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Screening of Mango Cultivars to Postharvest Fruit Rots and Biochemical Changes During Decay

K. B. Jadeja and M. U. Vaishnav

Department of Plant Pathology, College of Agriculture, Gujarat Agricultural University, Junagadh - 362 001

Stem end rot (*Lasiodiplodia theobromae* (Pat.) Griffon & Maul.) and black rot (*Aspergillus niger* Van Tiegh.) were found major postharvest diseases of mango fruits on *Kesar* cultivar (Jadeja, 1991). *Kesar* is the pride cultivar of Gujarat State. No information was available about disease reaction of another popular cultures of mango in Gujarat against these rots. The present study was undertaken with ten mango cultivars viz., Kesar, Alphonso, Rajapuri, Totapuri, Langra, Asadio, Vanraj, Sardar, Makaram and Badami. Simultaneously in all the cultivars biochemical changes due to these rots were also studied.

Unripe, mature fruits were carefully harvested with intact pedicel and brought to the laboratory. After surface sterilization, fruits of each cultivar were inoculated separately with both the pathogens. Twelve fruits were kept in each of the cultivar for respective pathogen which were divided in to four replications, keeping three fruits in each one. One set of uninoculated healthy fruits for each cultivar was also kept for incubation. The inoculated fruits were placed in serilized polythene bags separately. A piece of sterilized wet absorbent cotton was placed inside the bag keeping loosely tied open end. The bagged fruits were incubated at 30±1°C for seven days. The fruit rot incidence and intensity were recorded on 3rd, 5th and 7th day. The intensity of fruit rot was recorded on the basis of per cent fruit area infected. After 7 days of incubation, pH, ascorbic acid, reducing sugar and total sugar of healthy and diseased tissues were assessed by titrametric method described by Ranganna (1979). The scoring of disease reaction in respective cultivar was decided after 7 days of incubation on the basis of per cent fruit area infected (PFal), where, 1-5 PF al = Resistant (R), 5.1-10 PFal = Moderately Resistant (MR), 10.1 - 20 PFal = Moderately Susceptible (MS), 20.1 - 50 PFal = Susceptible (S) and >50 Pfal = Highly Susceptible (HS). Sixty per cent rot was taken as miximum of rotting.

The results presented in Table - 1 revealed that after 7 days of incubation fruits of Makaram (5.0%) and Sardar (6.1%) showed lower intensity of stem end rot disease, hence rated as resistant (R) and moderately resistant (MR) respectively. Stem and rot intensity in Vanraj, Rajapuri, Asadio and Totapuri was 22.8, 23.3, 42.2 and 46.7 per cent respectively which falls under

TABLE 1

Reaction of mango cultivars to the fruit rot diseases (after 7 days of incubation).

Cultivar	*Stem end rot disease*		*Black rot disease*	
	Per cent disease intensity*	*Disease reaction*	*Per cent* disease intensity*	*Disease reaction*
Kesar	60.0	HS	26.7	S
Alphonso	60.0	HS	19.5	MS
Badami	60.0	HS	17.8	MS
Langra	51.1	HS	13.3	MS
Totapuri	46.7	S	8.9	MR
Asadio	42.2	S	7.2	MR
Rajapuri	23.3	S	6.5	MR
Vanraj	22.8	S	4.7	R
Sardar	6.1	MR	3.9	R
Makaram	5.0	R	3.1	R

Note : uninoculated fruits remained disease free after 7 days of incubation.

* Mean of four recplications.

TABLE 2

Biochemical changes in mango fruits of different cultivars to stem end rot and black rot diseases.

Cultivar	*Per cent decrease in diseased tissues*							
	pH		*Ascorbic acid*		*Reducing sugar*		*Total sugar*	
	1	*2*	*1*	*2*	*1*	*2*	*1*	*2*
Kesar	09.2	10.6	74.4	47.4	49.3	56.6	54.5	62.0
Alphonso	23.3	20.8	76.5	52.0	49.6	52.2	53.7	60.2
Badami	06.2	06.6	71.8	35.7	50.9	31.2	48.3	55.6
Langra	26.3	32.5	87.4	68.9	47.6	31.5	44.7	46.9
Totapuri	14.6	03.4	41.1	27.8	45.3	14.4	54.8	26.4
Asadio	05.3	02.9	42.0	33.4	39.8	20.8	49.7	13.8
Rajapuri	12.3	03.8	50.5	24.4	33.0	19.8	49.2	13.2
Vanraj	07.8	00.9	38.0	23.5	36.3	38.9	40.5	14.5
Sardar	02.9	01.8	19.5	17.5	17.9	11.9	25.8	10.1
Makaram	00.8	00.8	15.9	11.8	14.4	12.2	19.9	12.4

1 = Stem end rot

2 = Black rot

susceptible (s) reaction. Above fifty per cent stem end rot intensity was observed in Langra, Badami, Alphonso and Kesar and marked as highly susceptible (HS). In case of black rot disease, less than five per cent fruit rot intensity was recorded in Makaram, Sardar and Vanraj. These cultivars were categorised as resistant (R) against black rot. Moderate resistant (MR) reaction was observed in Rajpuri, Asadio and Totapuri against black rot disease. The black rot intensity in Langra, Badami and Alphonso was 13.3, 17.8 and 19.5 per cent respectively, rated as moderately susceptible (MS). Highest black rot intensity (26.7%) was recorded in Kesar fruits and rated as susceptible (S). Stem end rot intensity was high in the fruits of all the cultivars in comparison to black rot due to its faster rotting rate. The fruits of most popular caltivars of Gujarat viz. Kesar and Alphonso showed maximum susceptibility against both the diseases. Although Patel (1972) observed miximum loss of 16 per cent in Totapuri fruits in Ahmedabad market against Aspergillus rot, this may be due to high inoculum load during transit in this particular cultivar and other injury causing factors therein.

The fruits of all the cultivars under investigation infected with *L. theobromae* and *A. niger* showed depletion in pH, ascorbic acid, reducing sugar and total sugar (Table-2). Similar trend was observed by various workers (Ghosh *et al.* 1966, Tondon, 1970, Desai and Pathak, 1971, Majmudar and Modi, 1980). Maximum reduction in pH and ascorbic acid due to both the rots was recorded in Langra, followed by Alphonso. Reduction in reducing sugar due to stem end rot and black rot was highest in Badami and Kesar, respectively. Total sugar reduction under stem end rot infection was maximum in Totapuri, which closely followed by Kesar and Alphonso, while it was higher in Kesar and Alphonso when infected with black rot.

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