

Economic Issues of Drainage in Agricultural Land

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Abstract

The water logging of agricultural lands in eastern region of India has been a major cause for yield loss and low income from agriculture. Water logging due to excess rainfall in a saucer shaped agricultural land and in the canal commands due to profligate use of water in the head end results in yield loss there by increases private as well as social cost. The coastal tracts of the country are prone to water logging in the event of excess rainfall due to saucer shaped topography there by reducing yield potential of major crops that varies from 20% to as high as 100% in some water sensitive crops. To combat the effect of water logging, provision of surface and sub surface drainage has been scientifically proved effective. In the early period prior to the advent of state planned barrage controlled irrigation system, rational farming which maximised the return per unit of scarce water by increasing the cultivated area, helped to prevent water table to build up as seepage losses in the fields were negligible. However, the consideration of maximisation of private gains out of public supplied irrigation system led to excessive application of irrigation water at the head end and water logging at the tail end of canal systems as the field to field irrigation was mode of water application in the absence of well laid out field channels. It is important to measure the changes due to artificial drainage effect on whole ecosystem and a holistic approach is required because most of the effects are currently recognised as externalities (i.e. environmental effects in economic models) become indigenised ¹. Two sets of approach can be considered for evaluation of a surface drainage project. One approach would be to evaluate the effect of drainage on farm economy and the other set would be to evaluate the whole drainage system against economic viability. The evaluation methodology for the whole of drainage project (drainage system) is same as any other project evaluation and the indicators considered for the projects are (i) Cash flow (ii) Net present Value (iii) Benefit-Cost Ratio(iv) Internal Rate of Return. If the project is to be analysed from social benefit cost point of view, the shadow or opportunity costs and prices are to be taken into account. To evaluate the benefit to the farmers due to the drainage system, the changes in the productivity, production, cropping pattern, increase in the efficiency of input use, increase in the gainful employment which resulted in increased income of the farmer have been considered as indicators by different surface drainage and sub surface drainage studies. A case study by Water Technology Centre for Eastern Region (Presently ICAR-IIWM) in Kushabhadra-Bhargavi doab reflected that the yield benefits increased by as high as 30% in comparison to pre surface drainage scenario, increasing in cropping intensity was recorded to be as high as 100% for different size class of farmers.