

Effect of plant growth regulators on fruit set, yield and fruit quality in pear cv.

BAGGUGOSHA

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ABSTRACT

Treatments of growth regulators viz., T₁: 10 ppm GA₃, T₂: 20 ppm GA₃, T₃: 5 ppm BA, T₄: 10 ppm BA, T₅: 250 ppm promalin, T₆: 500 ppm, promalin, T₇: 10 ppm, GA₃ + 5 ppm BA, T₈: 20 ppm GA₃ + 500 ppm promalin, T₉: 10 ppm GA₃ + 250 ppm promalin, T₁₀: 20 ppm GA₃ + 500 ppm promalin and T₁₁: control (no spray) were applied either once at full bloom or twice at full bloom and petal fall stage on Baggugosha pear trees. Combined treatment of 20 ppm, GA₃+10ppm BA, 10 ppm GA₃ + 5 ppm BA and 10 ppm GA₃ + 250 ppm promalin when applied as single spray at full bloom increased fruit set, fruit retention, yield efficiency and fruit quality. GA₃ applied alone through increased fruit set but decreased fruit retention, yield efficiency and fruit size. However, there was no clear advantage of giving repeat application of growth regulator treatments at petal fall I.

Key words : Gibberellic acid, Benzyl adenine, Promalin, Pear.

The pear (*Pyrus communis* L.) is an important pome fruit of considerable prominence by virtue of its melting texture, excellent taste and nutritional values. In Himachal Pradesh, soft pears are though mainly grown in the high hills, where number of high chilling cultivars are grown successfully but, there also exists a good scope for growing low chilling cultivars like Baggugosha in the mid-hills. However, during the last couple of decades, the problems of erratic flowering, low fruit set and lower productivity are often encountered mainly due to the changing climatic conditions. In order to make pear culture as a profitable and attractive entrepreneur in this zone, there is a need to have better control on fruit set, yield and fruit quality. Plant growth regulators have been reported to regulate or manipulate fruit set, yield and improve fruit quality. Plant growth regulators have been reported to regulate or manipulate fruit set, yield and improve fruit quality (Miller, 1988). Keeping in view this, the present investigation was therefore, carried out to evaluate the influence of plant growth regulators such as gibberellic acid, benzyl adenine and promalin on fruit set, yield and fruit quality of pears.

MATERIALS AND METHODS

The study was conducted in the experimental orchard of the Department of Pomology, Dr. Y.S. Parmar University of Horticulture and Forestry, Solan during the year 2002 and 2003, using twenty two uniform bearing trees of Baggugosha pear established on Kainth (*Pyrus pashia* Bush) seedling rootstock. On these trees, 66 uniform limbs were selected prior to bloom and divided into 22 lots, each comprising of three limbs for applying

the treatment viz., T₁: 10 ppm GA₃, T₂: 20 ppm GA₃, T₃: 5 ppm BA, T₄: 10 ppm BA, T₅: 250 ppm Promalin, T₆: 500 ppm Promalin, T₇: 10 ppm GA₃ + 5 ppm BA, T₈: 20 ppm GA₃ + 10 ppm BA, T₉: 10 ppm GA₃ + 250 ppm Promalin, T₁₀: 20 ppm GA₃ + 500 ppm Promalin and T₁₁: Control (no spray). The solutions of different treatments were applied to run-off at full bloom in T₁ and T₂ with the help of a sprayer. In T₂, second applications of respective treatments were made at petal fall stage. The experiment was laid in a factorial randomized block design with three replications. The data of fruit set and fruit retained was taken as per standard method. Yield efficiency was worked out in kilogram of fruit per centimeter of limb circumference. Data on size, weight and shape index of ten fully mature fruits in each replication were recorded. Average number of seeds per fruits was worked out. Fruit flesh firmness was recorded with Effegi penetrometer (Model FT-327) and expressed in Newton (N=force in kg x 9.807). Total soluble solids, titratable acidity, sugars and ascorbic acid contents of fruits were estimated using A.O.A.C. (1980) methods. In this study, two years (2002 and 2003) data have been pooled analyzed.

RESULTS AND DISCUSSION

All the treatments of growth regulators significantly increased the fruit set as compared to control (Table 1), however, the highest increase was achieved with the application of 20 ppm GA₃ + 10 ppm BA (21.3%), followed by the treatments of 10 ppm GA₃ + 250 ppm Promalin (20.8%) and 10 ppm BA (20.7%) in decreasing order. Repeat application of growth regulators at petal fall stage (T₂) however, did not exerted as additional