Digital Technology Applications for Agricultural Water Productivity Improvements

A webinar by 2030 WRG with the World Bank Water GP and GWSP

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08:45 – 10:00 AM EST (Washington, DC time)

ADDITIONAL QUESTIONS AND ANSWERS

ADDRESSED TO ROCHI KHEMKA

Q: Where is the uptake of IoT meters taking off? What are the techniques that help farmers to positively respond to these? And how can they align with water distribution during irrigation period by irrigation departments?

A: We have seen a few farmer producer organizations, such as Sahyadri Farms in India, and supply chain partners of ITC and Coca Cola that have installed IOT meters. In Vietnam, one of the Bank initiatives has targeted installation of IOT meters in rice and coffee cultivation. The information received on smart (or normal phones) related to soil moisture content allow farmers to judiciously plan watering cycles. In the Sahyadri Farms example, the farmers store water, when the government engages in “water circulation” during the irrigation cycle.

ADDRESSED TO ALL PANELISTS IN GENERAL

Q: How could smallholders farmers have access to affordable, low-cost technologies mainly for rice production in SA and SE Asia? Actually, rice production uses huge amounts of water compared with other crops and agricultural commodities.

- Prof. Dr. Wim Bastiaanssen (WB): These are 2 different questions. First on the affordability: The costs for a daily remote sensing based irrigation service with 10 m x 10 m details is $ 6 acre/yr. This includes all costs, so there is nothing extra. Some farmers can afford this, others not. An additional complication is that not all farmers have a mobile phone yet. So it is better to start with farmers who have a mobile phone or smart phone. If you are launching any new technology, do not start with the most difficult group. Middle income farmers can have the role of ambassadors of the technology, or being the "innovators". I think there is a great role for WorldBank Group and ADB to help the farmers with provision of access to this data. Also on training in its use etc. ¶ The second part of the question is on rice. Rice is not among the most water consuming crops because it has a short duration of 100 to 120 days. This is a generic misconception. Cotton grows for instance 180 days and consumes much more water. Also sugarcane. FAO has nice tables on water consumption by crop type. Also many tree crops use more water. But it is a fact that during the season, rice is having a high ET and that there are possibilities to save water in rice cultivation. IrriWatch is helping rice farmers with a more conservative irrigation application strategy. First the middle income farmers, later the poor smallholders.

Q: In sub-Saharan countries the access to such data seems to be very expensive. How we can increase the access to these data and information to smallholder farmers which constitute most farmers in this region. How we can promote the use of these technologies that could help achieve SDGs commitment in term of Biodiversity, land neutrality, water-use efficiency and for some major events such as locust control and the like? What should be the role of the Bank in this regard?

- WB: Digital agriculture can help achieving SDG commitments, if the information is reaching the farmers. If you do not reach the farmer, better resources management will be a paper solution. Too often discussions are held in the office and decisions are made by persons who never worked on a farm before. Involve the farmer representatives from the beginning, also on these international fora. Commercial and middle income farmers can afford data subscriptions. Smallholder farmers can be a challenge, and existing channels in reaching out to them should be explored. For instance the local agricultural extension worker could get a data subscription, sothat he/she can provide better advice to the group of farmers or water user associations he/she is responsible for. Commodity cooperatives like the local sugarcane factory or cotton cooperative can also have a role of producing more from less. Point is that the data can also go via a kind of middleman. Banks and local government may need to help financing such system.

Q: What is the role of governmental support / policy change in the roll out and scaling of the technology adoption?

- WB: Governments should have the technical capability to detect where in the country the largest problems are. Solve the largest problems first, such as water logging under conditions of water scarcity or over-abstractions of groundwater. Once the bigger problems are identified, a stimulating environment should be endowed for interventions. Can be large scale such as rehabilitation of drainage networks, maintenance of infrastructure or locally by opening programs where farmers can participate to get free data. If the rice farmer in Asia never gets a signal that the irrigation can be postponed by 6 days, he will continue to over-irrigate. A Government can open a desk where farmers learn how to read information and use it. Scaling is a big thing. Remote sensing can help. All raw satellite measurements are free. Cloud computing makes the image processing cheap. You can measure every 10 m every day, if the proper technologies are used. This can be applied to one single field of 0.5 ha, but also for 5000 fields in a given region. Scaling is solved.

Q: We are working in SW Bangladesh where top soil, surface water and groundwater salinity are important considerations with large spatial and temporal variability. Farmers are responding with many effective variations of innovative farming systems involving crops, livestock and both fresh and saline water aquaculture. How could technology support this process in terms of profitability, water-use efficiency and environmental sustainability?

- WB: Technology in general is a rather broad theme; so let me respond to the capabilities of remote sensing technologies only. Satellites can measure the wetness, water use and productivity of every land surface. Does not matter whether it is crop or pasture. This determines who the main water users are, and what their water productivity is. By creating a time series of multiple years, you can also see whether there is a positive or negative trend. Positive implies that something is getting better but a negative trend reveals something that is not sustainable., like a gradual soil salinization. So you can use technologies to benchmark current processes and monitor the overall betterment of an area of interest.