

Studies on the effect of different organic and inorganic fertilizers on growth, fruit characters, yield and quality of chilli (*Capsicum annuum* L.) cv. K-1

S.N. DILEEP AND S. SASIKALA*

Department of Vegetable Crops, Horticultural College and Research Institute, Tamil Nadu Agricultural University, COIMBATORE (T.N.) INDIA

ABSTRACT

Chilli is one of the commercial high value crops in our country. It is called as the universal spice of India, since it is cultivated in almost all the states and union territories. It is commercially important for the two qualities, the red colour due to the pigment capsanthin and the biting taste due to the chemical constituent capsaicin. Chilli crop requires a balanced fertilizer management without which growth and development of the crop will be impaired leading to substantial reduction not only in yield but also in the market appeal of the produce namely the colour and quality of the dry chilli. Hence, the present study was carried out to find out the effect of different sources of organic manures along with various levels of inorganic fertilizers on growth, fruit traits, yield and quality improvement of chilli cv.K1. From the study, it was found that growth, yield and quality attributes of chilli were significantly influenced by different treatment combinations. Among the treatments, application of 75% RDF along with humic acid @ 30 kg/ha was superior in increasing the growth characters like plant height (79.30 cm), number of branches/plant (23.62) and dry matter production/plant (85.81 g) and fruit traits such as fresh pod weight (2.35 g), dry pod weight (0.61 g), number of fruits/plant (147.72) and yield traits such as highest per plant (347.14 and 90.49 g), per plot (7.71 and 2.01 kg) and per hac. (12.86 and 3.35 t) yield of fresh and dry fruits, respectively. Besides, the treatment also produced fruits with maximum quality which is measured in terms of ascorbic acid (140.80 mg/100g), oleoresin (14.12%), capsanthin (45.52 ASTA units) and capsaicin (0.79%). From the study it may be concluded that application of 75 per cent recommended dose of fertilizers along with humic acid @ 30 kg/ ha can help to increase the growth, yield and quality of chilli cv. K-1.

Key words : Chilli, Organic and inorganic fertilizers, Growth, Yield, Quality.

INTRODUCTION

Chilli is one of the commercial high value crops in our country. It is called as the universal spice of India, since it is cultivated in almost all the states and union territories. In India, chilli is cultivated in an area of 9.57 lakh hectares with an annual production of 9.46 lakh tonnes. In Tamil Nadu it is grown in an area of 77,000 hectares with an out put of 38,000 tonnes of dry chilli annually (Anon, 1999). Chilli is commercially important for the two qualities, the red colour due to the pigment capsanthin and the biting taste due to the chemical constituent capsaicin. Capsaicin is a digestive stimulant, which prevents heart diseases and is curative for many rheumatic troubles. Besides, chilli is very useful in our daily diet since it is a rich source of vitamins A and C and rutin. Among the various factors affecting the growth and productivity of chilli, the fertility of the soil is the prime consideration for increasing the crop production. Improvement in growth and yield can be brought about by the application of different doses of essential nutrients. Continuous and unscrupulous use of fertilizers, without the incorporation of organic manure cause environmental degradation especially, in the soil thereby affecting its fertility on long term basis. For maintaining optimum productivity of the land and building up of soil fertility, the

addition of organic manures to crops has been suggested. Hence, the present investigation was carried out to find out the effect of different sources of organic manures along with various levels of inorganic fertilizers on growth, fruit characters, yield and quality improvement of chilli cv.K-1.

MATERIALS AND METHODS

Field experiments were conducted during July 2004 to January 2005 at the College orchard, Horticultural College and Research Institute, Tamil Nadu Agricultural University, Coimbatore. The seeds of the cultivar K1 were sown in raised beds and forty days old seedlings were transplanted at a spacing of 60×45 cm. The experiment was in RBD with three replications. There were totally eleven treatments with different sources and levels of organic and inorganic fertilizers and the details are as follows : T₁-Recommended dose of NPK fertilizers (Control), T₂ - 75% Recommended dose of NPK fertilizers + FYM (25 t ha⁻¹), T₃ - 75% Recommended dose of NPK + Poultry manure (2 t ha⁻¹), T₄ - 75% Recommended dose of NPK + Vermicompost (10 t ha⁻¹), T₅ - 75% Recommended dose of NPK + Composted coir pith (10 t ha⁻¹), T₆ - 75% Recommended dose of NPK + Humic acid (Keradix-G)(30 kg ha⁻¹), T₇ - 50%