

Evaluation of different tomato (*Lycopersicon esculentum* Mill.) lines for drought tolerance

D.M. NAIK* AND B.M. RODGE¹

Department of Horticulture, Marathwada Agricultural University, PARBHANI (M.S.) INDIA

ABSTRACT

The experiment was conducted at Department of Horticulture, Marathwada Agricultural University, Parbhani during *kharif* 1997 in randomized block design with nine treatments and three replications. Seven selections and two varieties were tested for drought tolerance. The results indicated that Selection-14 was found better in giving high yield (312.23 q) besides it was also found suitable under rainfed conditions in comparison with other selections and check varieties.

Key words : Drought tolerance, Tomato

INTRODUCTION

Tomato (*Lycopersicon esculentum* Mill.) is a member of family solanaceae is one of the most important vegetable grown world wide under field and controlled condition. It is adoptable to wide range of growing condition. In India, it is grown over almost all parts of the country.

Tomato plants are herbaceous, annual and sexually propagated. Growth habit both determinate and indeterminate. Branching pattern is sympodial. There are different species of tomato like *L. Pimpinellifolium* (resistant to *Fusarium* wilt), *L. peruvianum* (resistant to leaf curl virus), *L. hirsutum* (resistant to fruit borer), *L. cheemanji* (salt tolerance) and *L. pennellii* (drought tolerant).

In India, tomato is cultivated on 321000 hectares area with annual production of 50,29,000 metric tones (Anonymous, 1996). In Maharashtra State the area under this crop was 30,786 hectares with production of 6,42,700 MT in 1994-95.

MATERIALS AND METHODS

The present investigation was carried out at the Department of Horticulture, Marathwada Agricultural University, Parbhani during *kharif* 1997. The seed material was obtained from the Fruit Research Station, Himayatbagh, Aurangabad. Seedlings were raised on raised beds and transplanted in main field. The experiment was laid out in simple randomized block design with nine treatments and three replications. The row-to-row spacing was 60 cm. The plot size was 3 m x 2.4 m.

The five plants were selected from each plot and were labeled. The observation in respect of growth

character recorded at an interval of 15 days from 30 days after transplanting.

The height of plant, number of primary branches per plant, days to 50 per cent flowering, number of flowering cluster per plant, number of fruits per plant, fruit weight (g), marketable yield per plant (kg), unmarketable yield per plant (kg), total yield per hectares (q), unmarketable yield per hectare (kg), total yield per hectare (q), soil moisture estimation by gravimetric method. The estimation of chlorophyll content was done by Arnon's method (Arnon, 1949). The measurement of root length was also recorded.

The statistical analysis of collected experimental data was done by the following standard procedure described by Panse and Sukhatme (1967). The analysis of variance was carried out according to simple randomized block design.

RESULTS AND DISCUSSION

As per the data shown in Table 1 there were significant differences in respect of plant height at different dates of observation amongst various varieties and selections. Similar results with same trend were obtained at 30, 45, 60 and 75 days after transplanting. Selection-14 produced significantly more height than check Pusa Ruby and Devgiri and rest of all selections, however, it was found at par with Selection-13. Selection-12 produced minimum height than rest of all selections and varieties.

Thus from initial to final growth stages, it was observed that Selection-14 produced significantly taller plant than the rest of the selections and both checks, whereas Selection-12 and Selection-1 produced significantly dwarf plants than other check varieties and selection.

* Author for correspondence.

¹ Department of Horticulture, College of Agriculture, Dr. B.S. Konkan Krishi Vidyapeeth, Dapoli, RATNAGIRI (M.S.) INDIA