Volume 1 • Issue 2 • 2017

Scientia Ricerca

Case Report

Innovative Techniques in Agriculture

ISSN: 2575-5196

Emerging Irrigation Techniques-A Case Study

Sushree Sangita Dash* and C.R Subudhi

Deportment of Soil and Water Conservation Engineering, College of Agricultural Engineering and Technology, Orissa University of Agriculture and Technology, Bhubaneswar-751003, Odisha, India

***Corresponding Author:** Sushree Sangita Dash, Deportment of Soil and Water Conservation Engineering, College of Agricultural Engineering and Technology, Orissa University of Agriculture and Technology, Bhubaneswar-751003, Odisha, India.

Received: June 06, 2017; **Published:** June 21, 2017

Abstract

Irrigation is a vital input in the agricultural productivity and agricultural growth. More than 80% of available water resources worldwide as well as in India are being presently utilized for irrigation purposes. However, in India, the average water use efficiency of Irrigation Projects is assessed to be only of the order of 30-35%. There is no doubt that modernization of irrigation system like concrete lining to the inner surface of the open channel; canal automation etc. will save water significantly. But these techniques require huge capital investment, hence uneasy to adopt. On this background it is appropriate to know the innovative, simple, low cost, easy to adopt, water conveyance techniques used in the command of few irrigation projects in Maharashtra. The paper discusses the need to increase the Water Use Efficiencies of existing Irrigation Projects and new projects and the success case studies in detail. The findings show that such pioneering techniques shall be implemented in the command areas of other irrigation projects as and where found techno economically feasible to achieve improvement in crop yield and good water management with high water use efficiency.

Volume 1 Issue 2 June 2017

Introduction

Ultimate irrigation potential of India is 140 million hectare. Irrigation potential to the tune of about 102 million hectare has been created through Major/Medium/minor surface water irrigation projects and use of ground water. However, potential utilization is about 87 million hectare only Mahato (2013). Irrigation sector is the biggest consumer of water as more than 80% of available water resources in India are being presently utilized for irrigation purposes. However, the average water use efficiency of Irrigation Projects is assessed to be only of the order of 30-35%. Mahato (2013). Presently the annual agricultural output is just sufficient to sustain our food grain requirement. To meet the challenge of regular expansion of size of population, the productivity of the water and land has to grow, as both the resources are limited. Water is a major and vital input to increase agricultural productivity. Supplying water to the crop at right time, right place and right quantity is the main objective of good irrigation management, but in case of surface water reservoirs, the irrigation water is conveyed to the farm with the conventional wide spread open channel water distribution network. In fact, the above system is not capable to meet time based crop water need due to depletion of water use efficiency of the system with age. As the time passes lot of deficiencies including low water use efficiency get involved in this type of network.

Jai Malhar Water user Association, Indore Minor Irrigation Project, Dist: Nasik

It is established in the command of Indore Minor irrigation Project, 22 km away from Nasik city. The command of the project was 157 hectare. Before implementation of the innovative PVC pipe conveyance and water distribution network, only 20 to 30 hectare area was getting the irrigation benefit as there were huge conveyance losses in the conventional open channel water distribution network. Beneficiaries were fetching problems to survive as their farm income was very low due to lack of irrigation support. Very few farmers in the head reach were getting the benefit. Tail Enders was deprived. To maximize the benefit and equitable distribution of water, the WUA discarded the use of open channel and established an innovative water conveyance and distribution PVC pipe system.

An innovative irrigation technique for vegetable cultivation

A project supported by National Agricultural Innovation Sub Project (NAIP-KVK) in Jhabua district of Madhya pradesh. With this encouragement, he decided to grow cucurbits viz., bitter guard, and sponge guard in late summer season of 2012-13 in 0.1ha area Ramesh (Farmer) saved his crop from drought due to delayed monsoon and got net profit Rs.15200/- from 0.1 ha land till date. It included using of saline bottles as drip irrigation technique.

Wavi Harsh Water User Association, Dist. Nasik

It is a lift irrigation scheme, lifting water from the Vaitarana Major Project and supplying irrigation to the established for tribal farmers on the upstream sides of the reservoir. It is situated in Nasik District of Maharashtra. A common jack well is constructed on the upstream side of the dam. The hilly command area of the WUA is 371 ha, divided into 20 small chaks.

Results

The common Values of above case studies are listed below-

1. Simple, low maintenance, low cost, long lasting and adoptable system
2. High water use efficiency
3. No land is wasted. No land acquisition.
4. Built in transparency. No scope for malpractice in the water distribution.
5. Equitable water distribution.
6. Built faith of the system.
7. Helps to ensures water rights.
8. Minimum conflicts.
9. No one can draw water out of turn.
10. Any individual farmer can exchange his share with the adjacent needy farmer.
11. Tail Enders water right is assured.
12. Manageable turnout discharge
13. Construction of pipe network is much easier, cheaper and quicker than the open channel water distribution network
14. Induces Crop diversification and adoption of high yielding crops.
15. conjunctive use of surface and Ground water is possible
16. No water logging

Conclusion

It is concluded that specially designed closed pipe water distribution network improves the crop yield significantly. It saves considerable amount of water with trouble-free irrigation management. Land acquisition being the major hurdle in development of irrigation potential can be avoided which helps to maximize the utilization of created irrigation potential.

References

1. Bhalge PS and Holsambre DG. "PVC Pipe Distribution Network - An alternative solution to open channel gravity flow irrigation network". *International Conference on food security and environment Sustainability* (2009):
2. Mahto Shankar. "Present Status of Water Use Efficiency on Irrigation Projects in India and Action taken for its improvement including role of role of farmers". *Training Program on Increasing Water Use Efficiency (WUE) in irrigation Sector* (2013):
3. Pradeep Bhalage., *et al.* "Case Studies of Innovative Irrigation Management Techniques". *Aquatic Procedia* 4 (2015): 1197-1202.