



A study on the cultivation of capsicum in a greenhouse during off-season in warm and humid climate of India

M.K. GHOSAL* AND R.K. DAS

Department of Farm Machinery and Power, College of Agricultural Engineering and Technology, Orissa
University of Agriculture and Technology, BHUBANESWAR (ODISHA) INDIA
(Email: mkghosal1@rediffmail.com)

Abstract : The suitability of a low-tech naturally ventilated greenhouse was evaluated for off-season cultivation of capsicum in warm and humid climate *i.e.* in coastal Odisha, Bhubaneswar because of its high demand during that period. The cultivation of this vegetable was tried in winter days of the year 2009-10. It was observed that the crop yield was more in the greenhouse during off-season as compared to the open field condition. The greenhouse with shade net was observed to be a suitable protected condition for better plant growth and higher yield compared to without shade net for less variation in temperature due to partial elimination of incoming radiation by the shade net during day hours and prevention of the radiative losses to the cold night sky thus maintaining a better heat distribution inside the greenhouse. The yield of capsicum per square meter of the cultivated area in the greenhouse was found to be 2.34 times more than open field condition. Overall growth of capsicum in terms of height of plants and number of leaves per plant inside the greenhouse was more compared to the open field. Early flowering and fruiting were also observed in the greenhouse condition. The benefit cost ratio for capsicum in the greenhouse was 2.98 whereas it was 0.80 in case of open field condition. In this naturally ventilated type of greenhouse, the small and marginal farmers of Odisha will be able to grow other vegetables during off-season which would be quite remunerative.

Key Words : Greenhouse, Solar energy, Capsicum, Shade net

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INTRODUCTION

Cultivation of crops is mainly climate dependent in normal conditions. Hence, all vegetables have their own seasons in which they can be grown. But with the introduction of green house technology (Nelson, 1985), farmers can be able to grow various vegetables during off season to fetch a good market value. As there are many small and marginal farmers in Odisha, hence the suitability of a low-tech naturally ventilated greenhouse was evaluated for off-season cultivation of capsicum in coastal Odisha because of its high demand during pre-summer period. The cultivation of this vegetable was tried in winter days of the year 2009 with three dates of sowing under both open field and greenhouse condition to evaluate and compare its different growth parameters, yield and yield attributing characters and to harvest during pre-

summer period as an off season vegetable. Looking into the demands of capsicum during off-season and importance of maintaining suitable temperature inside the greenhouse for the growth of capsicum, experiments were conducted under greenhouse and open field conditions with the following objectives to compare the growth and yield of capsicum both inside greenhouse and in open field condition and to compare the cost of cultivation of capsicum both inside and outside the greenhouse.

MATERIALS AND METHODS

Experimental site:

A semi circular shaped greenhouse (Fig. A) covering the floor space of 4 m x 12 m (48 sq m) oriented in East-West direction (Singh and Tiwari, 2000) was used for study. The

* Author for correspondence.