

XII.A.3. Sustainable Agricultural Development and Micro-irrigation

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Efficiency in resource use is one of the important pre-requisites for sustainable agricultural development. Among various factors the type of technology, process of commercialization and the inadequate extension services have together contributed towards the inefficiency in resource use. Efficient use of irrigation water is one of the important components in achieving efficient resource mix and thereby sustainable development. Due to the extensive cultivation of crops under the conventional method of irrigation (flood irrigation under canal/well), the inefficiency in use of water has been increasing. The negative externalities of over-use of water are enormous. Waterlogging, soil salinity, soil erosion and formation of salt layer on the top of the soil. This has also affected the total availability of water. The gap between availability and requirement of water arises mainly out of the inefficient use. Keeping in view the growing needs of irrigation water and the rapid decline in the available potential of irrigation water, different measures have been introduced to improve the efficiency in water use. The measures (technological as well as economic alternatives) introduced so far could not bring any appreciable change in the existing pattern of water use. However, the new water conservation technologies, namely, drip and sprinkler methods of irrigation introduced recently are proved to be efficient in terms of water use and increasing the productivity of crops. Drip method of irrigation has a wider acceptance and the area cultivated under this method has been increasing. Experiences from countries like Israel indicate that drip method of irrigation is not only economically feasible, socially acceptable but also has significant contribution towards sustainability in resource use. In India, we do not have many studies analyzing the impact of drip irrigation on environmental parameters. But the questions like how much water is being saved by using this technique or what is the incremental productivity or the viability of the investment have been looked into at the experimental station level but not from field perspective. In addition to this the environmental impact questions assume greater importance. The present study is an attempt to probe through a few of these questions. More specifically: 1) to investigate the water saving in field conditions under drip irrigation and thus to estimate the positive externality of this technique; 2) To map the environmental externalities of drip irrigation in the horticultural cropping systems. The study suggests that drip irrigation has a positive contribution towards maintaining the environmental sustenance.