EFFECT OF NU FILM 17 ON FUNGICIDES EVALUATED FOR CONTROL OF CUCUMBER TARGET SPOT

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ABSTRACT

The effect of four different fungicides on target spot (*Corynespora cassiicola* [Berk. & Curt.] Wei) of cucumber was investigated during the fall of 1968. Weekly sprays of high and low rate equivalents (1 1/2 and 1/2 lbs. per 100 gallons of water respectively) of Dithane M-45 80 W (ethylene bisdithiocarbamate, a coordination product of manganese and zinc), Dyrene 50W (2,4-dichloro-6-0-chloroanilino-s-triazine), Polyram 80W (ethylene bisdithiocarbamato zinc dithio bisthiocarbonyl imino ethylene bisdithiocarbamato zinc), and Difolatan 40% Flowable (cis-N-(1, 1, 2, 2-tetrachloroethyl) thio-4-cyclohexene-1, 2-dicarboximide) in combination with 2 1/2 pts of Nu Film 17 (poly-1-p menthen-8, 9-diyl) per hundred gallons of water gave significantly higher disease control than weekly sprays of all the fungicides evaluated alone.

The low rates of Dyrene and Difolatan with Nu Film 17 gave significantly higher disease control than the high rates sprayed alone.

Cucumber plants sprayed with the combinations of the high rates of all fungicides and Nu Film 17 were kept alive three weeks longer than those sprayed with the fungicides alone.

Significantly higher yields were obtained from plants sprayed with the high and low rates of fungicides in combination with Nu Film 17, than those sprayed with the fungicides alone.

INTRODUCTION

The production of slicing cucumber (*Cucurbita melonis* L.) during the fall and spring seasons for the fresh markets is an 8 million dollar industry for the Lee-Collier-Hendry County area. In the 1968-1969 crop year, 8,000 acres were planted to cucumbers.

Under favorable conditions, the foliar diseases downy mildew (*Pseudoperonospora cubensis* [Berk. & Curt.] Rostow) and target spot (*Corynespora cassiicola* [Berk. & Curt.] Wei) cause cause severe damage to cucumber plants (2). Downy mildew appears early in the season on susceptible varieties and must be kept under control during the entire season (4). Target spot usually is not observed until the later part of the season on downy mildew susceptible varieties such as Marketer and Ashley. However, target spot appears very early in the season on the newer downy mildew resistant varieties Poinsett and Cherokee and is generally difficult to control. Fortunately, both diseases can be controlled by the recommended fungicides if they are applied on a preventative cycle (2). Downy mildew can be controlled even if sprays are delayed until after it has appeared in the planting. Target spot is a much more difficult disease to control after initial infections have occurred. It is necessary to spray the plants on a much shorter cycle (2-3 days) to keep the disease under control.

The purpose of this experiment was to evaluate some of the newer fungicides for the control of both target spot and downy mildew and to determine the effect of Nu Film 17 on the efficacy of the fungicides tested.

MATERIALS AND METHODS

The fungicides were mixed in the 2 1/2 gallon tank of a mist blower (Kirkmolen Model 26, Type G) and kept in suspension by an air stream from the main blower. Applications were made beginning at the 3-4 leaf stage of the cucumber plant on September 23rd and continued on a weekly schedule until the end of the test on December 9. A total of eight applications were made on the variety Ashley. The treatments were in a split-plot experiment with three replications. Each sub-plot consisted of one ten-foot row. Commercial production practices were followed, including one soil application of a 4-8-8 (30% organic) fertilizer at preplant, a second two weeks after planting, and a third at layby. Only

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two pickings were made from the entire experiment.

Results and Discussion

Very little downy mildew was observed during the entire experiment. The only prevalent disease in the plots was target spot. Early symptoms of the disease were observed in late September, and by the first week of October some of the plots of the southern end of the block were severely spotted. The spraying cycle was maintained on a 7-day schedule, so the experiment was a severe test of the fungicidal activity of the various materials and of the effect of Nu Film 17 on the efficacy of the fungicides tested.

In the first evaluation of the disease on October 25 (Table 1), the severity of infection in the check plots appeared to be much higher on visual observation than from an evaluation following the Brown-Barrett-Horsfall system (2). There were no significant differences between the fungicides (at either the 5 or 1% level) in per cent disease control of target spot. At such a low level of disease incidence (Table 1) there were no significant differences in per cent disease control between the combinations of fungicides with and without Nu Film 17.

In the second evaluation of the disease made on November 13 (Table 1), disease severity had increased considerably and had resulted in near defoliation of the check plots of the southern most replicate (Replicate C). There were no significant differences (5% level) between the high and low rates of the fungicides (whole plots) tested, however, there were highly significant differences (1% level) among the replications. The significant differences found between the replications corroborate the field observations of a much higher level of disease in the C replicate. Under a higher disease incidence the differences between the plots sprayed with and without Nu Film 17 were highly significant (1% level) (Table 1). The plots sprayed with all the combinations of fungicides with Nu Film 17 had a much higher per cent disease control than the plots where the fungicides were sprayed alone (Table 1). The sub-plot differences between the fungicides (when combined with Nu Film 17) were significant at the 5% level, whereas there were no significant differences between the fungicides in the sub-plots sprayed without Nu Film 17. Best control was obtained with the high rates of Dyrene (1 1/2 lbs), Polyram (1 1/2 lbs), Dithane M-45 (1 1/2 lbs), Difolatan 4 Flo (2 1/2 pts), Daconil 2787 (1 1/2 lbs), and with

Table 1. Average percent disease control of target spot and marketable yield of cucumber, Fall 1968.

			Plots sprayed with high and low rates of five fungicides with and without Nu Film 17									
			Disease				Average yield increase in pounds per plot over check					
			Avg % control October 25		Avg % control November 13		November 14		November 21		November 26	
			Nu Film 17		Nu Film 17		Nu Film 17		Nu Film 17		Nu Film 17	
Tr.	Materials	Rate/100 gallons	With	Without	With	Without	With	Without	With	Without	With	Without
1	Daconil 2787	1 1/2 lbs	68.67	52.33	56.00ab	21.00	24.5	21.7	1.7	0.6	0	0
2	Dyrene 50W	1/2 lb	42.33	30.33	55.67ab	13.00	22.4	22.3	3.1	1.1	1.5	0
3	Dyrene 50W	1 1/2 lbs	85.67	63.33	84.67a	32.33	32.8	34.5	2.1	1.2	1.8	0
4	Difolatan 4 Flo	1 1/4 pts	68.67	66.33	52.33ab	31.33	23.8	22.4	1.3	2.0	.6	0
5	Difolatan 4 Flo	2 1/2 pts	35.33	29.00	56.33ab	16.33	38.8	20.7	1.7	1.2	1.3	0
6	Polyram	1/2 lb	68.00	56.67	41.67 b	20.67	29.8	26.7	1.2	0.9	0	0
7	Polyram	1 1/2 lbs	58.00	80.33	60.67ab	35.67	34.8	30.1	1.9	1.2	1.2	0
8	Dithane M-45	1/2 lb	56.67	65.67	42.00 b	19.00	18.8	25.2	0.7	0.8	0	0
9	Dithane M-45	1 1/2 lbs	58.00	63.33	73.67a	31.67	11.1	3.9	2.6	1.3	1.4	0
10	Check-no fungicide		Avg % disease		Avg % disease		Avg yield		Avg yield		Avg yield	
	Nu Film 17 only		19.42	---	56.77	---	27.1	---	0	---	0	---
	Check (untreated)		---	27.29	---	72.73	---	21.4	---	0	---	0

Numbers within a column followed by similar letters are not significantly different from each other at the 5% level according to Duncan's Multiple Range Test.

the low rates of Dyrene (1/2 lb) and Difolatan 4 Flo (1 1/2 pts). The check sub-plot sprayed only with Nu Film 17 had significantly lower per cent disease than the unsprayed check sub-plot (Table 1).

In the harvest of October 14 there were no significant differences (5% level) between fungicides in average yield of whole plots. Average yield differences between the sub-plots sprayed with and without Nu Film 17 were significant. The average per cent of yield of the check sub-plot with Nu Film 17 was higher than the unsprayed check sub-plot (Table 1).

By November 21, 7 days after the first harvest, the yields had been drastically reduced. The vines of the plots sprayed only with fungicides were severely spotted and had lost most of their leaves. The differences in yield between the fungicides were not significant (5% level), but the differences between the sub-plots with and without Nu Film 17 were significant at the 5% level. Neither check sub-plots yielded any cucumbers.

In the third harvest of November 26, only the plots sprayed with the combination of fungicides and Nu Film 17 yielded any cucumbers. The plots sprayed with fungicides alone had no cucumbers because the vines were dead. No statistical calculations were possible due to the lack of yield from half of the plots.

Results presented herein suggest that when infection is light, Nu Film 17 appeared to have no significant effect on the fungicidal sprays. With an increase in disease all the plots sprayed with fungicide and Nu Film 17 combinations had better foliage with less disease than the plots sprayed with fungicides alone. All of the low rates of fungicides had increased per cent disease control of target spot when sprayed in combination with Nu Film 17 than when sprayed alone, and also a higher per cent disease control than the high rates of fungicides without Nu Film 17.

It is suggested that a test more comparable with commercial practices would have been to spray at much shorter intervals than 7 days, after target spot had been observed. Continued spraying at a 7-day cycle allowed the disease to become epiphytotic and eventually defoliated all the plots.

The occurrence of less disease and greater yield in the plots sprayed only with Nu Film 17, and the increase in yield cannot be explained. Similar results have been observed in other tests with Nu Film 17 but have not been fully studied to determine their course. It has been suggested that a lowered transpiration rate may be one of the factors involved.

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PHYTOTOXICITY TO PURPLE NUTSEDGE (Cyperus rotundus L.) AND SOIL PERSISTENCE OF SOME HORMONE TYPE HERBICIDES

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ABSTRACT

Foliar sprays of seven forms of 2,4-dichlorophenoxyacetic acid, two morphactin mixtures + 2,4-D, and paraquat applied to 2-week-old purple nutsedge (*Cyperus rotundus* L.) plants produced chlorotic and/or necrotic foliage in 2 weeks at which time treatments were rototilled. Spray treatment, plant counts, and cultivation were repeated twice at monthly intervals. Bioassay for soil residue was made at approximately 2-week intervals. All compounds evaluated were effective and reduced the stand of purple nutsedge 75 to 85 percent with 3 sprays. Only the 2,4-D acid, 2,4-D sodium salt and the mixture of

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