



Fungicide Application Method and Timing for Management of Sclerotinia Blight of Peanut, 2010

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Summary

Sclerotinia blight, caused by the soilborne fungus *Sclerotinia minor* Jagger, is a serious threat to peanut production in portions of Gaines and Collingsworth counties. Several factors contribute to the difficulty of managing the disease. Successful management of diseases, such as Sclerotinia blight, requires that the chemical must come in contact with lower portions of the plant, near the soil plant interface. Better control is achieved when the chemical contacts the crown where infections occur. By the time these products are applied (i.e. 60 days after planting), peanuts usually have a large, dense canopy. This thick canopy tends to block spray applications from effectively reaching this crown area and providing optimal effectiveness. Penetrating the dense canopy requires large volumes of water to carry the chemical down to the crown of the plant. South Plains peanut producers tend to have very large acreages to cover and therefore may apply materials with as low a volume of water as possible or hire an aerial applicator. This practice may result in less than sufficient fungicide being deposited within the plant crown; therefore, yield losses occur. Field trials were conducted in western Gaines County and Erath County to compare fungicide applications made during the day to those made at night and to compare broadcast versus banded applications for the control of Sclerotinia blight. The fields chosen for these trials had a history of Sclerotinia related losses. Trials were planted to Flavorrunner 458 (susceptible cultivars), and Tamrun OL07 (a partially resistant cultivar).

Objective

The objective was to evaluate spray application timing (day versus night) and spray application methods (broadcast versus banding) for the management of Sclerotinia blight of peanut.

Materials and Methods

The Gaines County trial was planted in a commercial runner peanut field. For the Flaverrunner 458 variety, plots were 2 rows by 45 feet in length; while the Tamrun OL07 plots were 2 rows by 50 feet in length. All plots were planted April 28, 2010. These plots were dug and inverted on October 5, and thrashed on October 18. Plots were rated for disease incidence in mid-season and again prior to being dug.

In Erath County the field was located at the Texas AgriLife Extension and Research Center. Trials were planted 2-rows wide by 25 feet in length. Plots were planted June 18th. Plots were dug and inverted on November 12 and thrashed on November 18, 2010.

In both trials treatments were arranged in a randomized complete block design with four replications. Treatments, consisting of banded or broadcast applications of Omega and Endura (Tables 1 and 2) were applied either during the day time hours or at night after the peanut leaves had folded up. Fungicide applications at the Gaines County site were applied on July 10 (approximately 75 days after planting (DAP). Table 1) and August 13 (105 DAP). At the Erath County site applications were made on September 12 (Table 2) and October 11. Also at the Erath County site, the plots of FR458, replicate number 4 had standing water for an extended period, which significantly reduced the stand count; therefore replicate 4 was omitted from data analysis. At both locations banded applications used a total volume of 16 gallons per acre; broadcast applications used 18 gallons per acre finished product. Final disease assessments were made prior to harvest. Disease incidence was measured as feet of plot expressing symptoms and yield is expressed as pounds per acre (Table 2). Treatments were applied approximately 75 and 105 days after planting (DAP).

Results and Discussion

At the Gaines County site there were no significant differences between treatments in the percentage of Sclerotinia blight disease at the end of the season in the OL07 variety. In the FR458 variety the untreated control had a significantly greater percentage of disease than did all treatments except the Omega at 16 ounces applied in a band at night. The Omega at 24 ounces applied as a broadcast at night had significantly less disease than all other treatments. There were no significant differences among treatments in yields. The FR458 averaged 4083.4 pounds per acre and the OL-07 averaged 3636.7 pounds per acre.

At the Erath County location, among the OL07 variety the untreated check and the Endura applied as a broadcast at night had similar disease incidence and were significantly higher than each of the

other treatments. The Omega banded at night had significantly less disease than did the untreated and the Endura broadcast at night, but was not significantly different in disease incidence than all other treatments. Four treatments were significantly better yield than the untreated check; Endura banded in the day, Omega at 24 oz/ac banded during the day, Endura banded at night and the Omega at 16 oz/ac banded at night. Among the FR458 variety, the untreated control was similar to the Endura, banded at night; and exhibited more disease than the other treatments. In yields, the untreated control was significantly lower yielding than all fungicide treatments. The Endura banded during the day was similar to the Omega banded during the day, Endura broadcast at night and Omega at 24 oz/ac banded at night.

Conclusions

Fungicide treatments to manage Sclerotinia blight of peanut are necessary to maintain profitable yields. These tests failed to distinguish clear differences between day time and night time applications. In the tests conducted in Erath County, applications which were banded tended to provide better yield than the broadcast applications.

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Table 1. Fungicide treatments, application method, time of day and effect of fungicide treatments on incidence of Sclerotinia blight (end of season rating) and yield of two peanut cultivars in Gaines County, Texas.

CV ¹	Treatment	Application Method	Timing	Rate (oz/ac)	SB ²	Yld (lbs/ac)
OL07	Untreated		NA	NA	6.3	3332.3
OL07	Endura	Broadcast	Day	10	4.0	3705
OL07	Endura	Banded	Day	10	7.5	4207.2
OL07	Omega	Broadcast	Day	24	5.3	3532
OL07	Omega	Banded	Day	24	7.3	4140
OL07	Endura	Broadcast	Night	10	7.3	4045.6
OL07	Endura	Banded	Night	10	6.3	2971.2
OL07	Omega	Broadcast	Night	24	5.5	3127.2
OL07	Omega	Banded	Night	24	4.8	3581
OL07	Omega	Broadcast	Night	16	6.8	4043.8
OL07	Omega	Banded	Night	16	4.8	3437.6
				LSD	ns	ns
				Mean (n=4)	5.9	3636.7
CV ¹	Treatment	Application Method	Timing	Rate (oz/ac)	SB ²	Yld (lbs/ac)
FR458	Untreated		NA	NA	19.0a	4031.4
FR458	Endura	Broadcast	Day	10	10.0bc	4160.8
FR458	Endura	Banded	Day	10	11.8bc	4367.4
FR458	Omega	Broadcast	Day	24	11.3bc	4297.9
FR458	Omega	Banded	Day	24	10.0bc	4512.2
FR458	Endura	Broadcast	Night	10	9.5bc	4406
FR458	Endura	Banded	Night	10	12.0b	3747.6
FR458	Omega	Broadcast	Night	24	5.5c	3645.9
FR458	Omega	Banded	Night	24	10.3bc	4301.7
FR458	Omega	Broadcast	Night	16	12.0b	3579.6
FR458	Omega	Banded	Night	16	13.8ab	3857.6
				LSD	6.5	ns
				Mean (n=4)	11.4	4083.4

¹ Peanut Cultivar

² Incidence of disease expressed as percent of plot exhibiting disease symptoms.

Table 2. Fungicide treatments, application method, time of day and effect of fungicide treatments on incidence of Sclerotinia blight (end of season rating) and yield of two peanut cultivars in Erath County, Texas.

CV ¹	Treatment	Application Method	Timing	Rate (oz/ac)	SB ²	Yld (lbs/ac)
OL07	Untreated		NA	NA	21.25a	4020.2c
OL07	Endura	Broadcast	Day	10	3.25bc	5181.8abc
OL07	Endura	Banded	Day	10	3.00bc	5889.7a
OL07	Omega	Broadcast	Day	24	6.75bc	5372.4abc
OL07	Omega	Banded	Day	24	7.75bc	5762.6ab
OL07	Endura	Broadcast	Night	10	17.5a	4401.4bc
OL07	Endura	Banded	Night	10	6.25bc	6116.6a
OL07	Omega	Broadcast	Night	24	2.25bc	5290.7abc
OL07	Omega	Banded	Night	24	6.0bc	5490.4abc
OL07	Omega	Broadcast	Night	16	7.00bc	5290.7abc
OL07	Omega	Banded	Night	16	8.75b	6071.2a
				LSD	6.37	1484.1
				Mean (n=4)	8.159	5353.4
CV ¹	Treatment	Application Method	Timing	Rate (oz/ac)	SB ²	Yld (lbs/ac)
FR458	Untreated		NA	NA	26.33a	2165.9d
FR458	Endura	Broadcast	Day	10	9.33bc	4138.2c
FR458	Endura	Banded	Day	10	6.33c	5311.9a
FR458	Omega	Broadcast	Day	24	7.67c	4235.0bc
FR458	Omega	Banded	Day	24	6.67c	4343.9abc
FR458	Endura	Broadcast	Night	10	9.00bc	5142.9ab
FR458	Endura	Banded	Night	10	18.0ab	4053.5c
FR458	Omega	Broadcast	Night	24	10.33bc	3944.6c
FR458	Omega	Banded	Night	24	9.00bc	4477.0abc
FR458	Omega	Broadcast	Night	16	11.33bc	3823.6c
FR458	Omega	Banded	Night	16	9.33bc	3775.6c
				LSD	9.72	978.35
				Mean (n=3)	11.2	4128.3

¹ Peanut Cultivar

² Incidence of disease expressed as feet of plot expressing disease symptoms.