

## CONTROL OF LEAF BLIGHT DISEASE OF KODO

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### ABSTRACT

Sixteen fungicides from different chemical groups were tested against Kodo leaf blight disease as seed dressing and foliar spray treatments under field. N I Ceresan followed by Agrosan GN proved most effective in controlling the disease over other seed dressing fungicides. While Brestan 60 followed by Dithane M-45 were come out to be the best fungicides to control the disease through foliar sprays under field. Rest of the fungicides though were less effective were far superior to the checks. Fungicides from Organo mercurial and carbamate groups stood better to control the disease as compared to fungicides in other groups.

Kodo (*Paspalum scrobiculatum* Linn.) an important minor millet, is widely and profitably cultivated in several states of India. This being poor man's food crop, unfortunately often suffers from a severe leaf blight disease (Gupta *et al.*, 1982) caused by *Alternaria alternata* (Fr.) Keissler (Simmons, 1967) which inflicts great economic losses in the yield. As the disease is newly investigated (Gupta, 1982) pertinent information is lacking on its control. *In vitro* tests against Kodo leaf blight pathogen revealed several fungicides quite effective to check the growth of the fungus (Gupta and Singh, 1992). Therefore, the promising fungicides were selected for further testing their efficacy against the pathogen under field.

### MATERIALS AND METHODS

As kodo leaf blight is seed and air borne, two separate trials viz., seed treatment and foliar spray were carried out to check the primary and secondary sources of infection. The fungicides used

Table 1. Effect of seed treatment on leaf blight of kodo.

Fungicides	Dose (%)	Disease percentage (av. angular value in percentage)	Per cent disease control over check
N I Ceresan	0.2	10.96	92.32
Agrosan GN	0.3	11.59	89.03
Thiram	0.2	14.03	84.52
Dithane M-45	0.2	14.56	83.23
Captan	0.2	18.60	73.55
Vitavax	0.2	19.48	70.97
Benlate	0.1	21.70	64.52
Brassicol	0.15	29.57	36.77
Check	-	38.44	-
C.V. at 5% level			4.38

were Agrosan GN (1 per cent phenyl mercury acetate plus ethyl mercury chloride); Bavistin (50 per cent 2-methyl 2 butyl carbamoyl, 2-benzimidazole carbamate), Benlate (methyl-1-butyl carbamoyl) - 2 - benzimidazole carbamate); Blue Copper (50 per cent copper oxychloride); Brassicol (75 per cent penta chloronitro-benzene); Brestan 60 (triphenyl tin acetate); Captan (75 per cent N(trichloro) methyl mercapto)-4- cyclo hexene-1, 2-dicarboximide); Cuman L (80 per cent, zinc dimethyl dithio-carbamate); Difolatan (80 per cent, N- (1.1-2,2-Tetrachloro-ethyl sulfenyl-Cis-4-cyclohexane-1, 2- dicarboximide); Dithane M-45 (75 per cent zinc plus manganese ethylene bisdithio carbamate); Dithane Z-78 (75 per cent zinc ethylene bisdithio carbamate); Karathane (25 per cent, mixture of: 2(1-methyl heptyl-4-4-dinitro phenol and 2(1-methyl)-4-6 dinitrophenyl carbamate); Kitazin (40 per cent o,o-disso propyl-S, benzyl thiophosphate) N I Ceresan (ethyl mercury phosphate); Thiram (80 per cent, tetramethyl thiruram disul phide) and vitavax (75 per cent 5-6 dihydro-2-methyl-1,4 oxathin-3 carboxinilide-4, 4-dioxide).

Kodo cultivar 155 highly susceptible to leaf blight was selected and the seeds were taken from the infected plants. The seeds were dressed with the required doses of fungicides (Table 1). Treated seeds 10 per pot were sown in 23 cm pots filled with field soil. In each treatment 3 pots were taken. Untreated seeds served as check. The pots were kept in Randomized Block Design and replicated thrice. After sowing the pots were covered with transparent polythene bag to avoid air borne infection. The pots were uncovered 45 days after seeding and average data on disease incidence were taken for two years (Table 1).

Table 2. Effect of fungicidal spray on leaf blight (*Alternaria alternata*) of kodo.

Fungicides	Dose (%)	Av. disease intensity	% disease control over check	Yield q/ha	Av. disease intensity	% disease control over check	Yield q/ha
Brestan 60	0.1	22.42 (25.71)	55.45	5.94	24.39 (29.59)	53.11	5.92
Dithane M-45	0.2	26.41 (30.93)	47.53	5.89	27.42 (31.58)	47.37	5.88
Difolaton	0.2	31.44 (34.11)	37.62	5.83	30.44 (33.48)	41.63	5.87
Cuman L	0.2	35.96 (36.85)	28.71	5.81	35.45 (36.54)	32.06	5.93
Dithane Z-78	0.2	36.30 (37.30)	27.23	5.75	36.97 (37.47)	29.19	5.75
Benlate	0.1	37.98 (38.04)	24.75	5.75	38.97 (38.63)	25.36	5.71
Blue copper 50	0.3	41.06 (39.85)	18.32	5.73	40.82 (31.71)	21.53	5.71
Captan	0.2	40.49 (40.10)	17.82	5.73	41.74 (40.25)	20.10	5.69
Karathane	0.2	42.23 (40.53)	16.34	5.69	43.49 (41.26)	16.75	6.65
Bavistin	0.1	44.49 (41.84)	11.88	5.61	44.49 (42.13)	13.88	5.61
Kitazin	0.2	46.49 (42.99)	7.92	5.58	46.74 (43.13)	10.53	5.56
Check	---	50.50 (45.29)	-	5.27	52.26 (40.29)	-	5.19
C.D. at 5% level		1.7121		0.1449	1.5726		0.1539

For foliar spray trial, the crop was sown in 3 M x 2 M plots in the first week of July each year during 1980 and 1981. Kodo seed taken from healthy plants of the susceptible cultivar 155 was seeded in 6 lines at 30 cm apart in each plot and 5 kg seed/ha was maintained. The treatments were set in Randomized Block Design with 4 replications. Mass inoculation of 45 days old plants in each treatment including the checks, was uniformly done after sun set through spraying with 10 day old spore cum mycelial suspension ( $14 \times 10^3$  spores/ml) of the pathogen. The fungicidal sprays were begun 48 hours after the inoculation spray and repeated at 15 days interval. In all 3 sprays were given in each case and final data on disease intensity per cent were taken 15 days after the last spray on the basis of leaf area infected by randomly selected 25 plants in each treatment and then pooled. Yield data were recorded/plot at maturity and transformed in Q/ha. Data recorded in both the trails were analysed statistically through regular transformation (Fisher and Yates, 1963).

## RESULTS AND DISCUSSION

The results show that in the seed treatment trial (Table 1) none of the fungicides used, was able to completely eliminate the primary seed borne infection of the pathogen. However, NI Ceresan followed by Agrosan GN which were at par, proved

significantly most effective in checking the infaction rate by 92.32 and 89.03 per cent respectively over checks. Thiram and Dithane M-45, though statistically on par followed by Captan and Vitavax were also proved significantly effective to curb the primary infection to a great extent. Obviously Benlate and Brassicol were least effective.

In case of foliar spray trials the results show (Table 2) that Brestan 60 remarkably controlled the disease intensity by 55.45 and 53.11 per cent and come out to be significantly superior respectively during 1980 and 1981. Dithane M 45 which closely followed the former controlled the disease by 47.53 and 47.37 per cent respectively during 1980 and 1981 and stood second best treatment. Difolaton also exhibited good control of the disease and was yet superior to other fungicides. Rest of the fungicides, though were superior to checks, were on par in controlling the disease. Bavistin and Kitazin both on par, showed the lowest disease intensity during both the years.

Obviously, in both the trials, fungicides from organo mercurial and carbamate groups gave better control of kodo leaf blight as compared to fungicides in other groups. Hence economic losses due to this disease in kodo may be avoided by the use of effective fungicides.

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## REFERENCES

- FISHER, R.A. and YATES, F. 1963. Statistical tables for Biological Agricultural and Medical research (Sixth ed.) J.W. Arrow Smith Ltd. Bristol pp.144.
- GUPTA, S.P. 1982. Parasitism and control of leaf blight disease of kodo *Paspalum scrobiculatum* Linn). Ph.D. Thesis, C.S.A. Univ. of Agric & Tech., Kanpur pp.173.
- GUPTA, S.P. and SINGH, B.R. 1992. In vitro evaluation of fungicides against Kodo leaf blight pathogen. Indian J. Agric. Sci. (Submitted).
- GUPTA, S.P.; NARAIN UDIT, SINGH MOHIT and SHUKLA, T.N. 1982. A new leaf blight disease of Kodo *Paspalum scrobiculatum* L.) Nat. Acad. Sci. India 5 (2):41-42.
- SIMMONS, E.G. 1967. Typification of *Alternaria*, *Stemphyllum* and *Ulocladium*. Mycologia 59:67-92.

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## STORABILITY OF CHILLI (*Capsicum annum* L.) SEED

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### ABSTRACT

Seeds dried to a moisture content of 8 per cent and with an initial germination of 85 per cent recorded 73 per cent germination after 30 months of storage under ambient conditions. Slurry treatment with captan 75% WP at 2 g + DDT 50% WP at 200 mg/kg of seed was found better than untreated seeds. Seeds obtained from various pickings exhibited differences in their storability. Seed germination decreased with increase in storage; whereas E.C. increased with the increase in storage period.

Seed quality is not only influenced by prevailing external environmental conditions but also on the condition of storage (Harrington, 1960). Production of seed itself is a costly venture and the possibilities of carrying over of the unsold stock to the next season is inevitable in a competitive seed market. Therefore, reliable information for prolonging the shelf life of seed under storage will be of immense help to the seed producers.

### MATERIALS AND METHODS

For evaluation, 20 g samples were made from seeds retained by 8/64" round perforated sieve separately from each picking obtained from a rabi season crop. The seed samples were given the following treatments: T<sub>1</sub> - Control without any treatment. T<sub>2</sub> - Seeds were slurry treated with Captan 75% WP @ 2 g + DDT 50% WP at 200 mg/kg of seed with 5 ml of water. The seeds were packed in cloth bags (C<sub>1</sub>) and polythene bags (C<sub>2</sub>) of 700 gauge thick and stored in the Department of Seed Technology, Tamil Nadu Agricultural University, Coimbatore under ambient condition. At trimonthly interval samples were drawn and the following estimations were made for 30 months

(P<sub>0</sub> - P<sub>10</sub>) on germination and electrical conductivity.

### RESULTS AND DISCUSSION

#### Germination

The mean germination after 30 months of storage was 72.8 and 75.9% in control and treated seeds respectively.

Among the pickings the mean germination ranged between 85.8 to 59.41 per cent. The highest and the lowest germination was in first and last pickings respectively. (Table 1). Untreated seeds from first four pickings maintained the standard germination of 70% upto 21 months in cloth bag and upto 31, 21, 24 and 21 months in C<sub>2</sub> respectively in the first four pickings. Seeds from fifth and sixth picking recorded 70 per cent germination only upto 6 and 3 months in cloth bags and upto 12 months in polythene bags. Treated seeds from six pickings maintained 70% germination upto 30, 24, 21, 24, 9 and 9 months in cloth bags and upto 30, 27, 24, 24, 15 and 15 months in polythene bags respectively.