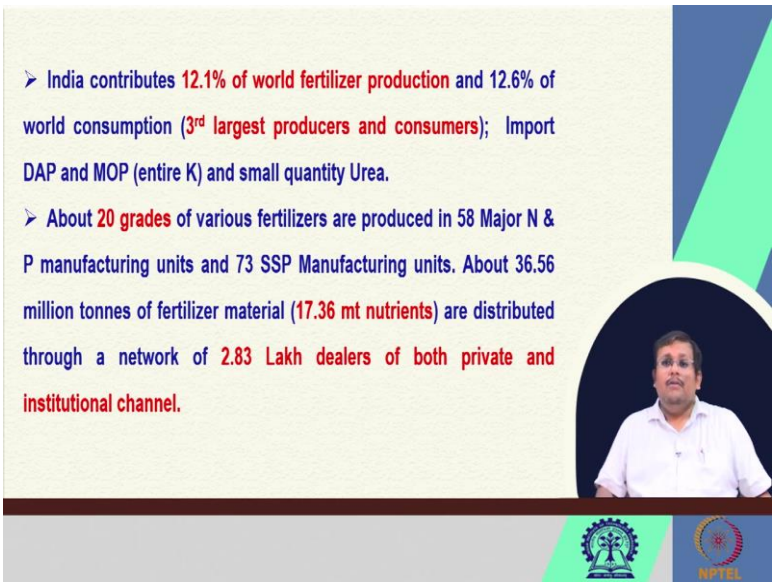

Now, let us first start about fertilizer quality control in India. Now, before we discuss the fertilizer quality control, we have to remember that India contributes 12.1 percent of world's fertilizer production and 12.6 percent of world consumption that is third largest producer and consumer of fertilizers. Generally, India imports DAP or diammonium phosphate and myriad potash, that is entire potassium inputs. And apart from that it also inputs some small quantity of urea which is a nitrogenous fertilizer. About 20 grades of various fertilizers are produced in 58, major nitrogen and phosphorus manufacturing units and 73 single super phosphate manufacturing units. About 36.56 million tonnes of fertilizer material are distributed through a network of 2.83 lack dealers of both private and institutional channel. So, you can see there is a huge network and huge amount of fertilizers are being sold in India and also manufactured in India.

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Now, let us see the essential commodities act of 1955. Now, this essential commodity act, commodities act or ECA was enacted by the parliament in 1955. Under this act Government is empowered to empowered to regulate production, supply and distribution, trade and commerce of commodities essential for sustenance of commandment. So, whatever a commodity is required for subsistence or sustenance of the common man they are come they come under these essential commodities act. Fertilizer with its complex linkage with agricultural development has been declared as one of the essential commodities. So, of course, these fertilizer, quality control of the fertilizer comes under these essential commodity acts.

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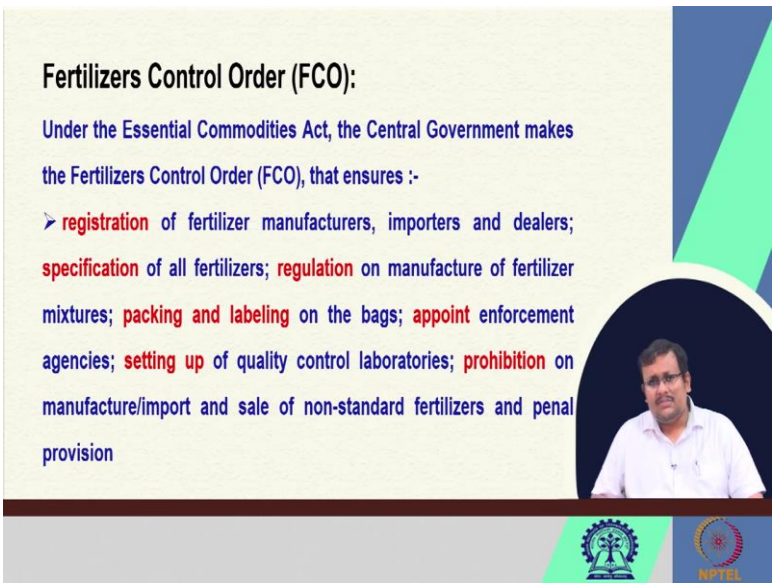

Now, what is fertilizer quality control? So, under these the essential commodities act the central government makes the fertilizer control order which ensures registration of fertilizer manufacturers. So, they ensure that manufacture of the fertilizer are properly registered and also importers are properly registered, dealers are properly registers. They also in the FCO we can see the specification of all the fertilizers, regulation on manufacture of fertilizer mixture, then packing on labelling of the bags, appointment of enforcement agencies then setting up of quality control laboratories and then prohibition on manufacture or import and sale of non-standard fertilizer and penal provisions. So, you can see it is a comprehensive law which covers all aspects of fertilizer, starting from fertilizer dealer to fertilizer production to fertilizer quality control and also the penal provision.

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Now, the fertilizer quality control order or FCO was in a verse of the essential commodities act was originally introduced in 1957 and subsequently revised in 1985. And these fertilizer quality controls order specifically provides for compulsory registration of fertilizer makers, importers and sellers. Then specifications for all fertilizer produced imported or sold in India and a set of regulations on the manufacture of fertilizer mixtures. So, you can see that the registration is compulsory for all the makers, importers and sellers and specifications of fertilizers are also provided in the FCO and set of regulation on the manufacture of fertilizer mixtures.

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Also, packing and labelling of fertilizer bags, appointment of enforcement agencies as I have talked previously, and also banning of the manufacture or import on sale of non-standard spurious or adulterated fertilizer. Now here, comes the fertilizer adulteration. So, we can see there is a huge amount of fertilizer adulteration in the black market and also illegal holding of the fertilizer, storage of the fertilizer. So, these type of things illegal things are being controlled in the fertilizer control order. So, the generally there is a provision for banning these manufacturer or importers of these non-standard spurious or adulterated fertilizer which is provided in the fertilizer control order.

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Now, let us see what are the fertilizer policies provided in this fertilizer control order? Now, let us see the restriction on manufacturer or importer seller fertilizers. So, the manufacturer or the manufacturer, import, sale and stock distribution is completely privatized under clause 19 for fertilizer, which is not of prescribed standards. So, we cannot manufacture, we cannot import, we cannot sell, we cannot stock or we can distribute the fertilizer, which is not a prescribed standard, which is not packed and marked as specified, which is adulterated, whose label or container gives fictitious address of manufacturer or any false or misleading information, whose label or container does not exhibit the proper grade and which is in fact not a fertilizer. So, these are the condition where there is a restriction on manufacturing, importing and selling of the fertilizer.

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Now, for if how we can quickly detect the adulteration of fertilizers. Now, for effective enforcement of quality of the fertilizer, the government of India has set up fertilizer control laboratories to test the fertilizer samples drawn by fertilizer inspectors. However, some qualitative test procedures have been developed by the central fertilizer quality control and training Institute which is located at Faridabad which can help the farmers to know if the fertilizer is genuine or adulterated. So, we need to set a standard we need a set of detection methods which can tell us whether that fertilizer is genuine or adulterated. So, there are certain qualitative test procedures which can say that whether that fertilizer is genuine or adulterated.

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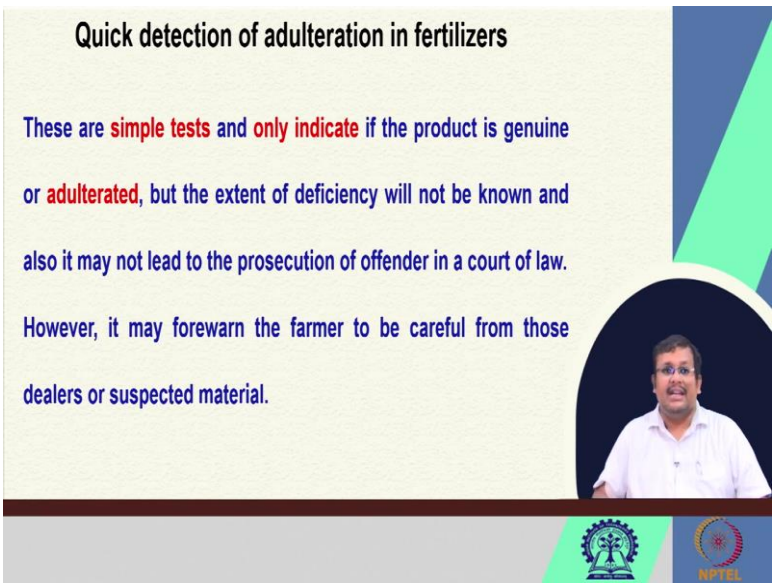

Now, remember that these are simple tests and only can indicate if the product is genuine or adulterated. But the extent of deficiency will not be known. And also, it may not lead to the prosecution of offender in a court of law. However, it may forewarn the farmer to be careful from those dealers or suspected material. So, in the FCO, we can get these clear guidelines and these clear indication of how to detect quickly detect the fertilizer adulteration and in that way, we can be careful about those fertilizers and respected dealers and the material.

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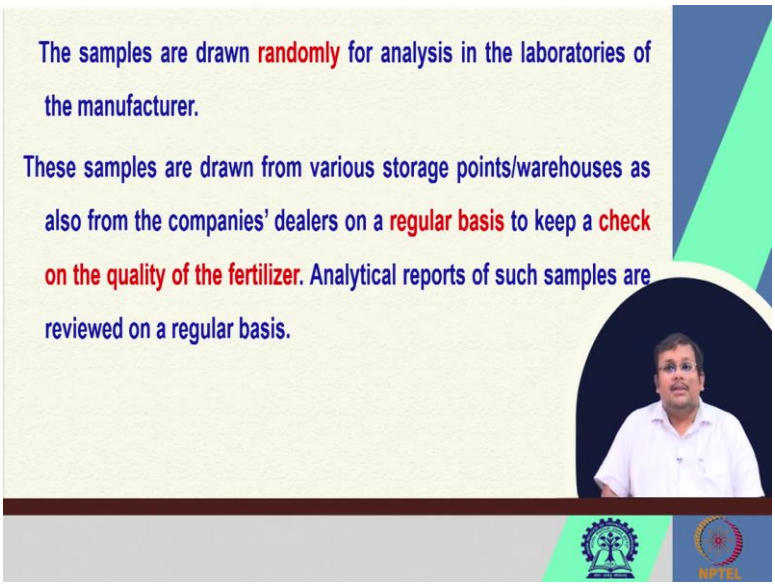

So, the samples are drawn randomly for analysis in the laboratories of the manufacturer. And these samples are drawn from various storage points or warehouses and also from the company's dealers on a regular basis to keep a check on the quality of the fertilizer. Now, analytical reports of such samples are reviewed on a regular basis.

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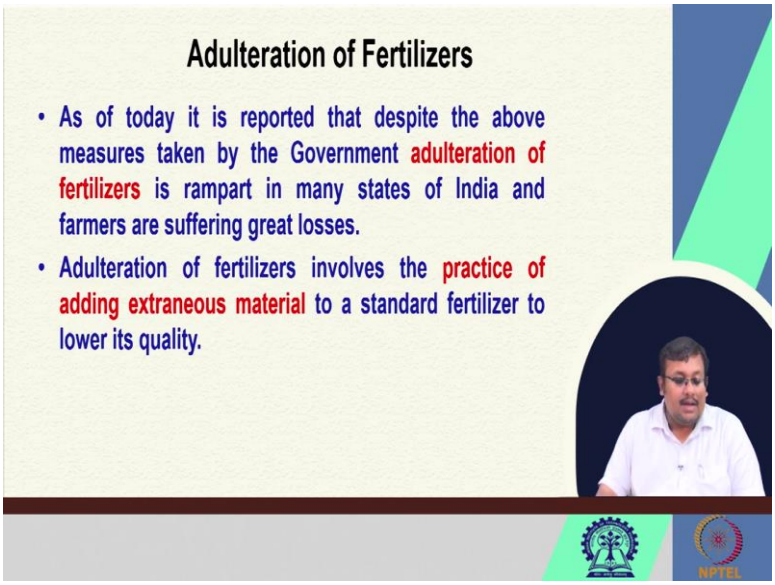

Now, let us also see what are the adulteration of the fertilizer. Now, as of today, it is reported that despite the above measures, like the quick detection of fertilizer adulteration and FCO guidelines, there is still adulteration of fertilizer, which is rampant in many states of India, and farmers are suffering great losses. Now, adulteration of fertilizer involves the practice of adding extraneous material to a standard fertilizer to lower its quality.

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Now, if fertilizers generally say to be adulterated, when it contains harmful or deleterious ingredient or unwanted crop or weed seeds, in quantities sufficient to harm the plant, when applied according to the direction on the label. Now, its composition falls also, its

composition falls below or differs from that given on the label and useless extraneous materials like salt, sand, soil, ash and other waste materials are added to it.

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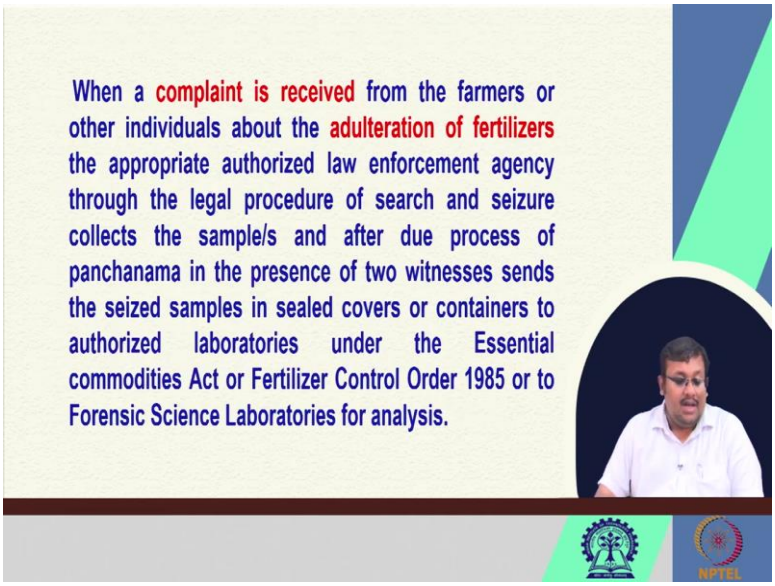

Now, when a complaint is received from the farmers or other individual about the adulteration of the fertilizers, the appropriate authorized law enforcement agency through the legal procedure of search and seizure colleagues the samples and after due process of seizure or panchanama, we call it in the presence of two witness sends the seized samples in sealed covers or containers to authorized laboratories under the essential commodities act of fertilizer control order 1985 or to forensic science laboratories for analysis.

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Now, this is how the fertilizer adulteration are periodically checked and legal procedures are taken against those manufacturers who produce or distribute or sell the adulterated fertilizers. Now what are the major objectives of quality control? First of all, to monitor or audit the quality of fertilizer and to provide a framework tools and information for helping the user for better handling, storage and optimum utilization of fertilizer for better productivity.

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Now, what are the major problems in quality control? The next question comes to our mind. First of all, the adulteration or misbranding is the major problem in quality control. Secondly, manufacturing of low-quality fertilizers is another major problem when there is a low-quality fertilizer, of course the fertilizer grade which is mentioned there will not be applicable. So, there will be deviation from that fertilizer grade so, that implies the low-quality fertilizer also short wait a bag. So, suppose a bag is supposed to have 45 kg or 50 kg and instead of that, it is only 40 kg or 42 kg then it will call that then it will be called as a deviation from the fertilizer specification. So, that will be a problem of quality control. Also, black marketing or overcharging price is another major problem in quality control.

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The following fertilizers have been identified for adulteration. So, we can see from different literature that these are the fertilizer, which are extensively adulterated because of several reasons. First of all, fertilizers and mixtures then single super phosphate then micronutrient fertilizers and DAP and complexes. So, these are the fertilizers which are extensively adulterated and what are the main reasons? So, the main reasons are use of lesser quantity of ingredients or their lower quality or the use of the excess quantity of fillers and non-homogeneous mixing. Now, the major reason as the main reasons are lesser quality quantity of ingredients. So, when you use lesser quantity of the ingredients of course, the grade will be deviated from the label and also, they are lower quality or use of these excess quantity of the fillers.

So, fillers are the weight make up materials as we know from the fertilizer terminology, fillers are weight makeup materials and when we give more amount of weight makeup materials or fillers and that can create a problem. And also, when there is a non-homogeneous mixing that also is the reason for fertilizer adulteration.

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Now, what are the enforcement agencies for quality control? First of all, Department of fertilizer is the first enforcement agency for quality control then central fertilizer quality control and training institute which is located at Faridabad. Then regional fertilizer control laboratories which is which are situated in Chennai. Then Kalyani, West Bengal and also Mumbai, Maharashtra and State agriculture departments and then state government quality control laboratory. So, these are some of the enforcement agencies for quality control of fertilizer.

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Now, what are the weaknesses in quality control? If we see the what are the weaknesses of the quality control first of all, there is a lack of full-time inspectors in various state and also

multiplicity of grade and then inadequate laboratory facilities another major obstacle for quality control of the fertilizer, then drawing samples from non-prone fertilizer is another major problem, then very low prosecution is another major problem in quality control of the fertilizer, no testing facility for dealers and farmers. So, this is another major problem for fertilizer quality control and then non participation in training programmes is another major problem for fertilizer quality control. And finally, non-submission of reports by state government is another weakness of quality control.

So, we can see it unless we have enough inspectors for in the various states, we cannot monitor the fertilizer quality and also if there are multiplication multiplicity of the grades then can create another problem. If there is inadequate laboratory facilities so, we cannot measure we can test the fertilizer for the possible adulteration and also if we draw the samples from non-prone fertilizer, that code can also create misrepresentation, very low prosecution. So, legal prosecutions are very limited and as a result, there is reason major weakness in quality control for there is no testing facility available for dealers, fertilizer dealers and farmers and then non participation in training programme. Whatever training programmes are being organized people do not participate in these training programmes. So, that is another major reason and finally non submission of reports by state government is another major weakness in quality control.

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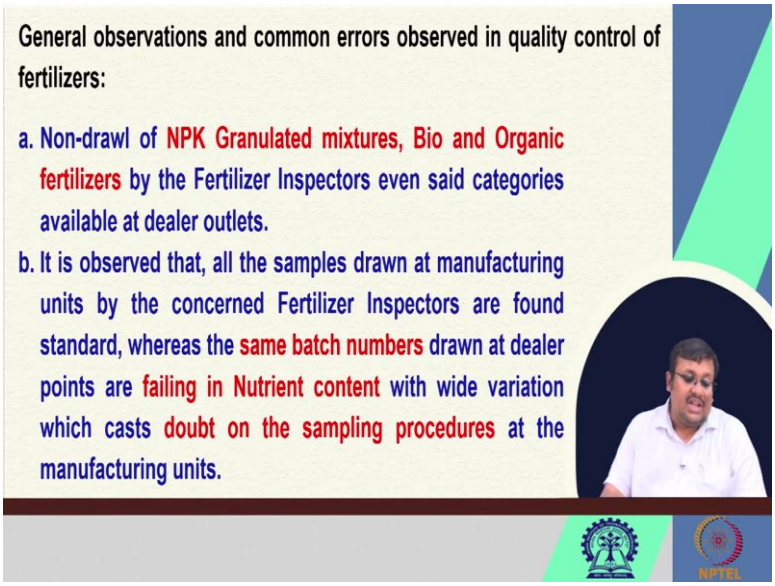

Now, what are the general observation and common errors observed in quality control of fertilizer? First of all, non-role of NPK granulated mixtures, bio and organic fertilizers by the fertilizer instructors even said categories available at dealer outlets. It is also observed that all

the samples drawn at manufacturing unit manufacturing unit by the concerned fertilizer inspectors are found standard whereas the same batch numbers drawn from at the dealer points are failing in nutrient content with wide variation which cause doubt on the sampling procedure at the manufacturing unit.

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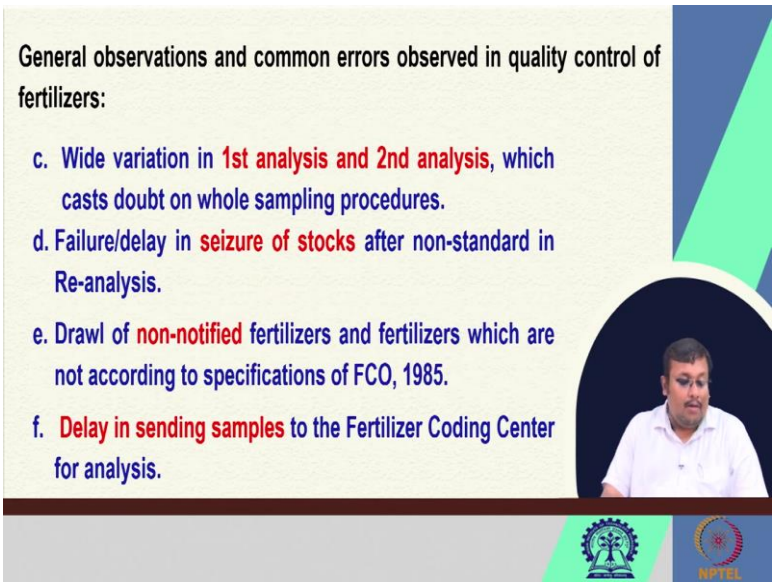

Now, also we can see that wide variation in first analysis and second analysis which casts doubt on whole sampling procedure. So, if the sampling is erroneous, that can create wide variation between first analysis and second analysis, then failure or delay in seizure of stock after non-standard or Re-analysis. So, that is another problem drawl of non-notified fertilizers and fertilizers which are not according to specification of FCO that and that is another problem. And delay in sending samples to the fertilizer coding center for analysis is another major problem.

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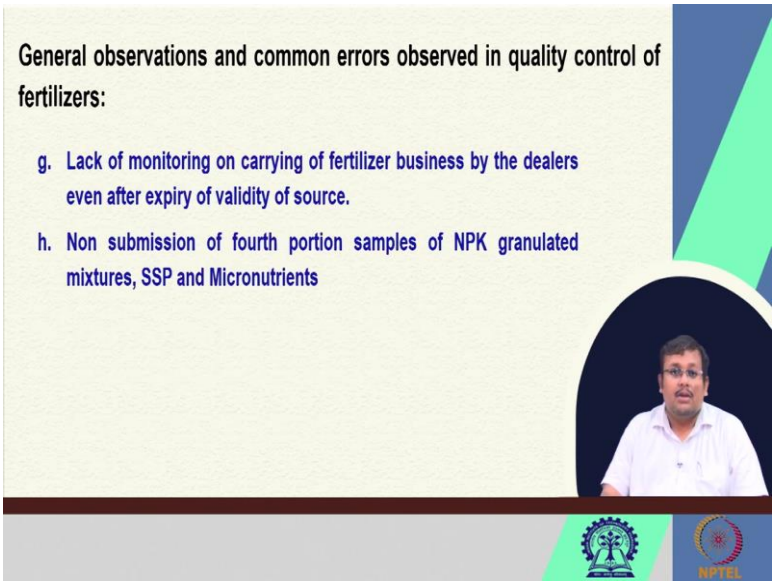

We can also see there is a clear lack of monitoring on carrying on fertilizer business by the dealers even after expiry or validity of source and non-submission of fourth portion samples of NPK granulated mixtures, SSP micronutrients. So, these are the some of the major problems and issues for in fertilizer, in quality control of the fertilizers.

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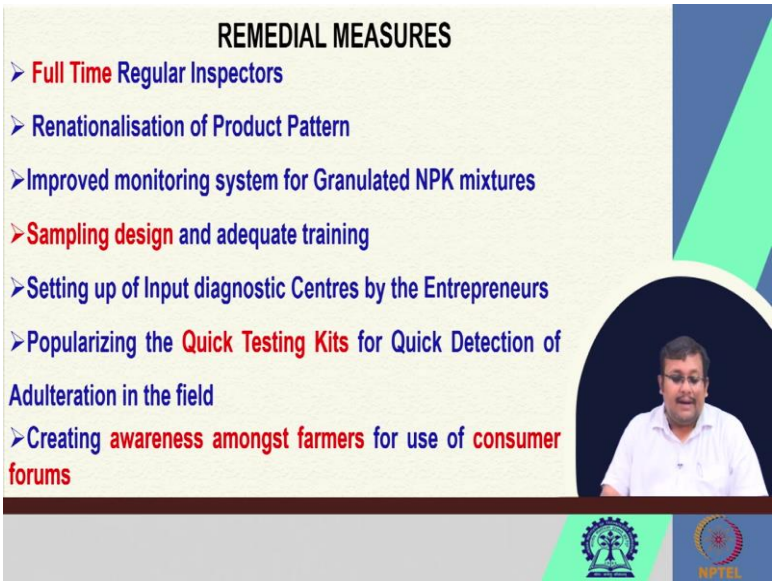

And what are the remedial measures then? First of all, we need full time regular inspectors and then renationalization of product pattern and then improved monitoring system for granulated NPK mixtures, then sampling design and adequate training so that there will be no misrepresentation, then setting up of input diagnostics entered by the entrepreneurs. And then popularizing the quick testing kits for quick detection of adulteration in the field and creating

awareness amongst farmers for use of consumer forums. So, these are some of the remedial measures which you can take for quality control of the fertilizers. So, guys, you have seen the major issues of fertilizer quality control.

And we have also discussed the fertilizer quality control and then ECA essential commodities act and how we can what are the practical problems for implementing the fertilizer quality control? And also, what are what do you understand by fertilizer adulteration? What are the ways to which we can detect the fertilizer adulteration quickly. So, we have already discussed and I hope that you have gathered some useful knowledge from this lecture. And if you have any question, please put your question in the forum and we will be happy to answer your queries and also you can email me and I will be happy to answer your queries.

And this marks the end of week 9 lectures where we have comprehensively discussed some of the current development in the fertilizer industry, fortified fertilizer, customized fertilizers, then, we have also discussed about the micronutrient, bio micronutrients and also, we have discussed about direct benefit transfer. So, direct benefit transferred and fertilizer quality control. And we can see that government of India has taken several important steps for preventing the preventing the leakage or the mis appropriation or the mis or adulteration of the fertilizer by enacting several policies like DBT and also fertilizer quality control. And there are clear guidelines which you can follow to maintain the quality of the fertilizers and to check whether our fertilizers are adulterated or not.

In that way, our farmers interest will be safeguarded and they will be able to use the best quality product for enhancing their soil fertility and productivity. Thank you very much. Let us meet in our next week of lectures.