

Growth, flowering, fruiting and yield of guava (*Psidium guajava* L.) cv. SARDAR as influenced by various plant growth regulators

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ABSTRACT

An experiment was conducted during 2002-03 and 2003-04 at Department of Horticulture RCA, Udaipur (Raj.) to study the response of various plant growth regulators at different concentrations namely, NAA (100 and 200 ppm), Ethrel (250 and 500 ppm), Paclobutrazol (250 and 500 ppm), CCC (500 and 1000 ppm) and triacontanol (5 and 10 ppm) on growth, flowering, fruiting and yield of winter season crop of guava cv. Sardar. The results indicated that 60 days after treatment the mean maximum increase in shoot length (36.25%) was observed in 100 ppm NAA treatment followed by 200 ppm NAA (36.23%) and maximum increase in shoot diameter (34.95%) was recorded in 500 ppm PBZ followed by 1000 ppm CCC (34.42%) treatments. However, mean minimum days taken to initiation of flowering (29.0), maximum number of flowers/shoots (7.77/shoot), maximum fruit set (71.17%), highest fruits retention (73.16%) with minimum days taken to harvesting (115.33) and maximum yield (63.83 kg/plant or 17.74 tonnes/ha) were recorded in 500 ppm paclobutrazol (PBZ) treatment as compared to control.

Key words : Guava, Naphthalein acetic acid, Ethrel, Paclobutrazol, Cycocel and Triacontanol.

INTRODUCTION

The increasing importance of guava (*Psidium guajava* L.) as a commercial tropical fruit crop, both for table purposes and processing, demands its wide spread cultivation ensuring regular cropping and higher production. At present, guava which belongs to family Myrtaceae, is cultivated largely through a traditional system without use of plant growth regulators, under which it is difficult to achieve desired level of production. An overriding need exists either to improve the traditional system or to develop new and modern system of cultivating guava to overcome the problems inherent with this tree.

The use of plant growth regulators has assumed an integral part of new and modern system of fruit production. Therefore, to achieve the desired level of production of guava the use of plant growth regulator is one of the important factor. Keeping this in view, an attempt has been made in this regard.

MATERIALS AND METHODS

Ten years old plants of guava cv. Sardar, planted 6x6 m apart at instructional farm, Department of Horticulture, Rajasthan College of Agriculture, MPUAT, Udaipur (Raj.). During the year 2002-03 and 2003-04 were selected for the study, single plant considered as an experimental unit was replicated three times in Randomised Block Design with eleven treatments. The treatments consisted of five different plant growth regulators with two concentrations of each. Namely, Naphthalein acetic acid (100 and 200 ppm), Ethrel (250 and 500 ppm), Paclobutrazol (250 and 500 ppm), Cycocel (500 and 1000 ppm) and Triacontanol (5 and 10 ppm) and distilled water sprayed on the plants for control. Observations were recorded on vegetative growth, flowering, fruiting and yield of winter season crop during experimental period. Vegetative characters (i.e. shoot length and diameter) were recorded at 30 days interval after recording initial observations in each treatment for a total

period of 60 days. Five newly emerged uniform size shoots were selected randomly in each treatment for measuring length and diameter of shoot and expressed in percent increase, on the basis of initial values. Days taken to initiation of flowering were recorded by visual observation through regular visiting of the orchard. The number of flowers were counted on the five selected shoots and average number of flowers/shoots was calculated. Total number of flowers which set into fruit were counted and percent fruit set was calculated on the basis of number of flowers emerged. Similarly total number of fruit present on the tagged shoot at the time of fruit maturity were counted and percent fruit retention was calculate on the basis of initial number of fruit set. Number of days taken to first picking from date of treatment was counted as days taken to harvesting. The yield of fruit/ha. Was calculated by multiplying the yield of fruit/ plant with number of plants (278) per ha. Data calculated in percentage were angular transformed before statistical analysis, which was carried out as per the methods prescribed by Panse and Sukhatme (1985).

RESULTS AND DISCUSSION

The pooled analysis of two year mean data on growth, flowering, fruiting and yield as influenced by spray of various plant growth regulators at different concentration on winter season guavava cv. Sardar are presented in table-1 and 2.

Growth and flowering :

It is revealed from the pooled data presented in table-1 that growth (length and diameter of shoot) and flowering (Days taken to initiation of flowering and number of flowers per shoot) characters were significantly influenced by the use of various plant growth regulators at different concentrations. Pooled mean indicated that application of NAA and triacontanol showed significantly higher rate of increase in shoot length over control. On the contrary, the

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