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Post flowering foliar sprays for advancing maturity and improving fruit retention in kokum (*Garcinla indica* Choisy)

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ABSTRACT

The experiment was conducted at Experimental Farm of the Department of Horticulture, Dr. Balasaheb Sawant Konkan Krishi Vidyapeeth, Dapoli, Dist. Ratnagiri during 2006-07 to advance maturity and increase in fruit retention. The experiment was laid out under RBD with three replications and seven treatments of foliar application of nutrients in the form of urea, KNO_3 and monopotassium phosphate. In present investigation the fruits from trees treated with KNO_3 and urea showed increase in fruit retention while KNO_3 and monopotassium phosphate treated plants showed advanced maturity while urea treated plants showed delayed maturity.

Key words : Advanced maturity, Kokum, Urea, Monopotassium phosphate

Kokum is a an indigenous tree spice. It is moderate to larged sized, slender, everegreen tree with drooping branches and occurring upto elevation of about 800 meters from the sea level. It requires warm and humid tropical climate. It is predominantly seen only in the low lying belts of the Konkan region of the Maharashtra. It has become unique not only because of the presence of HCA but also due to it's many traditional and medicinal uses in the west coast. The fruit has an agreeable flavour and a sweetish acid taste. It is used for preparing cooling syrups, amsuls, curries, etc. Butter extracted from seeds remains solid at room temperature and also has nutritive and medicinal values. In spite of all such beneficial properties of kokum, there are certain constraints because of which this crop is neglected by the farmers. One of the most important constraint is that, the fruit become ready for harvesting just before on set of monsoon. Through there is no precise statistical data, about 50 per cent of crop is damaged in rains and ultimately spoiled further, through the fruits which are affected by rains are not useful for value addition. For overcoming this problem, hastening the fruit development and ripening of fruits before monsoon is the practical solution for existing kokum plantation. Foliar feeding is an important method for efficient and economic use of fertilizer. Large quantities of fruits are required for processing to meet the rapidly increasing demand for kokum products. Hence, the present study was conducted at the Department of Horticulture, Dr. Balasaheb Sawant Konkan Krishi Vidyapeeth, Dapoli, Dist. Ratnagiri during 2006-07 with an objective to advance maturity of fruits through post flowering sprays of chemicals.

MATERIALS AND METHODS

The experiment was conducted at Experimental Farm of the Department of Horticulture, College of Agriculture, Dapoli (Latitude : 170-45' North, Longitude : $73^0$12 East) in Ratnagiri district of Maharashtra, situated at 240 m above mean sea level. The study area was lying along the west coast region of India and the climate having high humidity throughout the year with equable temperature and an average precipitation, distributed mainly during four months from June to September. The soil was lateritic sandy to loam and acidic in reaction with pH ranging in between 5.6 to 6.5.

The experiment was laid out under RBD with three replications and seven treatments. The treatment comprising of T_1 : (Urea-0.5%), T_2: (Urea-0.5% twice), T_3 : (KNO_3 -0.5%), T_4 : (KNO_3 - 0.5%) twice), T_5 : (Monopotassium phosphate 0.5%), T_6 : (Monopotassium phosphate 0.5% twice) and T_7 : Control (No spray). The plants were sprayed at pea grain stage of the fruits and the second one 20 days after the first spray. The observations on fruit retention (%), advancement in maturity (days) were recorded. The statistical analysis was conducted as per the methods suggested by Panse and Sukhatme (1967).

RESULTS AND DISCUSSION

The data on fruit retention and days required for ripening are presented in Table. The fruit retention was the highest in T_2 (69.33%) which was at par with T_4

Table 1 : Effect of foliar sprays on fruit retention (%), days required for ripening and advancement or delay in harvesting of kokum fruits (days)

Treatments (Conc.@0.5%)	Fruit retention (%)	Days required for ripening	Advancement or delay in harvesting of kokum fruits over control
T_1 – Urea once	63.00 (51.45)	128.00	0
T_2 – Urea twice	69.33 (56.41)	130.33	4.33
T_3 – KNO_3 one	62.83 (52.44)	117.33	-8.67
T_4 – KNO_3 twice	67.17 (55.08)	115.50	-10.5
T_5 – MPP once	60.67 (51.16)	112.33	-13.67
T_6 – MPP twice	63.67 (52.95)	92.00	-3.4
T_7 – Control	60.17 (50.86)	126.00	
S.E. ±	1.16	2.14	
C.D. (P=0.05)	3.57	6.61	

* MPP – Monopotassium phosphate

(67.17%) and significantly superior over rest of the treatments. Nitrogen is one of the essential nutrient required for retention of fruits. Several studies also indicated that foliar application of urea enhance fruit retention in mango (Gill and Mukherjee, 1967; Podhiar *et al.*, 1992; Gosh and Chattopadhyay, 1999). The fruits of T_6 ripened 34 days ealier than control (126 dyas). Both monopotassium phosphate and potassium nitrate at all the levels advanced ripening in kakum. It was evident that in kokum, potassium and phosphorus advances maturity and nitrogen delays maturity. The results are in agreement with the findings of Samara *et al.* (1977) in mango and Bose *et al.* (1988) in grapes.

Conclusion:

It can therefore, be concluded that nitrogen is one of the essential nutrient required for the retention of fruits. Nutrient application also brought about an increase in the chlorophyll conten, RWC, transpiration rate and diffusive resistance. So in present investigation the fruits from trees treated with KNO_3 and urea showed increase in fruit retention. It was evident that in kokum, potassium and phosphorus advanced maturity and nitrogen delayed maturity. In foliar feeding the nutrients are applied directly to the site of metabolism. Whereas 'K' acts as a catalyst which is used as accelerator of reactions. So these treatments were a step ahead to reduce days required for harvesting.

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