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Short communication

Studies on physical properties of fruits as indices of maturity in Lasora (*Cordia dichotoma* Forst 'F')

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Lasora (*Cordia dichotoma* Forst 'F') fruit is generally used as vegetable and for pickle making at home scale. It is an established fact that stage of maturity has a direct effect on the post harvest quality and storage life of the fruits. Early harvesting results in poor quality and uneven ripening, whereas delayed harvesting significantly reduces the shelf-life. In addition, stage of maturity influences the quality of the processed produce. Therefore, it is imperative that the fruits should be harvested at right stage of maturity.

Physical appearance like size and colour of a fruit strongly influences initial human reaction to fresh fruit. Physical characters of the fruits are widely used to determine their harvesting time. These characters are widely accepted by fruit growers through out the world. Although different scientific techniques are available to pin point harvesting stage of the fruit, yet the significance of physical characters cannot be ruled out.

Fruit size is one of the traditional visual means of judging harvesting maturity in several fruits. It is highly correlated to fruit weight (Badiyala 1991; Patel and Katrodia, 1994). Various workers have suggested fruit colour as a maturity index in several fruits (Chundawat 1990; Chandra and Pareek 1992). Singh (1984) observed that specific gravity is an easy method to assess the maturity. Keeping in view the above facts, the present study was conducted to assess the fruit maturity and right stage of harvesting for pickle purpose.

Experiment was conducted at KVK, Rampura, Rewari (Haryana) on correlate plant, which beared large size fruit. Three healthy trees of each were selected purposively. First sampling of fruits was taken after 45 days of peak flowering during 1999 and 48 days during the year 2000, with subsequent sampling at 3 days interval till ripening of fruits on each sampling date. A sample of 20 fruits were harvested randomly from tagged shoot in morning hours and the physical characters were observed in the laboratory. The data were statistically analysed in randomised block design.

Results presented in Table 1 show that fruit length and breadth increased progressively from the first date of sampling upto the date of colour break of the fruit. Likewise, the fruit weight increased progressively upto the date of colour break. Maximum fruit weight 11.98 and 13.16g was recorded on date of colour break during both the years of study and was significantly different at 5% level. After the colour break, fruit size and weight remained more or less constant. Similar findings have also been reported by Chander and Khajuria (1983) in peach, Gupta *et al.* (1983) in ber and Patel and Katrodia (1994) in sapota.

Perusal of data revealed that the pulp/stone ratio decreased progressively with the advancement of fruit development, irrespective of the type of fruit. Optimum pulp/stone ratio of (5.42 and 4.97) in fruit were attained in subsequent years. It is clear that accumulation of pulp was faster at early stages, whereas the increase in stone weight primarily contributed towards the increase in fruit weight at later stages. These results are in contrast to the findings of Chahill *et al.* (1980) and Khalil and Stino (1987) in peach crop.

The specific gravity of fruit increased upto 51 days after flowering thereafter it declined progressively. The optimum value of specific gravity in mature fruits was 1.01 to 1.01. On the other hand, the optimum value of specific gravity of ripe fruits was 1.01 and 1.01 for large fruited. Thus, the specific gravity for the mature fruits did not differ much from that of the ripe fruits. The fruit colour was dark green at the beginning of the sampling and there was no change in the colour of the fruit up to 60 days after flowering (large fruited). It changed from dark green to light green subsequently and lasted for nearly one week. By the proposed date of maturity, the colour of the fruits changed to yellowish green with a colour rating of 3. Fruit colour changed to yellow at ripening. These results are in accordance with Chundawat (1990). Loss of green colour might be attributed to the degradation of Chlorophyll and Synthesis of yellow coloured pigments like carotenoides.

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Table 1. Developmental changes in pulp/stone, weight of fruit, Sp Gravity and Colour of large fruit of lasora

No.of days after flowering	Large fruited type							
	Pulp/stone 1999	Weight (gm) 2000	Sp. Gravity 1999	Colour* 2000	1999	2000	1999	2000
45	10.03	8.66	4.29	4.24	1.11	1.04	1	1
48	9.13	8.48	5.20	5.32	1.13	1.05	1	1
51	8.39	7.45	7.74	6.73	1.12	1.06	1	1
54	7.13	6.76	9.05	8.41	1.08	1.06	1	1
57	7.28	6.47	9.64	9.17	1.07	1.06	1	1
60	6.97	6.32	9.76	10.31	1.06	1.04	1	1
63	6.62	5.88	10.35	10.57	1.04	1.02	2	2
66	6.44	5.59	10.72	12.17	1.03	1.02	2	2
69	5.42	4.97	11.98	13.16	1.01	1.01	3	3
72	5.28	4.95	11.98	13.16	1.01	1.01	3	3
75	5.28	4.94	11.98	13.16	1.01	1.01	4	4
CD (P = 0.05)	0.57	0.36	0.43	0.23	0.04	0.02	0.006	0.006

* 1=dark green, 2=light green , 3=yellow green , 4=yellow

In conclusion, the green mature stage of harvesting of the fruit was attained 69 days after full bloom. This stage of fruit is more suitable for pickle preparation because of higher pulp at this stage.

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