

Effect of saline water and fertigation on the yield contributing parameters of brinjal

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ABSTRACT

A field experiment on brinjal Cv. Krishna was conducted at Inter Faculty Department of Irrigation Water Management, Post Graduate Institute, MPKV., Rahuri during summer season of 1999-2000. The concentration of N was highest in a canal water treatment of 1.60 % in SW₀ + F₁ treatment than saline water treatment of 1.20 % in SW₁ + F₁ treatment at harvest in plant and 2.81 and 2.08 % in case of fruit. The plant height was highest in canal water treatment of SW₀ + F₁ of 71.3 cm at 90 days after transplanting and in lowest height was observed in saline water treatment (SW₁ + F₁) of 54.7 cm at 90 days after transplanting. The highest dry matter accumulation in canal water was observed of 112.6 g/plant and lowest was observed of 86.3 g/plant in saline water treatment (SW₁ + F₃). The highest dry matter accumulation in fruit was recorded of 87.4 g/plant and lowest was recorded of 66.9 g/plant in SW₁ + F₁ treatment.

Key words : NPK concentration, Dry matter, Brinjal.

INTRODUCTION

In Maharashtra, area among different vegetables grown was 22235 ha. Brinjal crop is less trouble some from pests and disease point of view. The brinjal is grown on a variety of soils. The deep fertile and well drained soils are recommended for its cultivation. The brinjal responds well under slightly acidic soil condition however, soils having pH upto 7.5 is also suitable for brinjal. Water is an important factor for increasing the crop production and being limited, its efficient use is very important from the point of agriculture. The soils of Maharashtra are mostly vertisols are associated soils with expanding type of montmorillaonite clay. The clay content varies from 60-65 per cent. The calcium carbonate is very high to the extent of 15-18 per cent showing alkaline reaction. In such a soil use of saline water by surface irrigation methods exhibits and creates several problems for crop production such soil, turn to problematic due to excess irrigation. The use of drip irrigation coupled with fertigation is gradually gaining much importance. Then the application of fertilizers through drip irrigation is the most convenient method. They are supposed to acts as slow release fertilizers and hence nutrient are available to the plants over longer period of growth as they are not easily lost by fixation, leaching etc. as compared to solid fertilizers. Soil salinity generally inhibits N-mineralization. The simultaneous presence of salt and nutrient element in the root zone can influence the ion uptake by plants and its chemical composition (Feigin, 1985). The limited information is available regarding the nutrient and water application. Therefore the experiment on saline water and fertilizer on brinjal was taken with certain objectives.

MATERIALS AND METHODS

A field experiment on brinjal was conducted at Mahatma Phule Krishi Vidyapeeth, Rahuri (M. S.) during the year 1999-2000. The soil was sandy clay loam, pH 8.1, EC 0.22 dS/m, available N, P, K was 148.6, 12.5, 392.0 kg/

ha, bulk density 1.3 Mg/m³. The experiment was laid out in a split plot design with 6 treatments and 4 replications. The details of the treatments are as follows.

Treatments

Salinity level

SW : Best available canal water EC 0.21 dS/m

SW₁⁰ : Saline water EC 2.0 dSm⁻¹

Fertilizer dose

F₁ : 100 % recommended dose of urea N-fertilizer through drip irrigation

F₂ : 75 % recommended dose of urea N-fertilizer through drip irrigation

F₃ : 50 % recommended dose of urea N-fertilizer through drip irrigation

The Cv. Krishna of brinjal was used. The spacing was 90-45 x 60 cm², plot size 3.6 x 4.5m. The fertilizer dose was 150:50:50 N, P O and K O kg/ha. The quantity of urea fertilizer required as per treatment was calculated and applied in splits at transplanting 15, 30 and 45 days after transplanting. The soil and plant samples were collected at 30 days interval and analysed for N, P and K in soils and plant. The yield of brinjal was calculated by summing of total picking.

RESULTS AND DISCUSSION

1. Nutrient concentration

a) Nitrogen concentration

Saline water : It was revealed from the data (Table 1) that the concentration of nitrogen is more in case of fruit of 2.80 % than of 1.60 % in plant in canal water treatment. The nitrogen concentration is highest in canal water irrigation than saline water irrigation treatment of 1.60 and 2.81 for plant and fruit, respectively. Similar results were reported by Rakh (1992) and Pawar et al. (1992). In saline

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