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Research Paper

Effect of irrigation scheduling, mulching and salicylic acid on growth, yield and quality of watermelon under rice fallow condition

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ABSTRACT

A field experiment was carried out to study the effect of irrigation intervals, mulching and salicylic acid on growth and yield of watermelon under rice fallow condition with fifteen treatment combinations by using irrigation schedules, one at 6 days interval and another at 8 days interval with three different mulching materials like paddy straw, coir pith and black polythene sheet and salicyclic acid @ 0.1% as a source of antitranspirant. The control is the usual practice of the farmers which is giving two irrigation per week. Various biometric observations on growth attributes *viz.*, vine length, number of branches plant^{-1}, number of leaves plant^{-1}, and leaf area, physiological attributes *viz.*, leaf area index, chlorophyll content, relative growth rate, dry matter production, photosynthetic rate and WUE, flowering attributes *viz.*, days taken for first male and female flower emergence, total number of male and female flowers plant^{-1}, sex ratio and fruit set percentage and yield attributes *viz.*, number of fruits plant^{-1}, fruit yield plant^{-1}, fruit weight, fruit girth, fruit length, yield ha^{-1} and TSS were recorded. Different treatments significantly influenced the growth, physiological, flowering and yield characters. The results revealed that irrigation at 6 days interval along with coir pitch mulch and salicylic acid @ 0.1% spray on 30 and 60 DAS (T_{11}) was found to be the best with higher fruit yield of 59.63 t ha^{-1}, which was followed by irrigation at 6 days interval with black polythene mulch and salicylic acid @ 0.1% spray on 30 and 60 DAS with a yield of 57.25 t ha^{-1}.

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At present, water is being a very precious input in agriculture. Irrigation is potentially one of the most important means of raising productivity of vegetables. The importance of irrigation lies not only in its own productivity, but also in its ability to increase the productivity of other associated inputs (Srinivas, 2006). Rice based cropping system has assumed paramount importance to meet the dietary habits of 42 per cent population of India (Nanda *et. al.*, 1999). Rice based vegetable cropping systems were evaluated under different physiological situations in farmer's field. Apparao (1997) noted that the rice followed by vegetable such as rice-tomato, rice-brinjal, rice-cabbage, rice-chillies, rice-watermelon and rice-cucumber as summar crops were more commercial in the paddy cropping system. But, the major constraints faced by the farmers following the rice fallow cultivation of vegetables are the requirement of more water and cost of field preparations. Conservation tillage and proper management of nutrients and water utility play a significant role in reducing the above said problem (Karuppaiah and Kathiravan, 2006). Hence, efforts are needed to obtain increased water use efficiency. Optimum use of water through proper irrigation scheduling is one of the option to use water resources efficiently (Hedge *et al.*, 1994). Mulching and application of antitranspirants are the economical measures to conserve irrigation water. Mulching aims at slowing the evaporation loss from the stored soil moisture. Antitranspirants are applied to crop foliage to reduce transpiration loss of water (Prakash *et al.*, 1992). Hence, the present study to reduce consumptive use of water and to improve water management is necessary to make the efficient use of water so as to increase the crop production under rice fallow condition.

MATERIALS AND METHODS

The experiment was conducted in the Department of Horticulture, Annamalai University, Annamalai Nagar,