

ICID Young Professionals e-Forum (IYPeF)

<https://www.linkedin.com/groups/6990321>

Flood Management in Agriculture

Background Note for Discussion

15-30 April 2019



Introduction

Projections by IPCC¹ show that potential change in precipitation and temperature brought about by climate change could affect run off and most importantly an increase in the frequency of extremes, such as floods and droughts. It is strongly believed that by 2050, many parts of the world will face increased risk of recurrent droughts and devastating floods (Nairizi, ICID 2017). For instance, after several years of drought in Iran, in recent days unprecedented devastating

¹The Intergovernmental Panel on Climate Change

floods have been occurring in various provinces, causing unfortunately loss of 70 human lives and damages worth about \$ 6 billion in the agricultural sector till now.

Paradoxically, dry and semi-arid countries are not able to utilize billions of cubic meters of floodwaters for useful purposes such as agriculture and water storage for dry season, but do suffer financial losses and casualties resulting in billions of dollars and thousands of deaths. At the same time, many regions are facing water scarcity. The sources of water for irrigation in such areas include flood and temporal flows. Inhabitants of these areas have adapted their local environmental conditions since distant using flood spreading and flood irrigation as the basis of their livelihoods.

Rainfall and floodwater collection are used for agriculture across a vast area of North America and Mexico. These practices were also used in many parts of the Middle East, North Africa, China and ancient India. Although the current condition of ancient flood management structures does not allow for accurate evaluation of their historical performance, contemporary archeological evidence does suggest that rainwater harvesting had been a common practice in many places up until the 11th century. This early mode enabled farming in arid and semi-arid areas; otherwise permanent inhabitation could not have been possible in these areas (Rahbargh, et. al.).

In the watershed outlet, there are vast areas of coarse-grained sediments, where flood accumulation is an appropriate method to achieve productivity, sustainable development of agriculture and the regeneration of natural resources. On the other hand, in arid and semi-arid regions, aquifers have been abandoned due to continued untapped use of groundwater resources. As a result, such areas were considered non-productive deserts. With high permeability, abundant water storage capacity in coarse-grained sediments and natural flood capability in fertilizing these areas, flood spreading through aquifers is a novel approach with several benefits. In addition to the restoration of dry and seemingly desert areas in the form of regeneration and expansion of forests and pastures, and the restoration of the environment, recharging underground reservoirs through the exploitation of floods, access to water can be dramatically improved (Kamali. K and Mostafae).

A recent study (Nairizi, ICID 2017) suggests that the rainwater harvesting during monsoon and its use for irrigation during dry season could increase the crop yield by 20-30% during Rabi season and increase additional water availability for population use by 60% in the area. The study concludes that the erratic and uneven distribution of rainfall, both spatially and temporally, necessitates rainwater harvesting to increase and sustain the agricultural productivity. There is urgent need for flood protection and irrigation on farm lands, particularly below the hills, through control and utilization of run off.

In short, ensuring food security for 10 billion people in a world that faces more frequent and severe floods and droughts is one of the greatest challenges of the humankind in 21st century. Young Professionals in the Irrigation and Drainage sector are encouraged to share research and experiences about flood management in agriculture with specific reference to the questions posed below.

Objectives

The discussion on the topic “Flood management in Agriculture” is expected to achieve the following objectives; amongst others:

1. Get an insight in converting flood threat into opportunities.
2. Sharing traditional methods of saving flood as surface and underground water resources for agricultural purpose in different countries.
3. Discuss the necessity of using floods for agricultural purpose in arid and semi-arid areas.
4. Highlighting the views of Young Professionals with regard to using flood for saving water and increasing food security.
5. Taking benefit of up-to-date knowledge and technology in flood management such as river restoration.

Expected outcomes

During the IYPeF e-discussion, Young Professionals will explore answers to following questions:

1. What are the benefits of flood saving methods?
2. How can we use flood in agricultural activities?
3. How to promote a safe and efficient flood management system in agriculture?
4. What solutions and approaches should be applied for diminishing flood risk in agriculture?
5. What are the most workable laws and regulations with regard to flood farming?
6. What are the traditional methods for using floodwaters in agriculture? Which ones are still used in different countries?
7. What technical innovations and financial instruments can be designed to develop traditional methods of flood farming?
8. How could we take benefit of flood management techniques for aquifer recharge specifically in arid and semi-arid areas?
9. How can YPs contribute to promote the use of flood in the agricultural sector and increase public and government awareness?

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