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Bahar Treatment or Crop Regulation in Fruit Crops

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Introduction

The practice of forcing flowering and fruiting in a desired season is known as ‘’Bahar treatment’’. In this treatment, the plants are forced to take rest during the unwanted bahar.

Main objectives of bahar treatment

- To force the tree to take rest and produce profuse blossom and fruits during anyone of the two or three flushes.
- To regulate a uniform and good quality of fruits and to maximize the production as well as profit to the grower.
- To reduce the cost of cultivation because uninterrupted continuous blossom would produce light crops over the whole year.

The selection of a particular bahar is mainly determined by prevailing factors like

- Availability of irrigation water
- Quality production
- Occurance and extent of the damage by the disease and pests
- Several market factors
- Prevailing climatic conditions

Methods of bahar treatment or crop regulation

1. Withholding irrigation

In general, irrigation is with held for 2 – 3 months. As soon as the growth of the plant ceases and leaves start turning yellow and as a result of moisture stress, tree undergoes rest. After one month, the soil of the orchard is ploughed, harrowed and manured with FYM to the individual tree. Immediately after application of FYM around the basin, the tree is irrigated. The plants then resume growth and bloom heavily and producing very high yield of quality fruits.

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2. Root exposure and Pruning

The procedure involves exposing the upper roots of the tree of 1.5 ft radius around the trunk by removing the upper 8 cm soil. The main root system is not disturbed while the fibrous roots on them are removed by a pruning shear. The results in shedding of leaves from the tree. At this stage, the exposed roots are again covered with soil, mixed with manures and irrigated immediately.

3. Deblossoming

Deblossoming or flower thinning manually has been found very effective.

4. Shoot pruning

The pruning of new shoot (current season) growth has been found very effective for crop regulation. This method involves the removal of half to $3/4^{th}$ portion of the shoot growth. This method has been found effective and economical without much adverse effect on total yield of the plant in a year.

5. Shoot bending

Shoot bending is one of the ways to produce better quality fruits in the off season of guava. In case of bending of branch wood, tension of branch is increased and phloem formation is decreased. As a result, photosynthates pass slowly from the shoots of bent branch as to other parts, maintaining increased C:N ratio and induce more flowering and fruit set. Bending of shoots forces the dormant reproductive buds to grow.

6. Nutrient application

To increase the quantum of winter crop in guava, the fertilizer schedule should be changed from April – May that will induce more vegetative growth that subsequently increases the winter crop.

7. Spray of chemical and other plant growth regulators

The chemicals like NAA, NAD, 2,4-D, Carbaryl and Ethrel are being used for deblossoming.

Advances in Crop Regulation

Prohexadione – Ca use in Apple and Pear

Prohexadione – Ca, as BAS 125 10W (a.i. 10 per cent), was tested as a growth retardant and fire blight control agent on young and mature Apple (*Malus domestica*) and Pear (*Pyrus communis*) orchards. Single or repeated treatments significantly reduced shoot

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growth by 16 – 43 per cent. The decrease in internode length rather than in number of nodes was responsible for the retarded shoot growth. Prohexadione – Ca reduced the incidence of shoot blight in the Apple and Pear orchards significantly.

Leaf Senescence of fruiting Apple trees

The photosynthetic potential of the senescing Apple leaves remained high at 8 – 14 µmol CO_2 m^{-2} s^{-1} after the commercial harvest date. Delayed harvest enhanced autumn leaf photosynthesis due to larger *in vivo* RUBISCO activity in comparison with trees harvested at the commercial harvest date. Nitrogen content declined more rapidly in the leaves of Apple trees harvested at the commercial date, an indication of earlier onset of senescence and more rapid remobilization to the woody, perennial parts of the tree.