

# Chemical control of leaf spot disease (*Phaeophleospora indica*) of sapota



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## SUMMARY

An experiment was conducted to find out the effective fungicides for the control of leaf spot disease of sapota at K.R.C. College of Horticulture, Arabhavi. The experimental results revealed that carbendazim (0.1%) effectively controlled the leaf spot disease followed by carbendazim 0.1% followed by mancozeb 0.2%, zineb and propineb 0.2%. With regard to yield, the highest yield as recorded in the treatment of carbendazim (0.1%) followed by carbendazim 0.1% followed by mancozeb 0.2% and propineb 0.2%. The benefit cost ratio was more in the treatment of carbendazim 0.1%.

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## Key words :

Sapota,  
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Sapota [*Manilkara achrus* (Mill) Forsberg.] is one of the delicious fruits of humid tropical and subtropical regions. Sapota is evergreen tree with luxuriant growth throughout the year and under most tropical conditions. However, with intensive cultivation of this crop in various states numerous diseases have been reported to cause economic losses to the crop. Leaf spot caused by *Phaeophleospora indica* Chinn. is the most serious disease and was first reported by Chinnappa (1968) and now exists in serious proportion in the states of Karnataka, Tamil Nadu and Maharashtra. Hence, the present investigation was under taken to find out the effective measures for the management of leaf spot disease in sapota.

## MATERIALS AND METHODS

An experiment was conducted during 2001-2008 at K.R.C. College of Horticulture, Arabhavi, UAS, Dharwad. There were nine treatments viz., carbendazim 0.1%, thiophanate methyl 0.1%, mancozeb 0.2%, chlorothalonil 0.2%, copper oxychloride 0.2%, carbendazim 0.1% followed by

mancozeb 0.2%, propineb 0.2% and zineb 0.2% and control. Each treatment was replicated three times in a Randomized Block Design with a spacing of 10 x 10m.

The spraying was done when the disease was observed on few leaves. Two sprays were made at 60 days interval (Thirty days interval in the year 2001-02). Observations were record with respect to leaf spot disease intensity (PDI) and yield.

## RESULTS AND DISCUSSION

The experimental results (Table 1) revealed that two sprays of carbendazim 0.1% at 30 days internal effectively controlled the leaf spot disease (8.28%) followed by chlorothalonil 0.2% (11.49%). The highest PDI was recorded in control (30.75%) during 2001-02. With regards to yield during 2001-02, the highest yield (9.20 kg / plant) was recorded in the treatment of carbendazim 0.1% followed by mancozeb 0.2% followed by mancozeb 0.2% (8.19 kg / plant) and carbendazim 0.1% (7.97 kg /plant) (Table 2). During 2002-2003, the lowest PDI was recorded in the treatment of carbendazim 0.1%

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**Table 1 : Chemical control of leaf spot disease (*Phaeophleospora indica*) of sapota cv. KALIPATTI**

Treatments	Conc. (%)	PDI								
		2000-01	2001-02	2002-03	2003-04	2004-05	2005-06	2006-07	2007-08	Mean
T <sub>1</sub> - Carbendazim	0.1	10.77 (19.12)	8.28 (16.70)	13.16 (21.02)	5.09 (13.67)	10.84 (19.20)	4.32 (11.97)	7.23 (15.61)	4.39 (12.10)	8.01 16.17
T <sub>2</sub> -Thiophanate methyl	0.1	18.33 (25.33)	14.29 (22.06)	17.22 (24.42)	15.81 (23.39)	15.05 (22.21)	13.29 (21.24)	12.05 (20.23)	13.62 (21.63)	14.96 22.56
T <sub>3</sub> -Mancozeb	0.2	15.53 (23.15)	13.19 (21.29)	16.94 (24.21)	10.37 (18.51)	12.76 (20.41)	14.01 (21.96)	14.04 (21.99)	15.18 (22.92)	14.00 21.81
T <sub>4</sub> -Chlorothalonil	0.2	14.33 (22.14)	11.49 (19.78)	19.26 (25.93)	14.33 (22.24)	15.63 (23.27)	18.74 (25.57)	19.18 (26.14)	18.13 (25.22)	16.39 23.79
T <sub>5</sub> -Copper oxychloride	0.2	20.18 (26.67)	18.10 (25.14)	18.08 (24.99)	10.17 (18.56)	16.11 (23.52)	13.70 (21.39)	18.16 (25.20)	20.38 (26.59)	16.86 24.01
T <sub>6</sub> -Carbendazim f.b. Mancozeb	0.1 0.2	16.25 (23.63)	13.59 (21.61)	16.56 (23.88)	10.34 (18.78)	9.68 (18.13)	6.96 (15.20)	10.76 (19.11)	9.23 (17.67)	11.67 19.75
T <sub>7</sub> -Control	-	32.53 (34.74)	30.75 (33.67)	38.23 (38.13)	36.66 (37.21)	34.77 (36.11)	37.46 (37.67)	41.20 (39.94)	45.79 (42.59)	37.17 37.51
T <sub>8</sub> -Propineb	0.2	--	--	13.02 (21.14)	11.16 (19.43)	8.79 (17.18)	8.89 (17.27)	13.39 (21.43)	12.57 (20.72)	11.30 19.53
T <sub>9</sub> -Zineb	0.2	--	--	--	8.68 (17.08)	11.13 (19.47)	9.43 (17.87)	14.05 (22.01)	14.0 (21.97)	11.46 19.68
S.E. ±		1.08	1.09	1.50	1.42	1.62	1.84	1.03	0.60	0.6
C.D. (P=0.05)		3.29	3.33	4.53	3.57	4.00	4.54	2.54	1.82	1.82

Figures in the parenthesis are the angular transformation values

**Table 2 : Chemical control of leaf spot disease of sapota (*Phaeophleospora indica*) cv. KALIPATTI**

Treatments	Conc. (%)	Yield (kg/plant)						
		2001-02	2002-03	2003-04	2004-05	2005-06	2006-07	2007-08
T <sub>1</sub> Carbendazim	0.1	7.97	23.77	20.13	60.60	72.83	124.83	120.33
T <sub>2</sub> Thiophanate methyl	0.1	6.25	18.60	15.90	46.73	63.00	117.33	95.50
T <sub>3</sub> Mancozeb	0.2	8.19	18.88	17.50	48.23	60.20	91.50	102.00
T <sub>4</sub> Chlorothalonil	0.2	6.59	18.53	16.23	45.63	57.03	113.00	97.00
T <sub>5</sub> Copper oxychloride	0.2	6.39	22.25	17.13	50.80	55.67	106.83	92.50
T <sub>6</sub> Carbendazim f.b.Mancozeb	0.1 0.2	9.20	21.13	21.47	57.15	60.47	122.00	112.33
T <sub>7</sub> Control	--	5.77	16.31	14.70	41.73	49.27	89.40	83.00
T <sub>8</sub> Propineb	0.2	--	26.13	16.77	45.86	60.10	106.17	106.33
T <sub>9</sub> Zineb	0.2	--	-	16.80	44.70	55.40	102.67	95.33
S.E. ±		0.54	1.50	0.89	1.28	1.15	2.93	2.02
C.D. (P=0.05)		1.65	4.57	2.75	3.88	3.44	6.21	6.07

Cont.... Table 2

Treatments	Conc. (%)	B:C ratio						
		2001-02	2002-03	2003-04	2004-05	2005-06	2006-07	2007-08
T <sub>1</sub> Carbendazim	0.1	1.98	4.13	3.35	5.90	5.03	11.96	11.00
T <sub>2</sub> Thiophanate methyl	0.1	1.16	2.78	2.23	3.42	4.12	10.38	7.63
T <sub>3</sub> Mancozeb	0.2	2.46	3.40	3.08	3.28	4.16	8.57	9.28
T <sub>4</sub> Chlorothalonil	0.2	1.41	3.19	2.67	3.28	3.60	10.46	8.53
T <sub>5</sub> Copper oxychloride	0.2	1.70	4.20	2.99	2.81	3.45	9.61	8.27
T <sub>6</sub> Carbendazim f.b.Mancozeb	0.1 0.2	1.07	3.36	3.43	3.68	3.61	10.75	9.73
T <sub>7</sub> Control	--	--	--	--	--	--	--	--
T <sub>8</sub> Propineb	0.2	--	4.79	2.46	3.83	4.05	9.80	9.39
T <sub>9</sub> Zineb	0.2	--	--	2.84	3.83	3.71	9.63	8.50

(13.16%) followed by carbendazim 0.1% followed by mancozeb 0.2% (16.56%) and mancozeb 0.2% (16.94%). The PDI was highest in control (38.23%). The treatment propineb 0.2% recorded the highest yield of (26.13 kg / Plant) followed by carbendazim 0.1% (23.77 kg/ plant). During 2003-2004, two sprays of carbendazim 0.1% effectively reduced the disease followed by zineb 0.2% (8.68%). The highest yield was recorded in cabendazim 0.1% followed by mancozeb 0.2% (21.47 kg/plant) followed by carbendazim 0.1% (20.13 kg/plant) and mancozeb 0.2% (17.50 kg /plant). (Table 1 and 2).

In 2004-05, two sprays of propineb 0.2% effectively controlled the leaf spot disease followed by carbendazim 0.1% followed by mancozeb 0.2% (9.68%) and carbendazim 0.1% (10.84%) (10.84%). The highest yield was recorded in the treatment of carbendazim 0.1% (60.60 kg / plant) followed by carbendazim 0.1% followed by mancozeb 0.2% (57.15 kg /plant). During 2005-06, two sprays of carbenduzim 0.1% effectively controlled the leaf spot disease. The next best treatment was propineb (8.89%). The treatment carbendazim 0.1% recorded the highest yield of 72.83 kg/plant followed by thiophanate methyl 0.1% (63 kg/ plant). 2006-07, two sprays of carbendazim 0.1% at 60 days interval effectively controlled the leaf spot disease (7.23%) followed by carbendazim 0.1% followed by mancozeb 0.2% (10.76%). Sohi and Sridhar (1973) recommended the spray of zineb 0.2% (Dithane Z-78). Subsequent trials at the same place (IIHR, Bangalore) showed that thiophanate methyl (Topsin-M 0.1%), Delan (0.2%) and carbendazim (Bavistin 0.1%) were also effective fungicides against this disease. During 2007-08, the treatment carbendazim 0.1% effectively controlled the

leaf spot disease and recorded the highest yield of 120.33 kg (Table 1 and 2). Rawal (1998) reported that, Topsin-M (0.1%) were most effective against leaf spot of sapota caused by *Phaeophleospora indica* showing 69.79% leaves infected / branch as against 86.93% in the control. This was closely followed by Delan 0.2% and Bavistin 0.1% where 71.68 and 72.65% infected leaves were recorded, respectively. With regard to cost benefit ratio, it was the highest in the treatment of carbendazim 0.1% followed by carbendazim 0.1% f.b. mancozeb 0.2% and propineb 0.2% (Table 2).

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#### REFERENCES

- Chinnappa, B. (1968)**. A new species of *Phaeophleospora* affecting *Achras sapota* L. *Curr. Sci.*, **37** : 566.
- Rawal, R.D. (1998)**. Studies on leaf spot of sapota caused by *Phaeophleospora indica* Chin. *Indian J. Hort.*, **55** (1) : 61-62.
- Sohi, H.S. and Sridhar, T.S. (1973)**. Chemical control of leaf spot diseases of sapota caused by *Phaeophleospora indica* Chin. *Indian J. Hort.*, **30** : 553-557.

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