

agMOOCs

Case study in India on the adoption of weather based crop production - Pest and disease management

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Dear farmers. Dear students. In the last class we were discussing on the case studies especially for rice in respect of crop management. One was on the management of nursery when it was sown with one day old. The other case study was a shift of rain more than 150 millimetre in six rainy days especially at this stage of, tillering stage of the rice crop, where I was saying that if you go agro advisory adaptation then crop production risk gets reduced. (Refer Slide Time: 01:04)

b. Case study in India on the adoption of weather based crop production on pest and disease management



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Now for today's discussion we will see how the weather based crop production on pest and disease management, how agro advisory helps us to minimize the risk due to pest and disease especially in rice. Normally based on the scientific literature the yield loss due to pest and disease in rice goes up to 30%. Let us see through case study also. (Refer Slide Time: 01:39)

Case study in India on the adoption of weather based crop production on pest and disease management

Results - Agromet advisory for blast and *Helminthosporium* leaf disease management of rice

- Weather situation "*anticipating high relative humidity (40 – 90%) combined with prevalence of minimum temperature <20°C*" at maximum tillering and panicle initiation stages of rice.
- The sensitiveness of these crop stages to the weather situation mentioned above are a yield loss of up to 30 per cent as a result disease infestation if it is not controlled by taking appropriate plant protection measures
- The proposed agro met advisory is to adopt timely plant protection measures.
- The present practice generally prevalent with farmers is to go for plant protection measures as per advice of agricultural input dealer rather than to contact extension specialist for proper advice on choice of chemical, its dose and dilution.

Now here the case study is agromet advisory for blast rice disease as well as hellminthosporium leaf disease. How it is being managed? Now we are able to say that prevention is always better than cure. Normally pest and disease are triggered by environment and within the environment the weather is the important factor that influences the incidence of disease and pest population in rice. Now the weather situation is anticipated high relative humidity, 40% to 90%, combined with minimum temperature lesser than 20 degree centigrade. At what stage of the rice crop this weather situation occurs that is the question which is a maximum tillering as well as a panicle initiation stage. The weather situation in, high relative humidity from 40% to 90% and minimum temperature is lower lesser than 20 degree centigrade. It occurs at maximum tillering as well as panicle initiation stage.

So the stages, tillering stage and the panicle initiation stages of the rice or sensitivity of the rice crop stages to the prevalent weather situation. So they have estimated that based on the previous study 30% loss would occur if prevention is not taken based on the observation made on the weather. So what would be the proposed agro advisory for this situation? So go for timely plant production measures that is go for application of systemic fungicides. So this is the way we have to do it. But against these at present what farmer, they do is, they go to the input dealers especially the people who sells the fertilizers and pesticides. He gives something, recommend something for his profit and farmers goes with confidence that will give protection to their crop, it does not happen.

So what our suggestion is, let the farmer after seeing the weather situation, after seeing the crop stages let them move to the extension specialists or some agricultural institution like KVK. Contact the officials and get their prescription and do the prevention against the occurrence of the disease. This is earlier to the occurrence of the disease the agromet advisory proposes to take preventive actions. Now let us move to another example.

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Results - Agromet advisory for tikka leaf spot in groundnut

- Weather situation "*anticipating high evenly relative humidity (>60%) for a week and high leaf wetness would provide congenial environment for the initiation of tikka leaf spot disease groundnut at peak vegetative stage*"
- The sensitiveness of this crop stage to the weather situation mentioned above are a yield loss of up to up to 40 per cent, if it is not controlled by taking appropriate plant protection measures
- The proposed agro met advisory is to adopt timely plant protection measures.
- The present practice generally prevalent with farmers is to go for plant protection measures as per advice of agricultural input dealer rather than to contact extension specialist for proper advice on choice of chemical, its dose and dilution.

This is the example for tikka leaf spot in groundnut. It may be early leaf spot or it may be late leaf spot. What is the weather situation that trigger this disease in groundnut anticipating high evening relative humidity. This is not evenly, evening relative humidity more than 60% for a week continuously for seven days. And high leaf witness. This provide a congenial environment for the leaf, the disease force to get germinated and comes to the level of damaging the crop. The situation of the crop is peak vegetative stage. At this stage the grounded leaves are very thicker, greener and it attracts, it a store some more carbohydrates or starch or photosynthetic material that is why with the triggering of the weather elements this disease comes to the groundnut.

Here based on the sensitivity of this crop to this weather situation they studied that the yield loss may go up to 40% if the disease is not controlled. After seeing the weather forecast and the information at the peak vegetative stage if the plant protection is not taken there will be yield loss up to 40%. So the proposed agro advisory would be adapted timely plant protection measures. This is very very important area to be understood. As I indicated for rice, people go for to the local dealers and get some medicine and spray to their crop. That may not protect their crop. They can meet the extension specialist or some KVK, meet the people, go with the sample, plant samples, show to them, they will suggest effective chemicals that can spray in advance after seeing the weather situation.

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Case study in India on the adoption of weather based crop production on pest and disease management

Results - Agromet advisory for brown plant hopper in rice

- Weather situation *"anticipating high cloud cover more than 6 octa combined with day relative humidity of more than 60 per cent would provide congenial environment for the initiation of brown plant hopper at peak tillering stage*
- The sensitiveness of this crop stage to the weather situation mentioned above are a yield loss of up to up to 40 per cent, if it is not controlled by taking appropriate plant protection measures
- The proposed agro met advisory is to adopt timely plant protection measures at the base of the rice tillers rather than foliage application and also draining water to minimize hopper incidence.
- The present practice generally prevalent with farmers is to go for plant protection measures as per advice of agricultural input dealer rather than to contact extension specialist for proper advice on choice of chemical, its dose and dilution.

Coming to the third one for rice, we say BPH, Brown Plant Hopper, very very worst insect. Normally this insect appears during tillering stage of the rice crop. When there is a cloudy environment may be due to cyclone or maybe due to some environmental pollution, cloudy environment would persist during the rice growing season especially at the peak tillering stage. The Brown Plant Hopper at the time will come and stay at the base of the rice crop. They are multiplied in large. Suck the sap of the rice crop and do the damage whatever they like. The result is the yield loss. So based on the sensitivity of the crop stage to this weather situation, weather situation is cloud cover more than six octa. In our earlier classes we were seeing that the cloud cover is being measured in scale from 0 to 8 octa. Now today it is 6 octa. So at this situation what will happen the Brown Plant Hopper gets multiplied, stay inside is a plant that is within the plant and bottom of the tiller they suck the sap and they causes damage

The advisory is timely plant protection and also giving your drainage so that and the water may not provide a congenial atmosphere to the insect which states at the base of the bottom of the plant. So the farmers they normally they never mind for this incident because it may not be clearly seen from the upper side of the plant. It could be seen only in the bottom. Whenever you go instead of the field you can able to see the insect across, so you have to take enough plant protection measure further, provide a drainage and also meet our agricultural specialist, extension specialist or go to KVK with the sample, show to them, get prescription and the control the insect in advance. So these are the few examples I like to focus on the case study of management of your insect and pest. Here the study was taken between two groups of farmers. One is farmers who adapted another one is farmers who did not adapt. The economics analysis will be discussed at my later classes. Thank you very much.