agMOOCs

Sustainable Development and Agriculture_a confluence of pressures

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Welcome to this talk in the course of GIS in Agriculture. This is part of the agMOOCs. My name is Balaji. I work for the Commonwealth of Learning based in Vancouver in Canada. This talk is about sustainable development and agriculture.

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Photograph taken by Mark A. Wilson (Department of Geology, The College of Wooster). [1] - Original photograph, Public Domain, https://commons.wikimedia.org/w/index.php?curid=4150009

I used the word confluence here, a confluence as you know can be a confluence of rivers as you can see in this photograph. Each river is in a flow by itself. When two river more than one river, two rivers come together and form a confluence the resulting river can be a bigger and very different entity. It can not only be larger it's also substantially different. What you will learn from this talk is there are three very big pressures that are operating globally today and they all impact agriculture. As a result of which agriculture is never going to be the same. That is what you will learn through this talk.

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The first pressure arises from over the last 25 years of thought and action about harvesting the deterioration of natural resources. We all know that there is a decline in the quantity as far as quality of natural resources. World leaders are concerned over the last 25 years. Several actions have been taken. The last one was the commitment of global leaders to sustainable development goals through a summit held in late 2015 at the United Nations headquarters.

All the leaders agreed that there is a need to create very specific and highly goal-oriented action on reducing hunger, removing poverty, creating more sources for affordable and clean energy and preserving and conserving, working with life on land and life below water. As you can see all of these things have major implications for agriculture and all of these are areas where agriculture can make a very serious contribution. A very important goal amongst them is related to climate action which as you know has emerged as a major concern.
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Climate change is a reality today that is a very big pressure on us. Recently global leaders met again late in 2015 to discuss a framework to array what actions to limit emissions of greenhouse gases as you know continued emission of greenhouse gases is responsible for its at least one of the factors responsible climate that leads to global warming. Global leaders are concerned. Agriculture is the source of greenhouse gases, however climate change and global warming impact on agriculture in very many ways, some favorable but mostly unfavourable. Therefore these actions related to climate change also have an impact on agriculture, that's a second pressure.

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We all know that there is an increasing globalization of agricultural commodity trade. This trend started more than 30 years back. It has accelerated now. There has been some grievance among some countries that this has led to pressure on some of them to reduce the amount of food they hold in stocks towards food security in their nations. India is one such country. The World Trade Organization is a membership organization whose rules must be agreed to and awaited by all the members. There was one more summit of World Trade Organization at the level of ministers who are dealing with World Trade and they agreed to a framework which would lead to far more improved movement of agricultural commodities across the globe. There are still some reservations, major reservations, in fact, again India is a major player in expressing those reservations, but there is a framework now it has come to stay. This is the third important pressure that is acting on agriculture in relation to sustainable development.
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Now one important trend that we see in the world today is exhibited in this map which is based on data from the Food and Agriculture Organization. What you find is that global food prices have generally increased over the last about 16 years. This trend is fluctuating but the general trend is towards an increase. Why this increase comes about is still not certain, but we can speculate that all the three pressures that we just discussed, namely erosion of environmental resources both in quality and in quantity, climate change and climate change related phenomena, global trade in agricultural commodities, all these three could have arrived at a confluence to cause steady increases in food prices over the last about 15 years.
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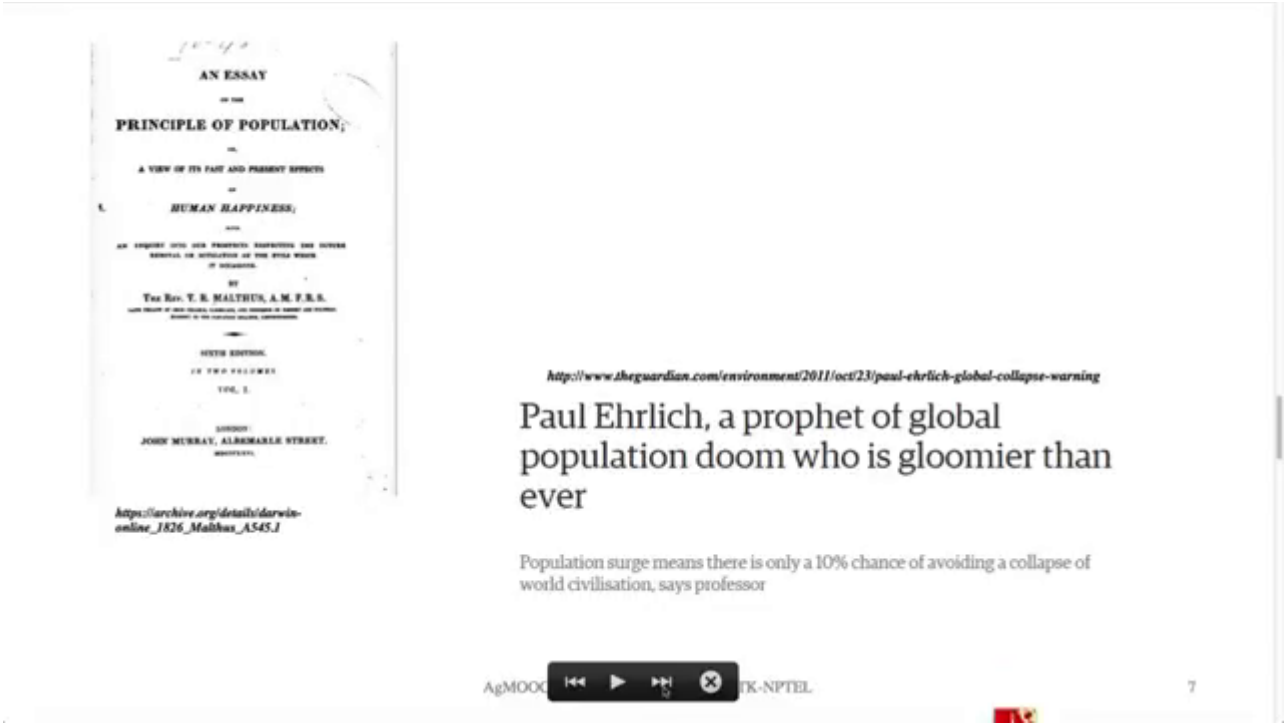

But then people have different views on how to act on them. On they left you see is -- on the left of the screen you'll see is the cover page of the essay on Principle of Population, a very famous essay by thinker in 18th Century, Britain, T.R. Malthus who proposed that there were strict biophysical limits on how much food could be produced. He proposed that population should be controlled in some way till stay within the biophysical limits of production. Now that was in late 18th Century, but these trends continue.

On the right hand side you see the name of Paul Ehrlich, a Professor at Stanford University who has continually advocated population control as the only means to avoid famines and disease on very large scale. In fact Paul Ehrlich is famous for predicting in 1965 that by 1985 two-thirds of population in India would have perished in famine and diseases. As of 2011 he continues to be as concerned and projects are very gloomy future. That is one way in which people seek to counteract the pressures on food production and agriculture.

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And there is another very famous philanthropist Mr. Bill Gates who more or less single-handedly funds the largest amounts in terms of support to agricultural research in Sub-Saharan Africa and in South Asia. According to him, population is still a problem. Although he doesn't specify how it becomes a problem. He's of the view that improved availability of vaccines can somehow handled the population problem in addition to improving food production. The links and details are not clear but the fact is a vision exists.

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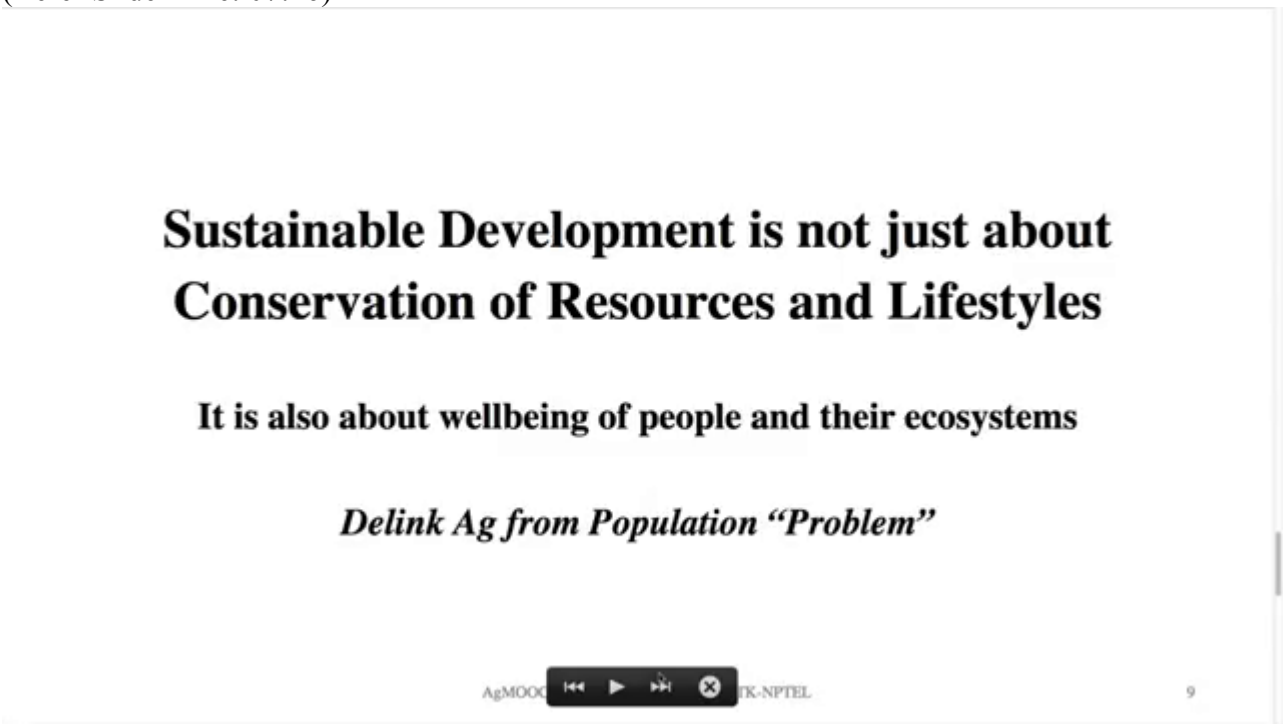

However sustainable development as we from developing countries would agree most of the learners in this course are from developing countries; we would agree that sustainable development is not about conservation of resources and lifestyles. It is about well-being of all

people and their ecosystems. Therefore it should be possible for us to delink agricultural production from population problems alone. In other words we should view these two not as confluence but as two different things. We can solve agricultural problems in one way. We can solve problems arising from population growth in another way. How do we go about doing that? What are the methods? First as we adapt a perspective.
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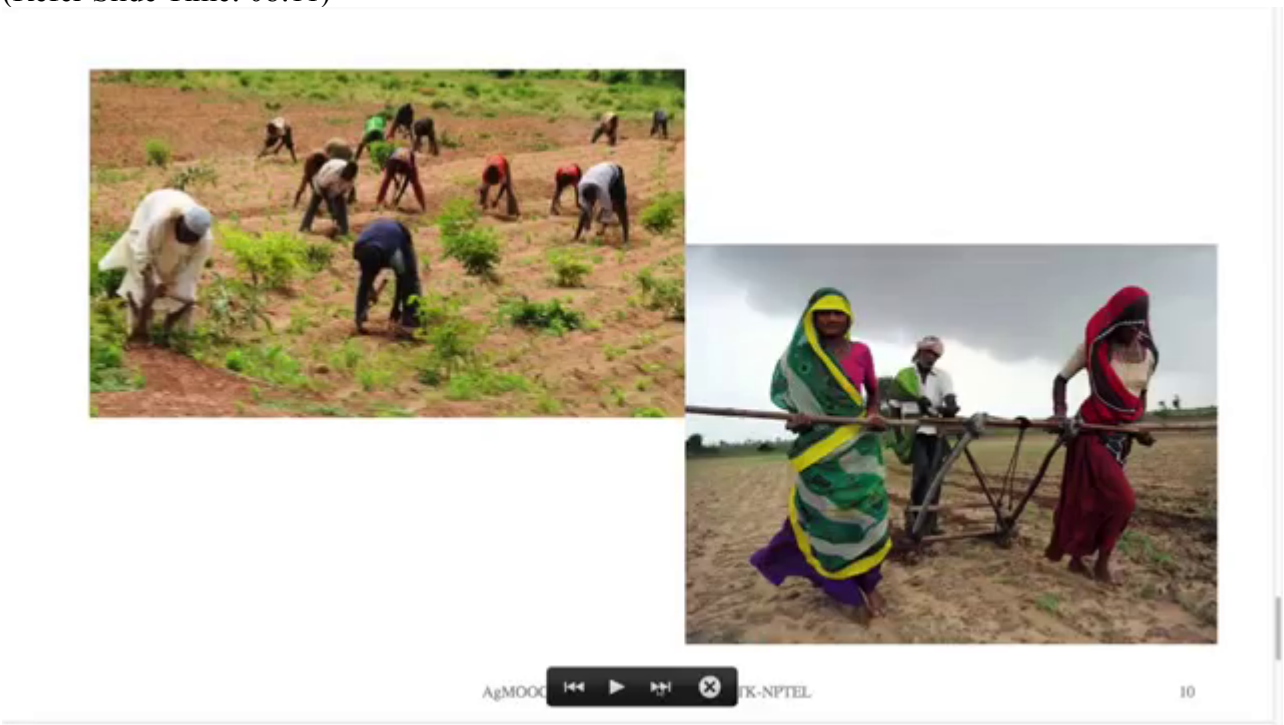

Second is looking at the people here, the farmers here who are working so hard to keep global food security intact. We should be able to arrive at a very general proposal that we need more site-specific land, water and biodiversity management. We need more site-specific land, water and biodiversity management.
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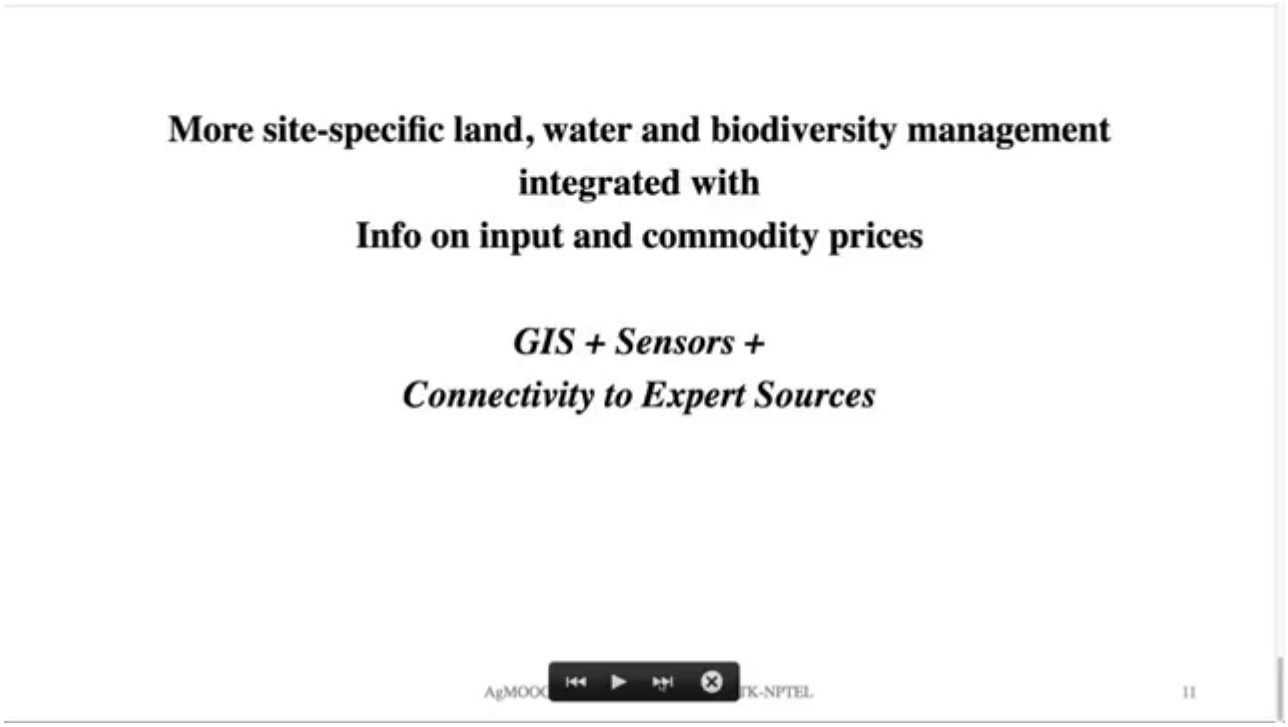

GIS and sensors can be of immense help in this particular regard. This was also stressed in two earlier talks by Professor R. Nagarajan, the Instructor In-charge in this course. This site specific management consideration should be deeply integrated with information on input as well as commodity prices, because we all know that commodity prices play a big role in farmer's decisions and in farmer's choices about what to produce and how to produce. Therefore it is very important that considerations such as this be integrated at a very fundamental level.

Also it is important to not only have access to GIS tools, we must also find ways to connect farmers to sources of expertise through mobile or voice telephone connectivity or through connectivity via the internet, several ways are possible. What is important is that experts and farmers must learn to work together to create site-specific land, water and biodiversity management paradigm, which is highly doable in today's world given the extent of tools available, all we need is commitment and determination. Thank you.

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