

Reduction of Forage Yield of Siratro by *Rhizoctonia solani* Foliar Blight

R. M. SONODA, Associate Professor, University of Florida, IFAS Agricultural Research Center, Fort Pierce 33450

ABSTRACT

SONODA, R. M. 1980. Reduction of forage yield of Siratro by *Rhizoctonia solani* foliar blight. Plant Disease 64:667.

Rhizoctonia solani foliar blight reduced total forage yield of Siratro (*Macroptilium atropurpureum*) by about 67%. Foliage yield was reduced by about 80% and stem yield by 50%. Foliar sprays of benomyl and chlorothalonil controlled the disease.

Siratro, a cultivated *Macroptilium atropurpureum*, is a viny perennial legume grown for forage in the tropics and subtropics (2). The plant was introduced in Florida in 1962 (2) where a few pastures now have Siratro as a component. Siratro produces its heaviest growth during the summer in Florida.

Siratro is affected by several diseases in Florida including a foliar blight incited by *Rhizoctonia solani* Kühn (3,4). Foliar blight has been reported from Australia (1) and several countries in South America (J. M. Lenne, Centro Internacional de Agricultura Tropical, personal communication). Foliar blight results in defoliation, but plants rarely are killed. Defoliation is especially heavy during summer and early fall when high temperatures and heavy rainfall coincide. A high incidence of foliar blight can be found in most plantings of Siratro in Florida.

The objective of this study was to determine losses in yield and to apply

fungicides to enable estimation of yield loss.

MATERIALS AND METHODS

Siratro seed was broadcast onto 1.2 × 2.1 m plots on 22 March 1979. Populations of Siratro were adjusted to 25 plants per plot on 2 May 1979. A 2-yr-old planting of Siratro affected by foliar blight adjoined the plots. Treatments applied to the plots, beginning 11 June 1979, were: 0.8 g/L a.i. benomyl (Benlate 50W), 1.8 g/L a.i. chlorothalonil (Daconil 2787 75W), 1.9 g/L a.i. mancozeb (Dithane M-45 80W), 2.6 g/L wettable sulfur, and no spray. Plants were sprayed to runoff. There were four replicates in the randomized complete block design. A 1.1 × 1.2 m area of each plot was hand-harvested with scissors on 2 September 1979. The plant material was dried for 40 hr at 72 C. The plant material was weighed and then separated into leaf and stem. Leaves and stems were then weighed separately.

RESULTS AND DISCUSSION

Foliar blight symptoms were noticed in early June. A few lesions of *Uromyces appendiculatus* Fries were also observed

then. There was little foliar blight on plants treated with benomyl or chlorothalonil throughout the experiment. Heavy leaf loss in plots receiving mancozeb, sulfur, or no spray began to occur in late July.

The incidence of foliar blight was high at harvest in plots receiving mancozeb, sulfur, and no spray (Table 1). The total yield of leaves and stems in plots receiving benomyl and chlorothalonil was about three times greater than in those with the less effective treatments (Table 1). Leaf yield was about 80% less and stem yield about 50% less in plots receiving the less effective treatments. The lower leaf to stem ratio in plots receiving the less effective treatments and observations made in the field also indicated that foliage was being lost. The lower stem yield in plots receiving the less effective treatments indicated that losses were occurring as a result of reduction of stem growth as well as leaf loss.

Mancozeb, sulfur, and untreated plots had about the same yield. Mancozeb and sulfur were used in this experiment to separate the effect of rust from the effect of *R. solani*. The low incidence of rust observed in the plantings and the similarity in yields between the mancozeb, sulfur, and the untreated plots indicate that *U. appendiculatus* had little or no effect on yield. In most years, *U. appendiculatus* lesions are most plentiful in the spring and late fall.

The severity of losses found under the conditions of this experiment and the need for a good warm-weather forage legume indicate that resistance to this disease should be sought.

Florida Agricultural Experiment Station Journal Series 1988.

0191-2917/80/07066701/\$03.00/0

©1980 American Phytopathological Society

Table 1. Effect of fungicides on leaf, stem, total forage yield, and leaf-to-stem ratio of Siratro (*Macroptilium atropurpureum*) naturally affected by *Rhizoctonia solani* Kühn foliar blight

Fungicide	Estimated defoliation ^x (%)	Yield (g) ^y			Leaf/stem
		Leaf	Stem	Total	
Benomyl	0.3 a ^z	120.9 a	103.0 a	223.9 a	1.15 a
Chlorothalonil	8.7 a	149.3 a	99.9 a	199.1 a	0.99 a
Mancozeb	51.6 b	21.3 b	52.1 b	73.4 b	0.40 b
Wettable sulfur	49.1 b	23.4 b	41.8 b	65.2 b	0.52 b
None	60.6 b	24.2 b	49.7 b	73.9 b	0.45 b

^xData were transformed to arc-sine before being subjected to analysis of variance.

^ySiratro seeds were sown on 22 March 1979 in a randomized complete block with four replicates per treatment. Forage was harvested 2 September 1979.

^zMeans in the same column followed by the same letter are not significantly different (Duncan's multiple range test, $P = 0.05$).

LITERATURE CITED

- HUTTON, E. M. 1965. A review of the breeding of legumes for tropical pastures. J. Aust. Inst. Agric. Sci. 31:102-109.
- KRETSCHMER, A. E., JR. 1972. Siratro (*Phaseolus atropurpureus* D.C.)—A summer-growing perennial pasture legume for central and south Florida. Fla. Agric. Exp. Stn. Circ. S-214.
- SONODA, R. M. 1975. Diseases of Siratro and other *Macroptilium atropurpureum* selections in Florida. Ft. Pierce ARC Res. Rep. RL-1975-3. 2 pp.
- SONODA, R. M., A. E. KRETSCHMER, JR., and J. B. BROLMANN. 1971. Web-blight of introduced forage legumes in Florida. Trop. Grasslands 5:105-107.