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Research Paper

Water use efficiency under coconut based different irrigation methods

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ABSTRACT : The quantity of water required for producing 1000 nuts in FM group, MSM group and DM group was 0.05Ha-m, 0.02Ha-m and 0.03 Ha-m, respectively. On the basis of nut yield per Ha-m and water used for producing 1000 nuts, the per cent water saved in modern methods over traditional one was worked out which indicated water use efficiency. The water use efficiency (nut yield/Ha-m) was found to be more in micro-sprinkler irrigation method (43173) followed by drip (38923) and flood irrigation method (22268). Water saved in modern irrigation methods was to the extent of 60 per cent in micro-sprinkler method and 40 per cent in drip irrigation method. Irregular supply of electricity was the major problem of farmers using flood method of irrigation (71.42%). Other major problems in flood irrigation method were shortage of water in summer season (31.43%) and unavailability of raw material (57.14%). Most important problem of farmers using micro sprinkler irrigation method was that of weed.

KEY WORDS : Cost of irrigation, Water use efficiency, Constraints

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INTRODUCTION

The agriculture is major consumer of water, which accounts for more than 90 per cent of total water use. The allocation of water to agriculture will get reduced to 75 to 80 per cent in another 15 to 20 years as the demand of water for industries and domestic purpose increases. The total utilisable quantum of water is estimated to be nearly 105 million hectare meters and even with the full utilization of this potential; nearly half of our cultivated area will remain unirrigated. So, this remaining area will continue to depend upon rainfall. Hence, it is necessary to economies the use of water in agriculture. This could be achieved by introducing advanced and sophisticated methods of irrigation like drip and sprinkler with improved water management practices. The overall irrigation efficiency is very low in our country due to loss of irrigation water during conveyance and field application (Rane, 1985). Therefore, there is a great scope in saving large quantities of water to estimate water use efficiency under different methods of irrigation and problem faced by the farmers using different methods of irrigation.

MATERIALS AND METHODS

A cross sectional sample of 90 farmers was selected from Ratnagiri district (M.S.). They were classified according to methods of irrigation as Flood irrigation method, Micro-sprinkler method and Drip irrigation method. The data collected for the agricultural year 2009-10 were analyzed by using suitable statistical tools and standard cost concepts to draw meaningful conclusions. In each irrigation structure, irrigation water used was estimated.

Estimation of quantity of irrigation water in flood irrigation method:

Following formula was used for estimation of quantity of irrigation water in flood method of irrigation:

$$Q = \frac{H.P. \times 75}{H} \times \frac{n}{100}$$

where,
Q = Discharge of pump (lit/sec)
H.P.= Horse power of the pump
n = efficiency of the pump (%)