

INFLUENCE OF IRRIGATION AND CROP RESIDUE MULCHING ON YIELD AND WATER PRODUCTIVITY OF TABLE PURPOSE GROUNDNUT (*ARACHIS HYPOGAEA*) IN HUMID TROPICAL ISLAND

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ABSTRACT

Field experiment was conducted during dry season of 2008-10 at Andaman and Nicobar Islands to study the influence of irrigation at critical stages and mulching on yield and water productivity of table purpose groundnut under humid tropical conditions. Experiment was laid out in split plot design with three replications by assigning irrigation at critical stages ('No irrigation', 'one irrigation at pegging', 'two irrigation at life and pegging', 'three irrigation at life, flowering and pegging' and 'four irrigation at life, flowering, pegging and pod development') to main plot and crop residue mulching ('Paddy straw', 'banana leaf', and '*Glyricidia* leaf' and 'No mulch') to subplots. Growth and yield attributes were significantly influenced by irrigation and mulching. Application of two irrigations at life (3 DAS) and pegging (55-60 DAS) resulted in higher pod yield (3 549 kg/ha) compared to three and four irrigations which registered 2.6 and 7.7% yield reduction. Higher net returns (Rs. 41 599/ha), B:C ratio (1:8), energy ratio (15.3) and lower specific energy (4.0 MJ/kg) was recorded with two irrigations. However, one irrigation at pegging registered higher water productivity of Rs. 66/m³. Among the crop residue mulches, paddy straw mulch registered higher pod yield (3 425 kg/ha), water productivity (Rs. 33/m³), net returns (Rs. 39 280/ha), B:C ratio (1:6) and energy ratio (15.0).

Key words Irrigation, Mulching, Table purpose groundnut, Water productivity.

INTRODUCTION

India is one of the largest producer of groundnut along with the United States of America, China and Argentina. Hand Picked and Selected (HPS) groundnuts also called as table purpose groundnut have very large potential in domestic as well as international markets. In India, Andaman and Nicobar Islands are one of the most preferred destination for eco tourists. Commodities which are having direct link with tourism are having higher economic value and table purpose groundnut is one such crop and its products can be consumed in many forms like boiled and fried peanuts. The Islands are having around 7685 ha of valley lands wherein only paddy is grown during June to November due to water logging. Out of 3074 mm of annual average rainfall, 2789.9 mm of rainfall is received in 126 rainy days during May- November while only 284.4 mm is received in 17 rainy days during December-

April leading to acute shortage of water for irrigation (Pramanik *et al.*, 2000). Table purpose groundnut can be grown as rice fallow crop in Islands as sandy loam soil is suitable for groundnut cultivation. Sowing at the appropriate time can lead to saving in irrigation due to utilization of residual soil moisture by the crop. Generally, paddy is harvested leaving portion of the straw in the land due to standing water in the field. Considerable quantity of this straw can be used for mulching to conserve moisture. *Glyricidia* is grown in the road side fence and field bunds at many places all across the islands, which can also serve as a suitable mulch material. Irrigation at critical stages and moisture conservation with mulching practices can increase the land and water productivity along with profitability. Considering the importance of irrigation and moisture management for table purpose groundnut, an experiment was conducted to study the influence of irrigation and

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