agMOOCs
Crop production risks and their management
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In the last class of this week we had discussed certain aspects of three weather codes. In this class we like to discuss the crop production risks and their management.

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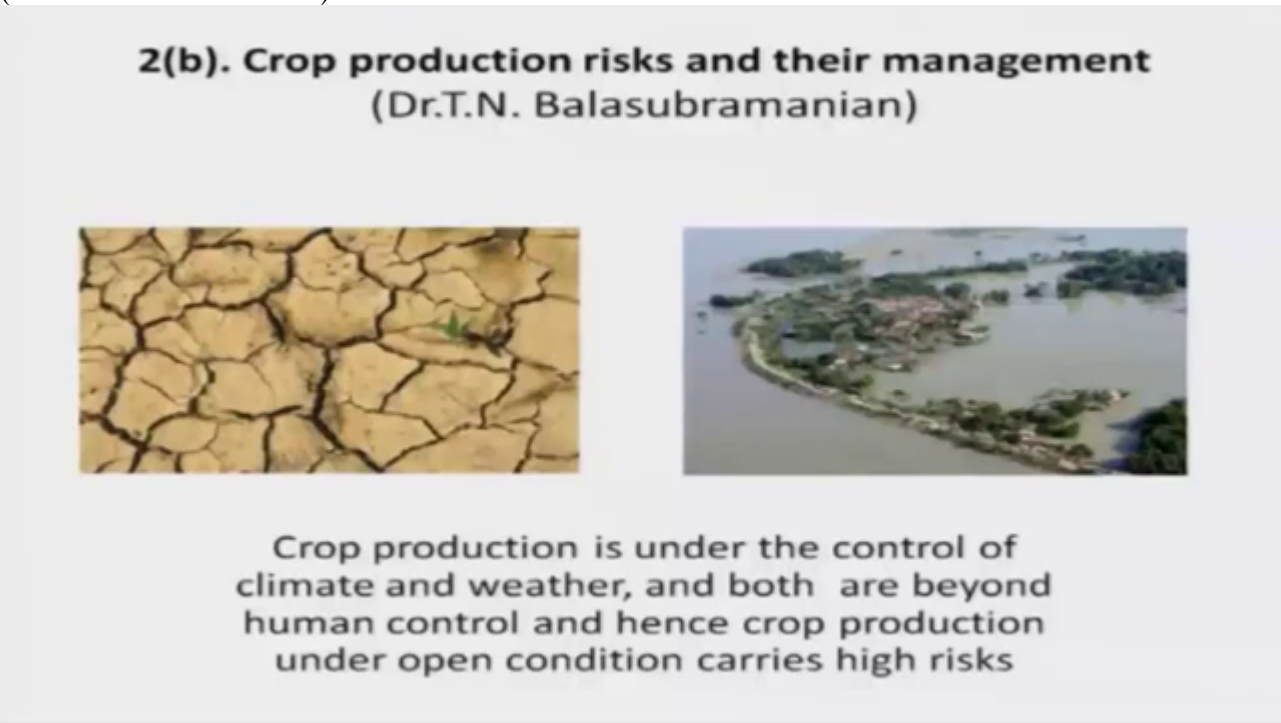

Here in the last week we had a discussion about climate and weather. Now I like to focus on these two terminologies which reference to crops. The climate of your particular area selects your particular crop to come up very well. So climate it's a manager like a umbrella. It selects your particular crop, for example, apple in temperate countries. So selection of a particular crop is done by the climate. The apple may not come in the plain areas of semi-arid climate or arid climate or sub humid climate. So the climate selects a particular crop and the production of the selected crop is influenced by the weather that prevails within the climate. So this is the climate, here you have the weather. Climate selects the weather influence its productivity. So under open conditions there is greater risk for crop production.

I can say that you will be discussing about weather variability, rainfall variability. If you examine the parameter rainfall and the temperature their weather variability with reference rainfall is would be more, more than 30% the coefficient of variation. First in the case of the temperature it must be lesser than 20% ACV, the variability is a very greater for rainfall. So as a result in the production is getting varied that I call it as a risk. Since we can't control weather, it is beyond human control, weather cannot be control or your climate cannot be controlled. It's all beyond our control. We have to adapt to climate and weather for that we have to do certain strategies.

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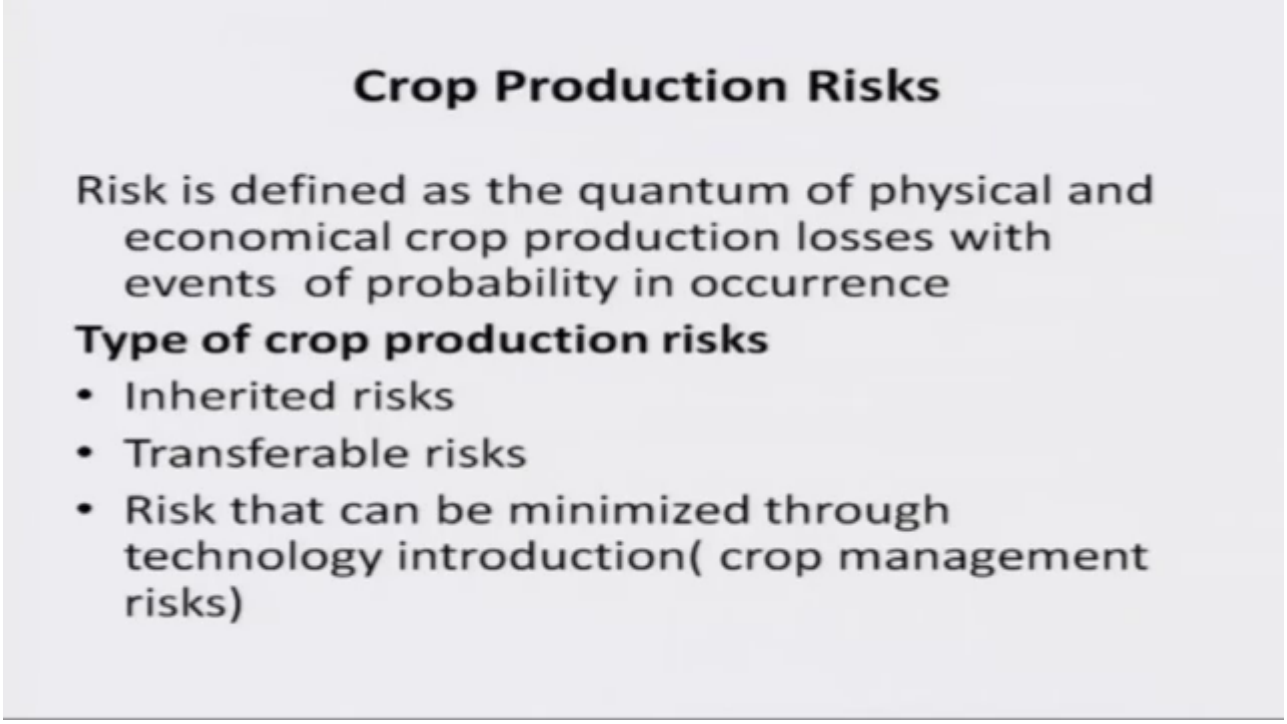

Now crop production risk must be defined. Risk according to economics, risk is defined as the quantum of physical, I say physical output against a three tons per hectare we get one ton per hectare, so physical loss. And economical crop production losses against 10,000 rupees you get 2,000 rupees. So risk is defined as the quantum of physical and economical crop production losses with events may be drought, may be flood, that are the events or probability in occurrence. What is the probability of occurring drought? Maybe 40 percent in a particular area maybe a 90 percent in a particular area, there are two terminologies with reference to drought. One is a drought prone area. Another one is drought affected area.

In the case of that drought prone area it is endemic area for drought. Always drought, nothing, so the production is always loss, but in the case of the drought affected area drought may visit once in four years, three years those has to be predicted and we have to manage very well to reduce the crop production risk. Now based on our knowledge and literature knowledge the crop production risks are divided into inherited risk, transferable risk and crop management risk and is given us risk that can be minimized through technology introduction.

So inherited risks, transferable risks and the crop management risks, let us examine one by one. Now the inherited risks, I have given some examples. Inherited, it exists over years, over generations, generation means normally in India we take 25 years, over over generation maybe seven generation or eight generation or historically more than thousand years the soil is either sodium or saline our marginal. So inherited, it can't be changed. If you want to change this risk you have to spend more, it can be change through technology, but it is not cost-effective, it is highly cost.
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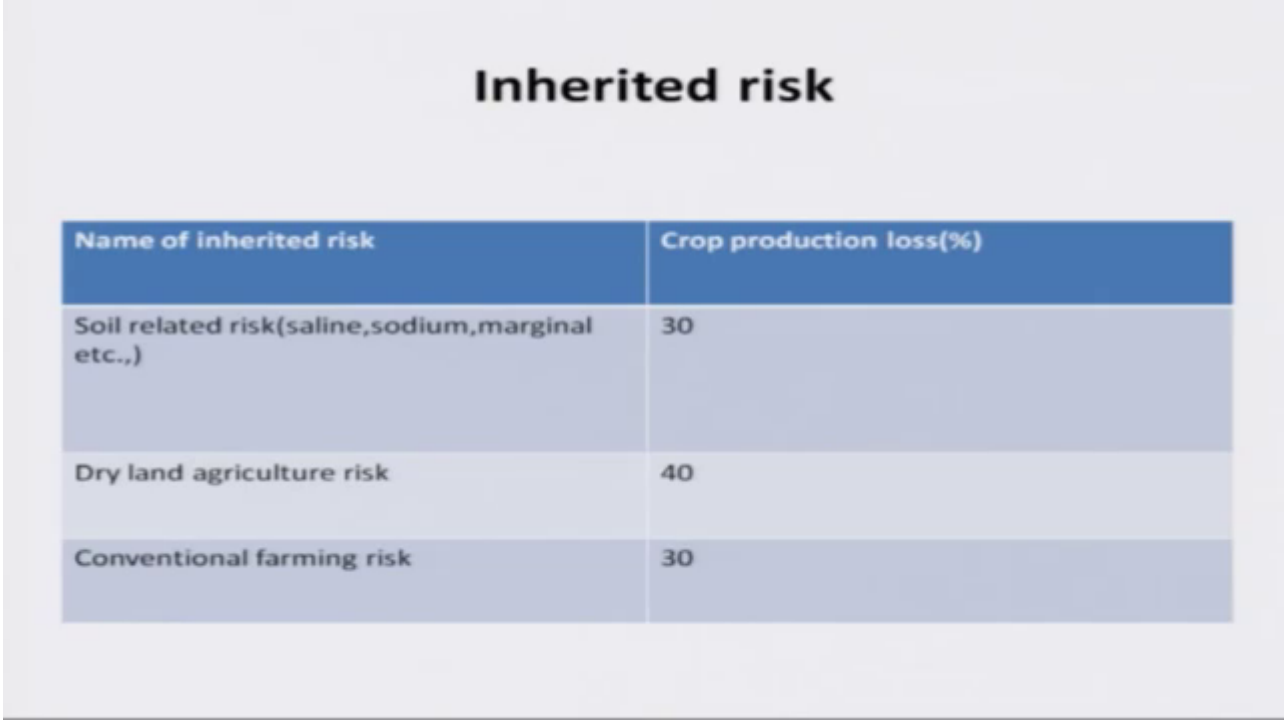

So the crop production loss with this inherited risk would be 30% for this example that is saline soil, sodium soil or marginal soil. Then another one is dry land agriculture risk. As we discussed earlier dry land depends on rainfall. If you rain have different mode of operation you may have continuous wet spell, you may have continuous dry spell or you may have intermittent dry spell between two wet spells. So these are going to affect your crop production. So dry land agriculture you have inherited risk of 40 percent unless it is being brought under irrigation through your river linking process. Hanumantharao and Professor Swaminathan in their comment they have recommended that river linking must be given to a dry land area so as to bring higher production to solve the food related problems. So those have to be thought very well.

Then another one is conventional farming risk, conventional farming risk means resource over murmurs. They go for lower input because of their results that also carries some quantity of risk that is 30 percent. So soil related risk also inherited risk it carries 30 percent crop production loss, dry land agriculture risk is also inherited risk that carries a 40 percent crop production loss, conventional farming risk also inherited risk that carries 30 percent yield loss.

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Transferable risks

Name of the risks	Crop production loss(%)
Drought	60 to 100
Flood	100
Dry spell more than 15 days(based on crop stages)	40 to 60
Wet spell more than 15 days(based on crop stages)	60 to 80
Pest and disease out break	30 to 40
Cyclone	80 to 100
Hail storm	60 to 80
Abnormal wind speed for banana,sugarcane	80 to 100

Then coming to the transferable risk, the risk can be transferred. For example I am with risk, I want to transfer my risk to my wife or my mother or something else, so she takes care of that risk and manages very well. In the case of the agriculture, the transferable risk is going for crop insurance. The farmers considering the weather risk they go for insurance, registered by themselves paying some premium they transfer the risk to the other companies or other organization, one is a drought that carries the crop protection loss 60 to 100 percent. Another one is a flat, 100%, flat mean 100% yield loss. Then dry spell more than 15 days based on the crop stages, 40% to 60%, wet spell more than 50 days 60% to 80%, pest and disease our break 30% to 40%, cyclone 80% to 100%, hailstorm 60%, abnormal wind speed for banana, sugarcane that we discussed last week, 80% to 100%. These are all transferable receipt and register with the crop insurance company so that these risks would be minimized properly. d

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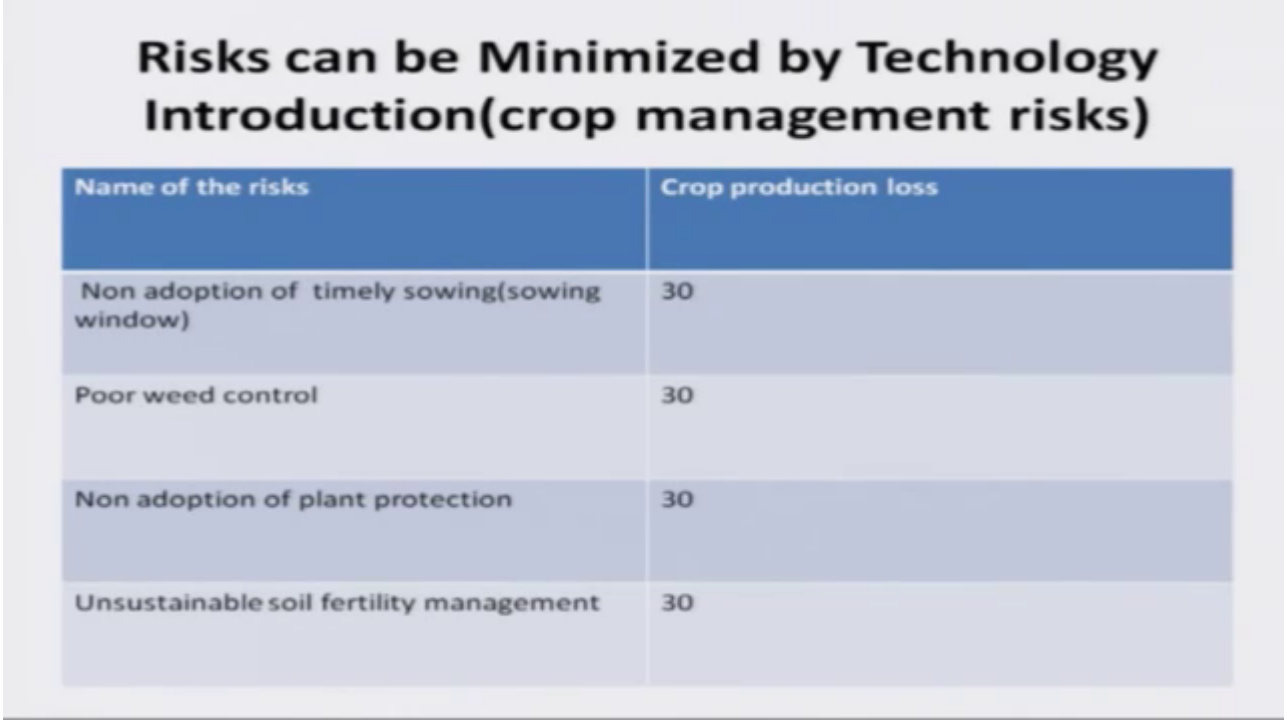

And the third one is your crop management risk or risk can be minimized by technology introduction. So if you want to -- don't want to go for non-adoption of timely sowing, for example, in India wheat is being sown by your November. If you sow by December means every yield will be is going to affected by the weather components. So this carries a 30 percent the crop production loss. Pure weed control, nobody bothers, let it comes then the yield loss would be 30%. Non-adoption of plant production as a thing, you say that I don't want to adopt plant production let the pest comes and go, whatever get I will harvest. This carries about 30% crop production loss. And unsustainable soil fertility management were not properly applying balanced fertilizer or the recommended fertilizer then automatically it carries a crop production loss of 30%.

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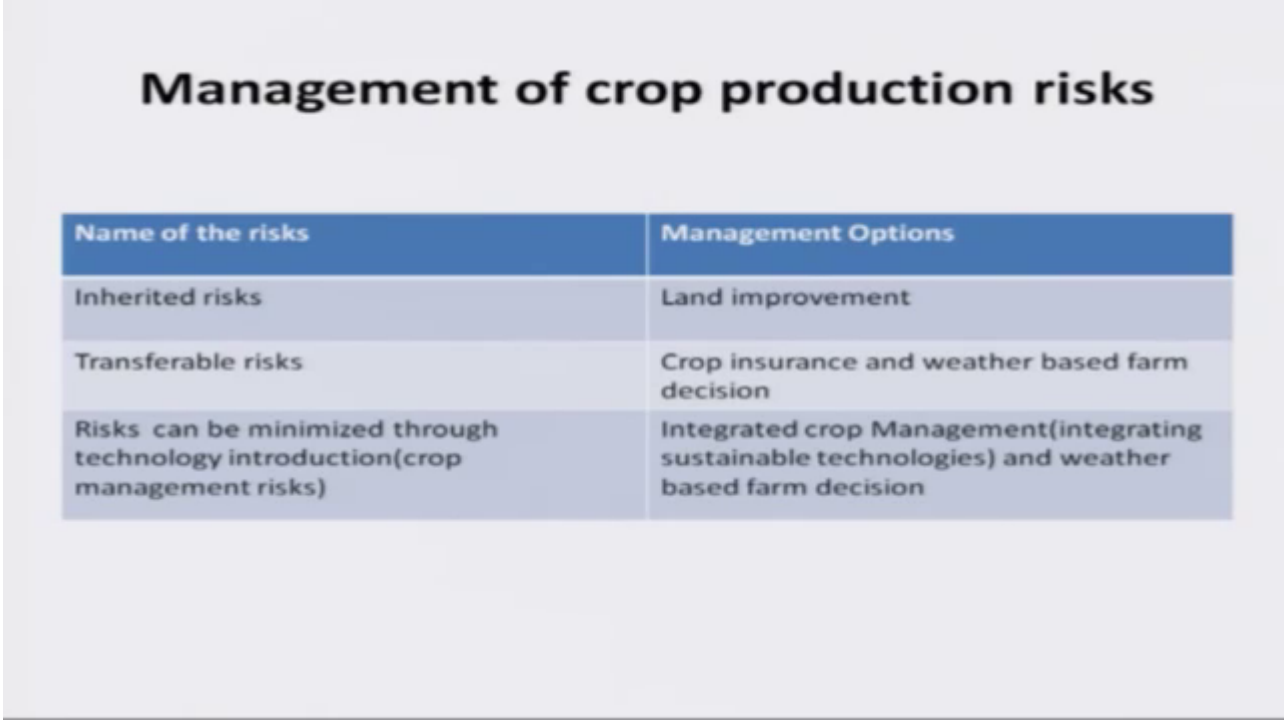

Now how to manage this risk. We were knowing about three types of risks, inherited risk, transferable risk and your crop production management risk. So inherited risk means, it is already existing over years, historically it is there. So if you want improve it, go for land improvement, it much expensive. Then transferable risk you are registering yourself for your insurance company and also you take some weather based to form decisions. That is very limited through contingency plan when we were discussing about your weather codes I was saying that contingency planning. That also can be done in the absence of the crop insurance program but may not be successful. You must go for crop insurance for having the transferable risk. And crop production risk you are so for integrated crop management, integrated pest management, integrated weed management, integrated water management, why not all components of the crop production management must be adopted so that this quantity of this can be minimized. We cannot avoid 100% risk. We can reduce the risk that is the strategy I have given here. Thank you very much. This is very important Class. See crop protection risk, because for taking weather-based agro advisories you have to consider the crop production risk at a greatest level. So we will be discussing some more things in the next class. Thank you very much.