Maps and Information in Practice
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Welcome to the agMOOCs course on agriculture and GIS applications. Okay, we are there in the second week; the first week, what we saw is about what all the different practices wherein the agriculture is carried out over the past decades together or the centuries together what all the needs in the light of the blooming or the forthcoming climate change which we are expecting it what type of Agriculture, whether is a sustainable agriculture, whether it is a precision agriculture or whether it is a smart primate smart agriculture.

We have seen how we should be able to adapt ourselves to grow more food so now when we were doing it we said don't get isolated information and then act on that so we were trying to tell about collation of information from the plot area as well as around the villages as well as around the region so that your information is approved you will be able to take a better decision during that particular time now the question arises when I do collect all the information how do I integrate them how do I collate them in a base level, in a baseline activity so baseline activity is nothing but so if it is going to be a time-limited so I take everything from 2010 onwards I will try to take analysis so if it is going to be a baseline then in the space-wise I take it in the 1:10,000, 1:20,000, 1:50,000 scale that is how I do that third issue which we were just trying to problem is about the referencing. so the our references are in a different mode and it cannot be universally it cannot be standardized across the country as well as across the region also.

So the best way of doing it is only about geo-referencing, geo-referencing is nothing but every reference point need to be connected to East; it is about latitude and longitude either easterly or a northern side. Northern coordinates which we use it in referencing the entire yet surface now how do we do that we said there is a system geographical information system which will be able to take the map form picture form as well as a form or different kinds of information which we have got it can be geo-referenced it can be brought into a similar scale or a similar level and it can be compared analyzed and we can get the results for our decision making activities now this week we are going to talk about geographical information system which will be able to integrate all the agriculture-related information which we require for a best practices which is there about.

Now before going that I didn't know what we were using it. so yeah list of things which I would show you so what we were using it. This map is a Cadastral map without a geo-reference. This is what we call it as a village map. A village this is the boundary of a village and these are all the agriculture patches, agriculture plots agriculture plots agriculture plots and these are all the areas where they try to say these are all the settlement areas are the areas where people start living it. This is to that means village means you have a settlement you have the agriculture land in some places in addition to agriculture land there may be some of that land also. They are also marked in a different mode. Now these boundaries are drawn how did they prepare this map? This map were prepared in the initial stages, there is a survey technique called a chain.

So they try to keep one chain and then measure it out and the direction is taken and the references for, references of this. So what is the reference you will give. What is the reference you will give, what is the references you will be able to give. So thee for this references there are times where they used to have some sort of a pillar, some sort of a stone which will be kept over in these corners. So that from that corner, the corner pillars belongs to these particular agriculture plot. When the next man adjacent man when he wants to do it he has to put his own finger here, his own pillar here and then start measuring his area of activities. This is how in a rudimentary surveying methods. So people were doing it. now this is the type of rudimentary service and which they did it on a plane table service which they have prepared this map. now this map which you are using it. Suppose if you say this is the village of Maharashtra. Maharashtra Sashan that Krishi Vibhag entities of a particular village, Panlo; so this is the village of; village map.

So the boundaries are there, this boundary and the next boundary adjacent to this, there maybe a village here, there maybe a village here, there maybe a village on all four sides. So if you are lucky all the boundaries will be able to match, if you are not lucky then this boundaries may not be able to turn. This is the problem when integrating this type of village maps. It is not only for one state. It is, if you want to make it across the state or across the country this type of problems they come up now where is your house or where is your plot. so then the person has to say it is particularly, the closer to this particular road and it is some 100 meters or 200 meters is my thing.

Suppose if the plot is somewhere here, here the problem is I have to say who is my neighbour and how far this neighbours plot from the road section that is the drawback in this type of system. SUPPOSE if the person has changed then you have a trouble but the issues that discrepancies comes out of this plot verification comes out of this type of system. Now, what is this? This is called record of rights of the properties and this is the 7/12 type of. 7/12 is nothing but these plots, agriculture plots, the descriptive portion is over here then the attribute information and this is known as record of rights.

So this says who is the owner, what is the size and when did you purchase and all those things. so this type of records are okay if it is a father who is owning one word, suppose if the plot is going to be bifurcated amongst a son then further subdivisions are becoming more and more trouble in identifying and getting a uniform identification code and producing it as and when it is needed this type of village maps are not uniform throughout the country everybody, because of that in near Hyderabad they have got the different varieties.

If it is there in the North India somewhere in the Hariana, Punjab; they will be having a different notations depending upon the requirement. so integration of this village maps between the villages is one issue reference is another issue, third thing is bifurcation of the plots over the years. so that is becoming difficult, more difficult to get back retrieve who is who on my side. it is like you have bought a house and your neighbours were like that so after some time everybody goes up only you are the person left out you cannot give a reference to their neighbours on their own credentials that is the issue in the micro-level activities. now as in country what we have got is we have got a topographic sheets that the

village maps, it is only for the land records and the revenue for purposes whereas when you want to have contours; contours are nothing but a line connecting the same equal elevations from the mean sea level. So they are used for a different perspective, view of shapes or hills or valleys of that kind of category. So that is what in the topographic sheets are come up in the thing; run by Survey of India. So what does it done is entire country has been divided by some grid size maybe 1 degrees sheets are partly; there are 15 degree sheets of a different scales.

Now the scales which are available is 25,000, 50,000 as well as 250,000. So this previously they were there 1:1 mile or 1:63 360 in our words. Now the conversion has taken place, taken a lot of toll on that how the set of a graphic map looks like that. So this is to show you not to sell that topographic sheets and uses when you go from the village farm level, village level, then regional level; what are all the different type of scale of information which you may have to use for integrating the areas. so this is the topographic survey, so what they have done is; this is the river. This is the streams and this colour; these are all some of the tanks and these are all the roads, the red ones are the roads and we have this entire thing is about the settlements and some of these colours which you see on the yellowish they are the agriculture plots now the contours are also available in this area contours are equal elevations. this is the one contour.

So like that you will be able to see what is the elevation of that particular village or a region with reference to the overall area, this is a contour and this contour like that moves like that. so there are variations in the contours; how people use it and normally the different colours that legend if you see that you will be able to appreciate one of those things some places they try to give the well, some places they try to give some other cultural information. This is the road network and if there is a railway line they will be also given. This is the area where there is a wasteland or there are only rocky areas are there, some sort of a land-use conditions also they try to give it up. Now if I have to have an aerial view or a pyramid. So this should be the village map should be the minimum then these maps at the top and global map has to be there. So now what is happening about the geo-referencing. So in the geo-referencing there are these points they have got a different geo-referencing which is done as well as somewhere in the middle also.

so when you want to include your village. So if this is the village and your map will be the all the villages will be in this area. So in this area like that it will be able to, you can able to synergize adjusts it, match it and then move further. so this is the way which maps are done. so first when you look at the maps what do you want to look? When you want to have a look at the tourist map now you go to the tourist area. What do you want to know is location? where is this particular area? Where, how do I go. so then you need a location of that particular museum or some other palace or aquarium of that kind of category, the roads you want to know, how you want to go, the north-south which you want to do that. so that you will be able to go straight, left, right and towards the museum you will be able to go. That is the tourist map. it gives only about the roads and the building places and things like that whereas here we are interested in the locations. What type of locations we want to know; if

you say that one area is salinity affected area I want to know where is that location. So here it is not going to be there in the city or urban area. It will be somewhere outside.

Now second thing is if you want to do it on a trend whether the salinity has taken one year, two years, ten years that means ten year means, ten years before that map if you see that there was no salinity. now this year it has happened that means ten years this is the trend it is happening, it has happened in one place and it has spread out all the places that is what the trend means pattern is whether it is a continuous patches or that will be a patches single patch, another patch, another patch all that so that is what the patterns we want to do that. Whether it is developed as a whole or it is developed as a single units and then it has spread out.

Now fourth one is networks. networking means how do I reach those places, service centre or outer area; if I have to take a sample of the soil salinity, how it has happened, how the surface indication from the agriculture point of view what I would do is I will just look at how do I go that place, what I want to do is I want to know the road sections are opening section so that I will be able to read that what I will do after the living there is I will be taking samples across or a representative samples then I will be doing a simulation in 10 years I will be taking a sample across as well as vertical sample i will be able to do that whether it has come growing from the top to bottom or it has been to a surface, it is anthropogenic process or it is a exogamic process. so for that purpose, modelling purpose I will be using the soil samples from the patterns which I have collected.

What I will do, decision with all these things what I will do is whether my field are the downstream of this area, whether my field is available or my village is located. So that this same spread that is the trend which is happening whether the same trend will continue towards me or it will be, I will be away from that trend, that is what I wanted to make a decision if it is there, if it is there, if I am there in the soil salinity will be affected; my area what I would do is, I will take necessary measures to stop it, arrest it or minimize it. So that my agriculture production will be happening. So this is what we look from the maps. so why do we need a GIS is nothing but we have to coordinate, we have to integrate information collected from a different sources by different equipment of different accuracies and they are all coming to a common platform that is why we need a GIS.

How do I use the existing data, try to give as much as accurate geo-referencing to your data sets. So that it will be able to do it; there are map projections map projections or something like you have a globe the globe has to be XY in a flatter conditions, there are projection methods which I will tell you about everything equal area will be covered. Now see, what people earlier to me they did; they have not updated the maps that means the information is not updated. Now when you look at all the websites they give a bottom, it is updated on a particular day this type of information if it is done, it is easier for me to verify myself before I ask somebody else. so this is here it is updation is possible all the time, is it? Another thing is? Is it a user-friendly or I have to hire somebody else to do this. So many of the GIS, it is user-friendly and provided if your object is very clear. So will it only one thing or will it do

multiple task? It will do a multiple task that is integrate all the maps, bring the results in the form of a table, maps and other queries also possible.

How do I display? or how do I present my results whichever way you want to do that. so how do you present myself? Today I am presenting whatever I have learned through these PPTs, through these images and through this visual communication. So all those things are possible in this way; you can transport from one place to another place so that you will be able to see it. So now what we have; I will just sum up at or wrap up the information which we were just collecting it and using it in the past they do not have a common reference from one place to another place and data keeping record keeping is a major issue in those areas the physical objects which are kept as a reference in the villages over the years maybe 100 years or 200 years that there are village maps now the Indian village map 1933 and before that when it was used for taxation purposes.

So they have been prepared that time identification mark was a stone, identification mark was something like a bamboo port. So nowadays all those poles, all those stones, they have been removed. So now the reference point from where they have started measuring the distance or the area they are all gone now. So in these type of, this is the one which we have experienced it. the future we are not sure, the future what we know is, there is geo-referencing is the only way which we will be able to identify ourselves at any part of time as well as we will be able to transport and then compare it with the rest of the people. For that purpose what if we are going to talk about is; how geographical information system can be used in integrating different information in space as well as in time in the forthcoming lectures. Thank you.