agMOOCs

Crop Water Requirement and Distribution Loss

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Welcome to agMOOC courses.

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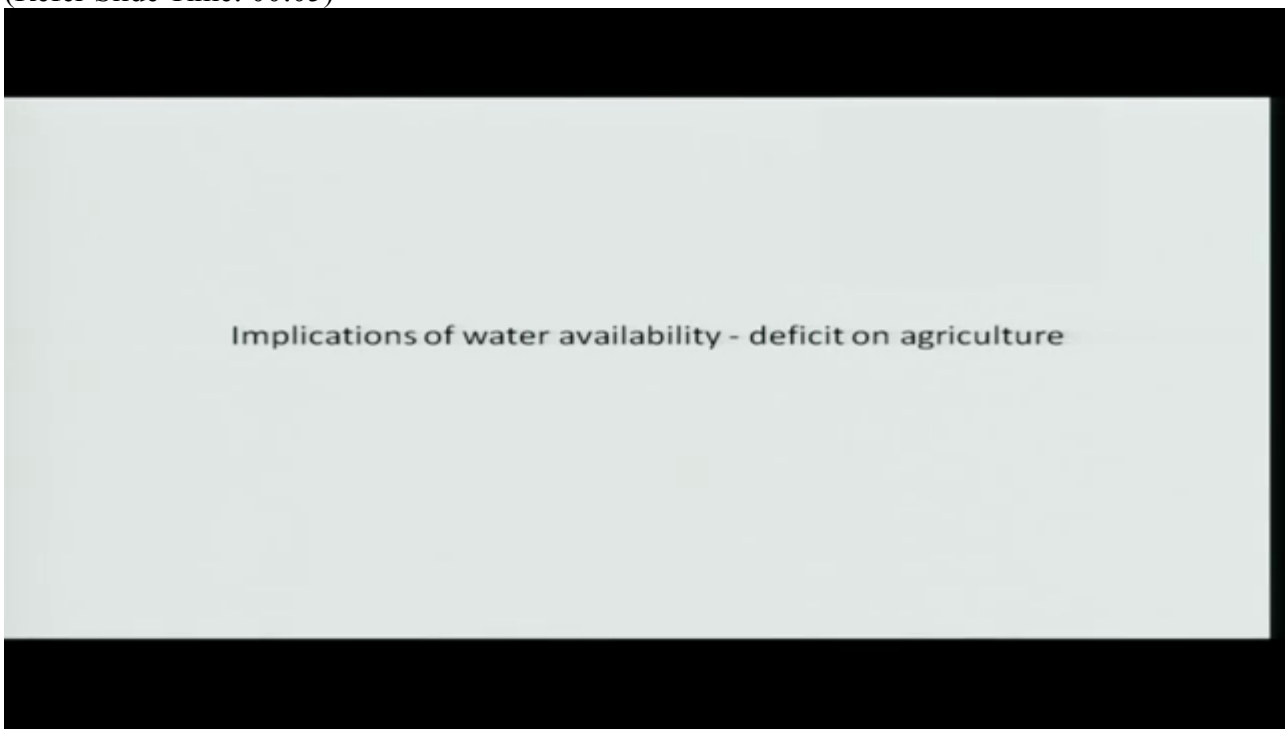

This week we are going to talk about the implications of water availability and its deficit on the agriculture. In this lecture what we are going to say is; what is the crop water requirement? What is the requirement from a particular region or a particular area for crop as well as for an agriculture purpose, for the drinking water purpose? So, how much is the minimum requirement which is needed to go for a sustainable agriculture. So how do we calculate and how do you synergize with the area based activities.

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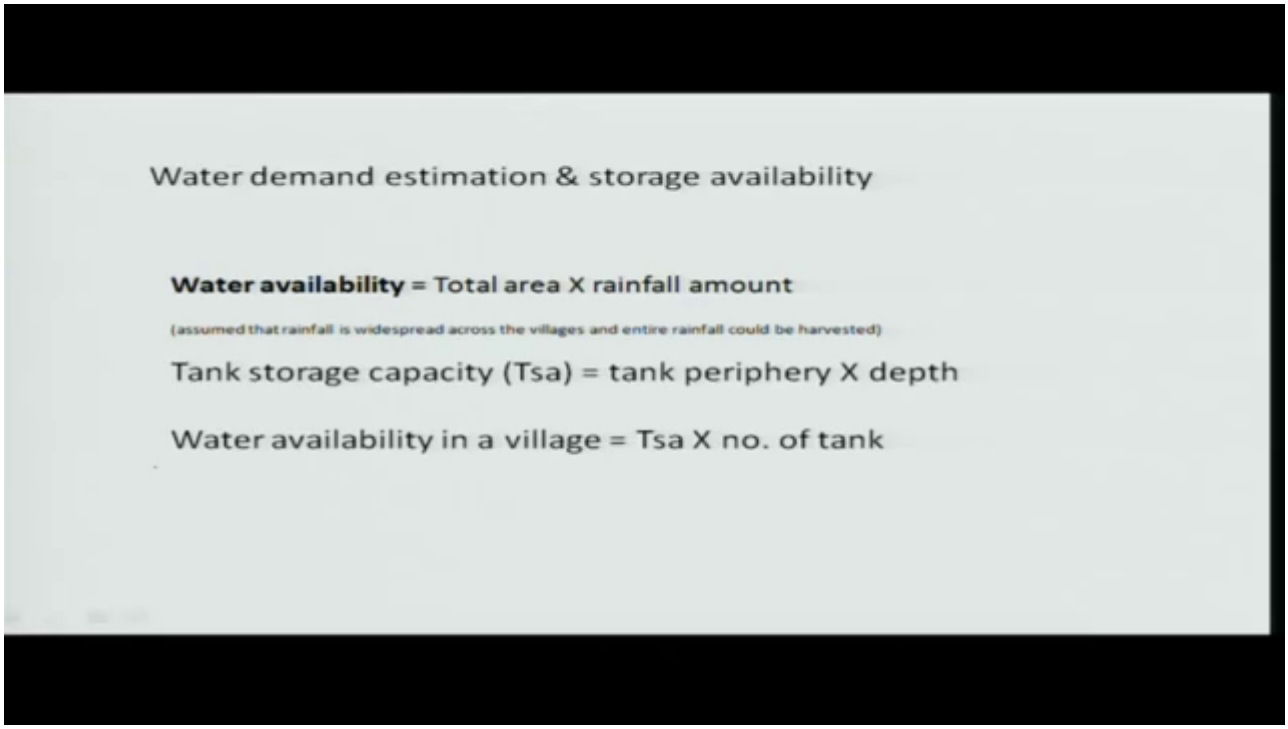

Now water availability is one thing, which one normally we try to assess it depending upon the area for the -- of the watershed or the basin, then what is the rainfall amount which is happening in over there. Since the rainfall amount is not an actual amount and what is the mean, the rainfall is one thing which varies in space as well as in time. Those space in time that variations need to be ascertained before we start doing that.

Second thing is how much it can be stored. See, there run-off moves will follows the drainages and it may go to the final end, either it could be in the sea or it could be in the lake areas. So now, in this tank storages there could be tanks or ponds which has been created just for a storage of water purposes; when we are needed. For that purpose what is needed is the tank periphery area as well as the depth is needed.

So now, if we want to estimate what is the water availability in a village, that means, you need to know how much is the tank storage capacity the things and the number of tanks in that area. This will tell you about, if you get a X amount of rainfall how much the village themselves, villages themselves can store it and then use it at a later date when there is a requirement. If it is going to be only reverse than mean it a run off. You cannot able to hold on to that system. So that is what is being discussed in this class.

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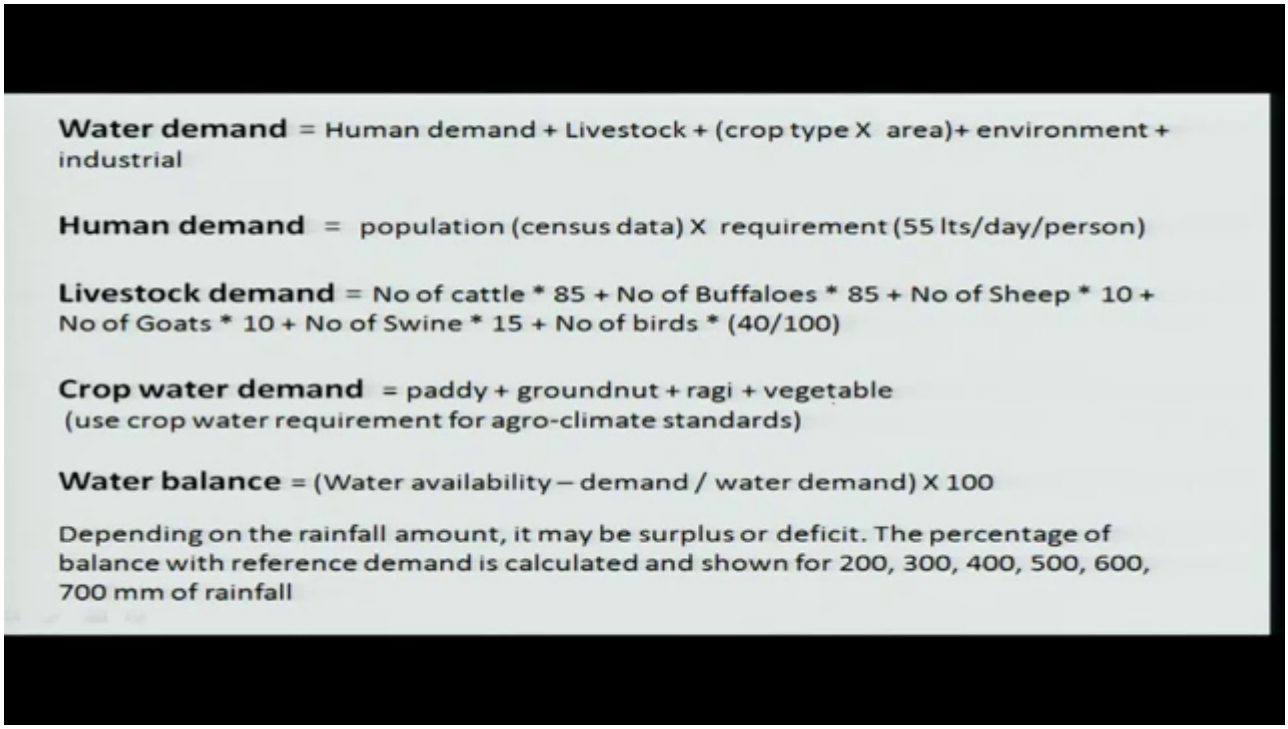

Now, when you want to say about what is the demand from the demand. So there are different kinds of demands which is happening. One thing is the water demand for the human demand that is for the drinking water purposes there are certain standards about 100 litres, 130 litres of water which is needed by person per day. Whereas livestocks, the livestocks also depending upon the type of life either it is in the bird side or whether it is a big bodied animal or a small bodied element depending upon their water requirements like a human being that has been decided already -- that has been evaluated.

Now, the second thing is -- third thing is about the crop water requirement. The crop water requirement depending upon the crop, if it is going to be a crop like paddy, it needs water, standing water about six centimetres and above the surface. So that is needed completely, totally it has to be a standing water. That means then that is a crop water intensive crop, without water it may not be able to yield the better way. And what is the area which is done it. If there is going in inner region. If it is going to be a crop intensive crop, the water intensive crop that means the water requirement is on the higher side. If it is going to be a dry area where the irrigation is required at every 15 days then the water requirement will be less.

In addition to this, there is another requirement -- water requirement is the environmental water requirement. The environmental water requirement is for the plants and other small creatures or like a fish and other things which are available only in along a particular river course or in the tank area which they are the ones which we have to protect and we have to allow conducive environment to grow. For that the minimum water supply is water availability should be done. As well the last and the least is only about the industrial requirements. So, these are all the different water requirements from the different sectors which we have to allocate accordingly or appropriately so that crop, the area gets developed along with agriculture in practice.

So, what we are talking. We are not talking about the urban areas. We are talking about the region wherein you have the villagers, villagers which grow more crops as well as the smaller areas. When you plant your basin leaven allocations we may have to consider all this human livestock, crop, environment and industrial requirements and these allocations are very -- it has got the serious implications if it is deviated on the development of the region or the livelihood of the people.

Okay. How the human demands are pet. So human demands it is the population which you try to take it from the census data and the required rate is around 55 litres depending upon the place. Whereas in the livestock demand, number of cattles, then number of buffaloes into 85 litters, that is what is given there, then number of sheeps, then you have this 10 litres number of goats, 10 litres per day number of birds, 40 litres for 100 birds. So, this is the standard water requirement from the different livestock which is taken care in demand assessment. Whereas the crop water requirement it is the paddy, groundnut, ragi, vegetable, use of water requirement depending upon the agro climatic conditions like crop water requirement is already established.

So, the water balance which we are talking about is how much is the water availability, how much is the demand way considering all those things, then what is the water balance will be is the case. And depending upon the rainfall amount if it is going to be 300 millimetre how much will be the deficit. If it is going to be 900 millimetres how much is the deficit or balance additional thing which you will be able to do that. So this we can calculate it for the individual villages or individual river basins then the necessary management deficit improving methods could be made use of.

So, this section what we are trying to do is what we need know on a space that means geographical locations, which are the areas are chronically they have water shortages, because their water usages is water demand and usages are very heavy, so what would be the minimum, maximum deficit we'll be able to have. And which are village -- which are the regions which have got lesser demand and the surplus or a balance water is available so that that equity, sharing of water resources can be met.

So now, what we have seen in this entire -- in this part of the lecture is how do we calculate the different water demands from a different segment and how do we allocate it. And so that we will be able to see which are the areas where there is going to be a water shortage at given rainfall conditions because of the requirements or because of that non-availability or non-availability and which are the areas where there is not much of differences are there in the demand and supply. So this is one among the reasons. So this will help us in sharing the water between amongst the villages where excess is there, where the deficits there this is possible in this type of studies. Thank you very much.