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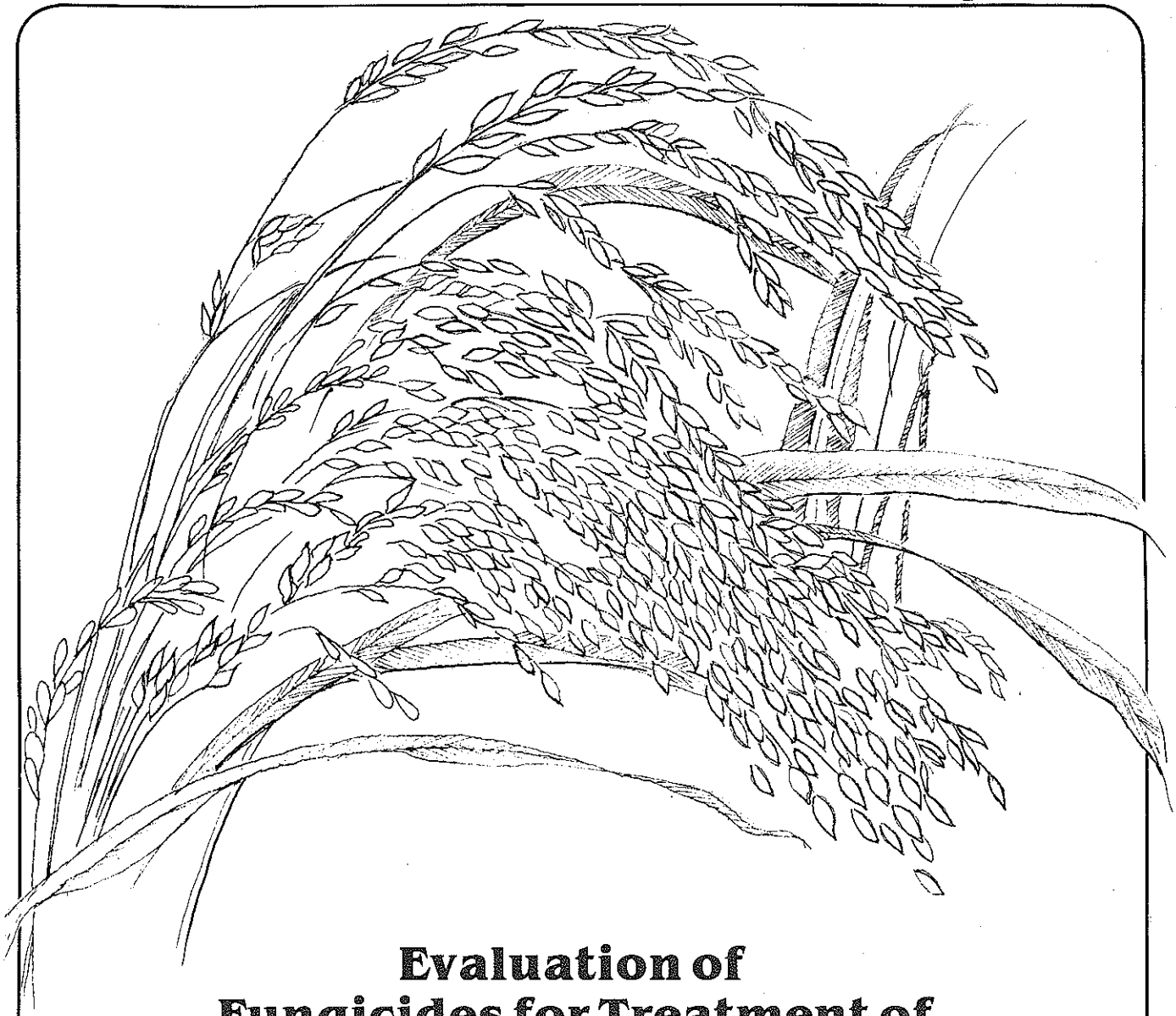

Evaluation of Fungicides for Treatment of Rice Planting Seed, 1976-81

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Treatment of planting seed with fungicides is an accepted practice for control of seed- and soilborne-diseases that affect seedling stands and development of crops. Seed and seedling diseases of rice are common in Mississippi and may be related to the stresses caused by early or late plantings and conditions that impede germination and growth of rice seed. Effectiveness of seed treatment with fungicides in tests has been reported in Louisiana (1). This report summarizes the results of six years of fungicide trials with rice in Mississippi.

Procedure

The test materials (Tables 1-8) and seed were stirred or tumbled in a jar or a plastic bag. The treated seed were sown with a one-row, push-type plot planter at a rate of 20/ft in 10-ft long rows. The design was a randomized block with five replications. Tests were planted on a Sharkey clay in 1976-80 and on a Bosket fine sandy loam in 1979-81. Stand counts usually were made during the early seedling stage.

Results and Discussion

Fungicidal treatments generally increased stand (Tables 1-8), but the 1977 test showed that seed dressings are not always associated with improved stand. The 1977 test was planted on a rough, poorly pulverized seedbed, and plant stands for all treatments were low, indicating that seedbed condition rather than seed dressings limited stand. Seed and seedling disease pressure were low in the 1980 test on Sharkey clay and in the 1981 test, and this prevented identification of effective treatments. Such uncontrollable factors make the selection of effective treatments more difficult.

Fungicides suggested for use on rice planting seed in Mississippi (Arasan 42-S®, Arasan 70-S®, Busan 30A®, Captan®, Difolatan 4F®, Dithane M-45®, Terracoat L-205® and Vitavax R®[1]) were included in most tests. Effectiveness of the suggested materials generally was satisfactory. There was variability among years. Higher seedling stands than those of the control usually were associated with one or more of the suggested materials in years when conditions were such that differences between treatments were evident.

Several experimental fungicides were evaluated each year. Some of these materials resulted in better stands, but their status as possible new fungicides for rice seed is uncertain.

Acknowledgment

Seed used in the regional rice seed treatment tests have been treated and distributed by either F. N. Lee, Arkansas Agricultural Experiment Station, Stuttgart; or M. C. Rush, Louisiana Agricultural Experiment Station, Baton Rouge. D. H. Bowman, T. C. Miller and J. E. Street, MAFES Delta Branch, are thanked for their assistance.

Literature Cited

1. Rush, M. C. 1977. New seed-protectant fungicides for rice. Louisiana Agriculture 20(3):10-11.

[1]*Mississippi Cooperative Extension Service. Rice Seed Treatment, Plant Disease Dispatch, October 1978.*

Table 1. Rice seedling survival in the 1976 regional rice seed treatment test, by treatment, MAFES Delta Branch.[1]

Treatment	Rate (oz/cwt)	Stand[2] (%)
Difolatan-Vitavax (2-2) Fl SP	4	60.2**
DPX 14	4	56.2**
H 719 Fl (17%) + Difolatan 4 Fl 50% + 50% Tank Mix	2	55.8**
Terracoat L-205 + OAC 5-1563	4 + 2	55.0**
Captan 4 Fl	3.4	53.0*
H 719 Fl (17%) + Difolatan 4 Fl 50% + 50% Tank Mix	4	52.7*
Demosan T	6	51.5*
Dithane M-45	4	49.1
Difolatan 4 Fl+ Kocide SD 50% + 50% Tank Mix	8	49.0
RE 19656 50 W	6	48.8
Difolatan 4 Fl + Vitavax-R 50% + 50% Tank Mix	4	48.7
Orthocide-Vitavax (37.5 - 37.5) WP	2	48.5
Kocide SD	8	47.9
Chapman C-22	4	47.7
Arasan 70-S	2.35	47.4
Vitavax-R	4	47.1
Terracoat SD-205 + OAC 5-1563	4 + 2	46.3
Difolatan 4 Fl SP	4	46.2
Difolatan 4 Fl + Vitavax-R (2:1)	4	45.8
Guardsan 389 40 WP	6	44.9
Kocide SD	4	44.8
Terracoat L-205	8	44.7
Vitavax-17	4	44.2
Chapman C-44	4	43.7
Guardsan 389 40 WP	8	43.4
Terracoat ZN 20-5-5	5	43.2
Terracoat L-205 + OAC 5-1484	4 + 2	42.6
Difolatan 4 Fl + Vitavax-R (1:2)	4	42.6
Vitavax-17	8	41.9
Orthocide-Methoxychlor 75-5 WP	2.25	41.3
Busan 30 EC	1.65	41.2
Vitavax-17	2	41.1
Untreated seed	-	39.6
Terracoat L-205	4	38.7
Bay Meb 6447	2	37.6

[1]Rice cultivar - Starbonnet
Soil type - Sharkey clay
Planting date - 4-23-76
Date stand counted - 6-10-76

[2]Expressed as percent of seed planted, mean of five replications. Means followed by asterisks are significantly higher than the mean stand from untreated seeds at the 1% (**) or 5% (*) level. LSD 0.01 = 14.1. LSD 0.05 = 10.7.

Table 2. Rice seedling survival in the 1977 regional rice seed treatment test, by treatment, MAFES Delta Branch.[1]

Treatment	Rate (oz/cwt)	Stand[2] (%)
Untreated check	---	30.8
Orthocide-Vitavax (37.5 - 37.5) SP	6.00	27.6
Arasan 70S Red	2.35	27.4
DPX-14	6.00	26.5
Kocide SP	4.00	26.3
Difolatan 4F + Vitavax R (50%-50% tank mix)	8.00	26.0
MRC 156C	6.00	26.0
Dithane M-45	4.00	25.2
Terracoat ZN 2055	5.00	25.2
Terracoat ZN 2055	3.00	24.6
Arasan 70S Red + Zinc Oxide	2.35 + 4.00	24.6
Terracoat L-205	8.00	24.4
Orthocide-Methoxychlor	2.25	24.2
Vitavax-R	4.00	24.1
Difolatan-Vitavax (2-2) fl.	4.00	22.8
Terracoat L-205 + OAC 5-1563	4.00 + 2.00	22.6
DPX-14	4.00	22.2
OAC 5-1563	2.00	21.5
Orthocide-Vitavax (37.5 - 37.5) SP	4.00	20.1
UBI P-368	4.00	20.0
RH-2161	1.00 ai	19.9
Chapman 22	4.00	19.2
UBI 1196	4.00	18.7
RH-2161	2.00 ai	18.6
Difolatan 4F	4.00	18.2
OAC 5-1563	4.00	18.2
Terracoat L-205	4.00	16.4
UBI 1196	12.00	15.2
UBI 1196	8.00	15.3
Guardsan 389 WP	4.00	14.8
Guardsan 388 WS	4.00	11.3
EL 228 WP	6.00	9.2

[1]Rice cultivar - Labelle
Soil type - Sharkey clay
Planting date - 5-9-77
Date stand counted - 6-13-77

[2]Expressed as percent of seed planted, mean of five replications. Means followed by asterisks are significantly higher than the mean stand from untreated seeds at the 1% (**) or 5% (*) level. LSD 0.01 = 13.4. LSD 0.05 = 10.2.

Table 3. Rice seedling survival in the 1978 regional seed treatment test, by treatment, MAFES Delta Branch.[1]

Treatment		Rate (oz/cwt)	Stand[2] (%)
DPX 14		4.00	24.2**
Difolatan 4F		6.00	22.6**
CGA-48988 + Vitavax 17F		1.0 + 8.0	22.0**
CGA-48988 2EC + Vitavax 17F		2.0 + 8.0	20.0**
UBI P-368		6.00	18.8**
CGA-48988 2EC		2.00	18.4**
RH 2161		4.00	18.2**
Captan 80WP		2.25	17.8**
ABG-2000 + Difolatan 4F		2.0 + 4.0	17.4**
Terracoat L-205		8.00	17.0*
UBI P-368		4.00	16.6*
Difolatan 4F		4.00	16.0
CGA 48988 + Terracoat LT-2		1.0 + 4.0	15.8
Terracoat ZN 2055		5.00	15.6
Benlate-T		4.00	14.4
UBI P-368 + Vitavax 75	(tank mix)	3.0 + 3.0	14.2
Chapman-22		4.00	14.2
Kocide SD		4.00	13.4
Terracoat ZN 4-1-1-F		4.00	13.4
ABG-2000 + Kocide SD		2.0 + 4.0	13.2
ABG-2000		4.00	13.0
Untreated		---	12.8
Vitavax-R		4.00	12.6
Kocide SD		8.00	11.8
CGA-49899 2EC + Terracoat LT-2		2.0 + 4.0	11.8
CGA-48988 2EC		1.00	11.6
Orthocide - Methoxychlor 75-5		2.25	11.4
Dithane M-45		4.00	11.0
Arasan 705 Red		2.35	8.8
MRC 156C		6.00	7.2

[1]Rice cultivar - Labelle
Soil type - Sharkey clay
Planting date - 4-21-78
Stand counting date - 5-25-78

[2]Expressed as percent of seed planted, mean of five replications. Means followed by asterisks are significantly higher than the mean stand from untreated seeds at the 1% (**) or 5% (*) level. LSD 0.01 = 4.6. LSD 0.05 = 3.5

Table 4. Rice seedling survival in the 1979 regional seed treatment test, Location 1, by treatment, MAFES Delta Branch.[1]

Treatment	Rate (oz/cwt)	Stand[2] (%)
Difolatan 4 F1	6.0	33.0**
Dithane F1-45	4.0	32.9**
UBI - P368	4.0	32.8**
DPX 770-2	4.0	31.0**
Terracoat Zn 20-5-5WP	5.0	28.7**
Chapman PQ-572	8.00	28.2**
DPX 115 B	4.0	27.9**
Captan 80 WP	2.25	27.6**
Orthocide 4 F1	3.40	27.5**
DPX 770	4.0	27.4**
CZ 57	6.0	26.6*
CGA-48988 (Ridomil)	2.0	25.2*
Gustafson Captan 30 DD + Gustafson 42 S	2.70 + 3.15	25.1*
Busan 30A	1.5	25.0*
Gustafson Captan 30 DD	2.70	24.4
Gustafson Captan 30 DD + Vitavax 30 C	2.70	24.2
Kocide SD	4.0	23.9
Gustafson 42 S	3.15	23.6
Chapman PQ-56	8.0	23.5
Terracoat Zn 20-5-5 WP	5.0	23.0
Vitavax-R	4.0	21.8
Kocide Zn SD	4.0	21.3
Terracoat 20-5 F1	5.0	20.6
CGA-48988 + Vitavax-17 F1	1.0 + 8.0	20.6
CGA-48988 + Terracoat LT-2	1.0 + 4.0	20.3
DAC 3289 + PCNB (17%-17%) F1	4.0	18.9
Vitavax 34 F1	2.00	17.7
Untreated	---	16.6
Terracoat L-205	8.00	16.6
CGA-48988 + CGA-64250	1.0 + 2.0	14.8

[1]Rice cultivar - Labelle
Soil type - Sharkey clay
Planting date - 6-13-79
Stand counting date - 7-3-79

[2]Expressed as percent of seed planted, mean of five replications. Means followed by asterisks are significantly higher than the mean stand from untreated seeds at the 1% (**) or 5% (*) level. LSD 0.01 = 10.8. LSD 0.05 = 8.2.

Table 5. Rice seedling survival in the 1979 regional seed treatment test, Location 2, by treatment, MAFES Delta Branch.[1]

Treatment	Rate (oz/cwt)	Stand[2] (%)
Gustafson Captan 30 DD + Gustafson 42 S	2.70 + 3.15	59.2**
DPX 770-2	4.0	58.2*
Terracoat Zn 20-5-5 WP	5.0	56.8*
Captan 80 WP	2.25	55.5
Dithane F1-45	4.0	54.3
UBI - P 368	4.0	53.5
Difolatan 4 F1	6.0	53.5
Gustafson Captan 30 DD	2.70	53.5
Orthocide 4 F1	3.40	53.4
Gustafson Captan 30 DD + Vitavax 30 C	2.70	52.4
Kocide SD	4.0	52.1
DPX 770	4.0	52.0
Gustafson CZ 57	6.0	52.0
CGA-48988 Vitavax 17 F1	1.0 + 8.0	50.9
DPX 115 B	4.0	50.8
Vitavax-R	4.0	48.9
Terracoat ZN 20-5-5 WP	5.0	48.1
Chapman PQ-56	8.0	47.7
Vitavax 34-F1	2.00	47.2
Kocide Zn SD	4.0	46.9
Gustafson 42 S	3.15	46.6
Terracoat 20-5 F1	5.0	45.8
CGA-48988 (Ridomil)	2.0	45.8
Untreated	---	44.9
Busan 30A	1.5	44.6
CGA-48988 + Terracoat LT-2	1.0 + 4.0	44.0
Chapman PQ-572	8.00	41.0
Terracoat L-5=205	8.00	40.1
DAC 3289 + PCNB (17%-17%) F1	4.0	38.1
CGA-48988 + CGA-64250	1.0 + 2.0	29.5

[1]Rice cultivar - Labelle
Soil type - Bosket fine sandy loam
Planting date - 5-1-79
Stand counting date - 5-13-79

[2]Expressed as percent of seed planted, mean of five replications. Means followed by asterisks are significantly higher than the mean stand from untreated seeds at the 1% (**) or 5% (*) level. LSD 0.01 = 14.1. LSD 0.05 - 10.7.

Table 6. Rice seedling survival in the 1980 regional seed treatment test, Location 1, by treatment, MAFES Delta Branch.[1]

Treatment	Rate (oz/cwt)	Stand[2] (%)
Busan 30A	1.5	49
CGA-48988 + Vitavax-34	1.0 + 3.0	48
Vitavax-34	3.0	48
Captan 80 WP	2.25	47
Dithane M-45 F	4.0	47
Orthocide 4 F	3.4	47
Terracoat L-205	8.0	47
Untreated control	---	46
Difolatan 4 F	4.0	46
CGA-48988 (Ridomil)	1.0	45
CGA-48988 + Vitavax R	1.0 + 3.0	44
Dithane M-45 WP	4.0	44
Difolatan 4 F	6.0	43
Kocide SD	4.0	43
Terracoat Zn 20-5-5 WP	5.0	43
Gustafson 42 S	3.3	43
Vitavax-R	4.0	42
Vitavax-R + Gustafson 42 S + Protoective binder	3.0 + 5.3 + 2.0	42
Terracoat Zn 20-5-5 FL	5.0	40
Gustafson-Captan 30 DD	2.7	38

[1]Rice cultivar - Labelle
Soil type - Sharkey clay
Planting date - 5-8-80
Stand counting date - 5-26-80

[2]Expressed as percent of seed planted, mean of five replications. Means followed by asterisks are significantly higher than the mean stand from untreated seeds at the 1% (**) or 5% (*) level.
LSD 0.01 = 10.8. LSD 0.05 = 8.2.

Table 7. Rice seedling survival in the 1980 regional seed treatment test, Location 2, by treatment, MAFES Delta Branch.[1]

Treatment	Rate (oz/cwt)	Stand[2] (%)
Vitavax 34	3.0	49**
CGA-48988 + Vitavax R	1.0 + 4.0	44**
Difolatan 4 F	6.0	43**
Difolatan 4 F	4.0	43**
Vitavax-R	4.0	42**
Dithane M-45 F	4.0	42**
Terracoat L-205	8.0	41*
Captan 80 WP	3.25	40*
Dithane M-45 WP	4.0	38*
Terracoat Zn 20-5-5 FL	5.0	36
Gustafson-Captan 30 DD	2.7	36
Gustafson 42 S	3.3	33
Busan 30A	1.5	33
Terracoat Zn 20-5-5 WP	5.0	32
CGA-48988 + Vitavax 34	1.0 + 3.0	32
Vitavax-R + Gustafson 42 + protective binder	3.0 + 5.3 + 2.0	32
Kocide SD	4.0	29
Orthocide 4 F	3.4	28
CGA-48988 (Ridomil)	1.0	27
Untreated control	---	23

[1]Rice cultivar - Labelle
Soil type - Bosket fine sandy loam
Planting date - 4-23-80
Stand counting date - 5-8-80

[2]Expressed as percent of seed planted, mean of five replications. Means followed by asterisks are significantly higher than the mean stand from untreated seeds at the 1% (**) or 5% (*) level.
LSD 0.01 = 18.5. LSD 0.05 = 14.0.

Table 8. Rice seedling survival in the 1981 regional seed treatment test, by treatment, MAFES Delta Branch.[1]

Treatment	Rate (oz/cwt)	Stand[2] (%)
Apron + Vitavax-R + Durakoat	2.00 + 4.00 + 6.00	65*
Zinc Omadine 40% WP	1.00	64*
Apron + Vitavax-R	2.00 + 4.00	64*
Orthocide 4 F1	3.25	62*
Vitavax R	4.00	62*
Dithane M-45 F1	4.00	60
Zinc Omadine 40% WP + Olin 4001	0.50 + 12.5	58
Difolatan 4 F1	6.00	58
Difolatan 4 F1	4.00	57
Captan 30 DD	2.70	57
Apron	2.00	57
Apron + Durakoat	2.00 + 6.00	56
Imazalil 5% SD + TCMB 10% SD	0.1 g/kg	55
SC-0785	3.00	55
Thiram 30 F	3.30	54
Imazalil 5% SD	0.1 g/kg	52
Imazalil 5% SD	0.1 g/kg	51
SC-0785	1.50	51
Untreated	---	49
Imazalil 5% SD + TCMB + 10% SD	0.1 g/kg	48
Olin 3900	5.60	40
Olin 3900 + Olin 4001	2.80 + 2.5	29

[1]Rice cultivar - Labelle
Soil type - Bosket fine sandy loam
Planting date - 5-11-81
Stand counting date - 5-25-81

[2]Expressed as percent of seed planted, mean of five replications. Means followed by asterisks are significantly higher than the mean stand from untreated seeds at the 1% (**) or 5% (*) level.
LSD 0.01 = 16.3. LSD 0.05 = 12.4.

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