Improved irrigation backed to halve food gap

If all farmers adopted well-known water management methods, global food production could expand as much as 41 per cent, scientists have shown.

Scientists modelled 35 “ambitious yet achievable” water management strategies and found that improved irrigation could halve the world’s food gap, researchers write in a paper published in the journal *Environmental Research Letters*. This means the potential increase in crop yields could provide half the calories needed to eradicate hunger worldwide by 2050, the paper says.

To gauge the impact of crop-water management techniques, the model considers rain and other climate data from 1901 to 2009 and simulates different scenarios of improvements in irrigation, conservation of soil moisture and rainwater harvesting.

> ***“With improved water management, it’s theoretically possible to increase food production without expanding the area of land being farmed.”***
>
> ***Peter McCornick, International Water Management Institute, Sri Lanka***

Under the most optimistic scenario, production could increase “by more than 55 per cent in many river basins between the Middle East, central Asia, China, Australia, southern Africa and North and South America”, the researchers say.

Peter McCornick, deputy director-general of the International Water Management Institute in Sri Lanka, who was not involved in the research, says: “The message I would take from this [paper] is that with improved water management, it’s theoretically possible to increase food production without expanding the area of land being farmed.”

McCornick adds that NGOs and farmer organisations could use these findings to lobby governments for improvements in water management practices, promoting techniques such as conserving soil moisture through mulching, collecting runoff water, digging pits, terracing the land and improving irrigation equipment.

Financing such changes requires support from policymakers, says lead author Jonas Jägermeyr, a geographer at the Potsdam Institute for Climate Impact Research in Germany. Yet, agricultural water management is “outright missing” from the UN’s Sustainable Development Goals (SDGs), he tells *SciDev.Net*.

McCornick agrees there is a problem with the SDGs. For example, effective water use can contribute toward Goal 2 on hunger, food security, nutrition and sustainable agriculture, but crop water management is not mentioned explicitly enough, he says.

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Assefa Melesse, an environmental researcher at Florida International University in the United States, says the

paper's models are useful, but expresses caution about the conclusions.

Water management can boost production, but technology alone "can be disappointing in many cases, as other issues overshadow its significance", Melesse tells *SciDev.Net*. For example, land degradation can reduce the effectiveness of water management efforts, and introducing water infrastructure can spark political conflict over who controls such an important resource, he says.

Some water management projects have been poorly designed, and others have proven too costly to maintain over time, Melesse adds, arguing that such efforts must be planned at the community level to take into account local challenges and preferences.

References

Jonas Jägermeyr and others. Integrated crop water management might sustainably halve the global food gap (*Environmental Research Letters*, 16 February 2016)