

## CROP REGULATION IN FRUIT CROPS FOR IMPROVING QUALITY AND INCOME OF FARMERS

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India is bestowed with diverse agro-climatic conditions which favour the production of a variety of fruit crops. At present India is second largest producer of fruits in the world after China. Fruit culture can be highly profitable by increasing employment opportunities and commercialization of the rural sector. During early sixties, priority was to achieving self sufficiency in food grain production in our country, however, over the years, fruit culture has emerged as an indispensable part of agriculture, offering a wide range of choices to the farmers for crop diversification. It also provides ample opportunities for sustaining large number of agro-industries to generate substantial employment opportunities (Bardhan, 2016). Amongst various tropical and sub-tropical fruit crops grown in India, guava, pomegranate, acid lime, sweet orange and mandarins, if left on its own, give several light crops of the variable quantities and qualities from the various flowering flushes throughout the year. Under natural conditions, these crops produce flowers thrice in a year i.e. February-March (AmbeBahar), June-July (MrigBahar) and October-November (HasthBahar) with the corresponding harvest during rainy, winter and spring season, respectively (Boora *et al.*, 2016, Lal *et al.*, 2017). Owing to this, potential yield is not obtained during the desired period. Therefore, to obtain higher fruit yield during a particular period, these fruit crops are given a resting period with artificial means so that the natural flowering tendency of the trees is altered. It can be achieved through root exposure and its pruning (Boora *et al.*, 2016), shoot pruning (Tiwari *et al.*, 1992, Thakre *et al.*, 2016), withholding irrigation water ((Stern *et al.*, 1993, Krajewski and Rabe, 1995), deblossoming ( Tiwari and Lal, 2007), chemicals PGRs application (Babu and Rajput, 1982, More *et al.*, 2016, Maji *et al.*, 2015, Mahalle *et al.*, 2010, Ahire *et al.*, 1993), change in fertilizer schedule (Boora *et al.*, 2016) and shoot bending (Sarkar *et al.*, 2005). However, the results of these experiments were not similar and the responses differed according to cultivars, tree conditions, soil types and agro-climatic conditions (Maji *et al.*, 2015). Regulated crops are desired to avoid glut in the market and also ensure the regular supply of fruits (Devi *et al.*, 2011). The choice of *bahar* at a particular location is determined by prevailing production constraints like availability of irrigation water, quality of produce, market demand and extent of damage by insect-pests and diseases (Lal *et al.*, 2017). To avoid glut in the market and to extend fruiting period, several attempts on flowering induction show significant results in regulating off season flowering in mango, mangosteen, durian and rambutan (Poerwanto *et al.* 2008). Any practice or combination of practices that will produce a favorable carbohydrate: nitrogen ratio (i.e. a moderate stress) is generally beneficial, although the endogenous growth regulator balance in the leaves and stems on a tree actually controls the flowering process (Wilkie *et al.*, 2008). Lack of floral initiation in an "on" year of a biennial bearing cultivars in several fruit crops has been attributed to gibberellins in developing fruits and seed; therefore, chemical deblossoming and