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# SCLEROTINIA BLIGHT OF PEANUTS

R. V. Sturgeon, Jr.
Extension Plant Pathologist

Kenneth Jackson
Extension Program Specialist

"Sclerotinia blight", a disease of peanuts caused by a fungus identified as Sclerotinia sclerotiorum, has become a serious problem in Oklahoma. Sclerotinia was reported as a pathogen of peanuts in Virginia in 1971 and North Carolina in 1972. This disease became an obvious pathogen of peanuts in Oklahoma when 30 to 40 acres of a large field in Hughes County suffered severe losses in 1974. From that time, "Sclerotinia blight" has been found in a number of fields throughout the central and western peanut producing areas of the state. Positive identification was made in Caddo, Grady, Hughes, Pottawatomie, Lincoln and Atoka counties. State disease loss estimates report Sclerotinia caused about 1.5 percent loss in 1977 amounting to $825,930.00. This is a small amount when compared to the loss from "Pod Rot", yet the rapid buildup of the disease in the state warrants concern.

"Sclerotinia blight" symptoms closely resemble that of "Southern blight" caused by Sclerotium rolfsii and most growers fail to distinguish between the two diseases. Lack of recognition of Sclerotinia in the field and confusion with Southern blight has created problems of applying the proper control measures.

Sclerotinia blight symptoms: The white mold or mycelia growth of Sclerotinia is cotton white and fluffy and is usually abundant on the infected plant parts and old debris during periods of high humidity. Sclerotinia fungus can invade the crown of the peanut plant near the soil line resulting in sudden wilting or dying of the lateral branches. Aerial infection can also occur 4-10 inches up the stems and that branch will wither and die. Sclerotinia infection first shows as a small watery spot turning to a light-tan lesion and later becoming a dark-brown area which, as the disease progresses, becomes shredded. Pods on infected plants will usually rot.

Sclerotia, which form from masses of mycelium into small elongated or round to irregular-shaped gray to black fungal bodies, can be found in and on the infected plant tissue. The black sclerotia are found on the surface or inside the infected stems, pegs, and on occasion, found inside the pod with the seed. Sclerotia are hard resting bodies resistant to unfavorable conditions, which may remain dormant for long periods (several seasons) of time and germinate when conditions are favorable.

Although cultural practices aid in reducing sclerotinia disease build-up, application of fungicides are needed to obtain acceptable control. Crop rotation should reduce disease incidence; however, because of survival, potential of fungal sclerotia and lack of knowledge of crops to rotate with, rotation may be impractical. Severe outbreaks of Sclerotinia have developed in peanuts following two years of wheat and following alfalfa. PCNB, Botran and Benomyl have been shown to give some degree of control on Sclerotinia. However, these chemicals are not now specifically labeled for Sclerotinia control on peanuts.

Field control studies: "Sclerotinia blight" control plots were established on the Joe Spencer farm near Oney in Caddo County and a field demonstration was carried out on the Hack Black, Jr. farm northeast of Calvin in Hughes County.

Studies on the Joe Spencer farm consisted of a small replicated plot study and large (40 row) field plots. Sclerotinia had been quite severe in this area of the field in 1976, hence, certain chemicals were selected for their possible control. These chemicals were applied in certain combinations for evaluation on the control of Sclerotinia.

Small Plot Study: Five different chemical treatments provided significant control of Sclerotinia (results in Table I). These five treatments produced yield increases of 490 to 719 lbs./acre more peanuts than untreated plots. Four of the five yield increases were significantly greater than the untreated plots (results in Table II). Sclerotinia blight was the predominant disease found in the study area. The Terraclor 10G applications of 20 lbs. formulation infurrow at plant, followed with 30 lbs, over-the-row in mid-July and 50 lbs. in late August plus Botran 75W at 4 lbs. formulation sprayed at the base of the plant in August provided the best control and highest yield. Benlate and Terraclor 75 wettable powders sprayed at the base of the plants significantly reduced the incidence of Sclerotinia, but not as much as the Botran applications. This study also showed less disease incidence when treatments received a PCNB treatment at plant as opposed to those treatments not receiving a PCNB treatment at plant.

Large Field Plot treatments consisted of the following chemicals and chemical combinations: (1) Terraclor + Terraclor Super-X, (2) Botran, (3) Vitavax, and (4) Vitavax 200. All treatments produced good yields, with the greatest reduction of Sclerotinia occurring in plots receiving Terraclor 75 percent wettable powder 10 lbs./acre or Botran 75 percent wettable powder 4 lbs./acre sprayed at the base of the plant on July 12th or an application of 100 lbs. Terraclor 10G banded over the row (results in Table III). Plots were planted June 4th to Tamnut variety, dug October 10th and threshed October 14th. Field demonstration plots carried out on the Hack Black farm in Hughes County provided an excellent opportunity to evaluate chemicals known to have shown some control of Sclerotinia blight at other locations. When called to examine this field, Sclerotinia blight had become well established; cotton-ball infections could be found on the stems 6 to 8 inches above the ground. The basal type of infections could be found; however, the above ground stem infections were found on one out of 25 plants down the row. This was the heaviest infection reported in the state to date.

The best treatments consisted of Terraclor Super-X 2-0.5 EC at 2 gals/acre applied in the first 30 minutes of overhead irrigation followed with Botran 75W at 4 lbs./acre formulation in the next 30 minutes and at the end of this time the system was shut down and moved (see Table IV for results). The Benlate 50W at 2 lbs./acre followed with Botran 75W at 2 lbs./acre or the treatments of Botran 75W at 4 lbs./acre or Terraclor Super-X 2-0.5 EC at $2\frac{1}{2}$ gals./acre did not show the reduction of disease incidence as Terraclor Super-X + Botran. The field was checked four days following the fungicide applications and active Sclerotinia infection sites were difficult to find. The disease had been stopped while it was in a most active stage. This is one of the highlights of our 1976 season.

The Terraclor Super-X 2-0.5 EC + Botran 75W treatment will be recommended for grower use on control of Sclerotinia blight as soon as label clearnace is approved.

Table 1. Evaluation of Fungicides on Sclerotinia Blight: Joe Spencer Farm, Oney, Oklahoma 1977

| Treatment[1] Chemical, Rate Formulation/a Method & Time of Application | Average Number of Plants Infected With Sclerotinia Blight per 200' row 9/13 | 9/29 |
|---|---|---|
| 1. Terr 10G 20 lbs. I, 30 lbs. IV 7/13, 50 lbs. IV 8/17, + Botran 75W 4 lbs. VIII 8/17 | 0.75 | 2.75 |
| 2. Demosan 65W ½ lb. & Benlate 50W 1 lb. III, Demosan 65W 1 lb. and Benlate 50W 1 lb. VIII 7/13 & 8/17 | 3.25 | 5.25 |
| 3. TSX 10-2.5G 10 lbs.I, + Vitavax 200 3 pts. VIII 7/13 & 8/17 | 5.25 | 7.75 |
| 4. TSX 10-2.5G 10 lbs.I, + Terr 75W 5.3 lbs. VIII 7/13, + TSX 10-2.5G 50 lbs. IV 8/17 | 1.25 | 3.75 |
| 5. TSX 10-2.5G 10 lbs. I, 30 lbs. IV 7/13, 50 lbs. IV 8/17, + Botran 75W 4 lbs. VIII 7/13 | 0.25 | 4.25 |
| 6. No Treatment | 7.00 | 24.75 |
| LSD 0.15 | 6.40 | 20.50 |
| LSD 0.10 | 4.10 | 17.20 |

1. Method of application: I=infurrow-band at plant with Gandy 901 Jr. applicator mounted on John Deere Flexi planter; III=infurrow spray at plant with one 8003 fan nozzel per row; IV=12-14" band over the row applied with a Gandy 901 Jr. applicator mounted on a tool bar; VIII=basal spray with 2-8003 fan nozzels per row with Hi-Boy sprayer. Plots were 2-36" rows 100 feet long and replicated 4 times in a randomized block. The plots were planted to 'Tamnut' variety peanuts on June 4, dug October 18 and threshed October 21.

Table 2. Evaluation of Fungicide on Sclerotinia Blight: Joe Spencer Farm, Oney, Oklahoma 1977

| Treatment[1] Chemical, Rate Formulation/a Method & Time of Application | Yield[2] lbs/a | Diff-Ck lbs/a | Grade[3] | Value/a | Increased Value/a |
|---|---|---|---|---|---|
| 1. Terr 10G 20 lbs. I, 30 lbs. IV 7/13, 50 lbs. IV 8/17, + Botran 75W 4 lbs. VIII 7/13 | 4313 | 719 | 70 | $925 | $124 |
| 2. Demosan 65W ½ lb. & Benlate 50W 1 lb. III, Demosan 65W 1 lb. & Benlate 50W 1 lb. VIII 7/13 & 8/17 | 4296 | 702 | 72 | 937 | 136 |
| 3. TSX 10-2.5G 10 lbs. I, + Vitavax 200 3 pts. VIII 7/13 & 8/17 | 4280 | 686 | 71 | 928 | 127 |
| 4. TSX 10-2.5G 10 lbs. I, + Terr 75W 5.3 lbs VIII 7/13 + TSX 10-2.5G 50 lbs. IV 8/17 | 4247 | 653 | 70 | 911 | 110 |
| 5. TSX 10-2.5G 10 lbs. I, 30 lbs, IV 7/13, 50 lbs. IV 8/17, + Botran 75W 4 lbs. VIII 7/13 | 4084 | 490 | 71 | 888 | 87 |
| 6. No Treatment | 3594 | - | 73 | 801 | - |
| LSD 0.05 | 754 | | | | |
| LSD 0.10 | 630 | | | | |

1. Method of Application: I=infurrow-band at plant with Gandy 901 Jr. applicator mounted on John Deer Flexi planter; III=infurrow spray at plant with one 8003 fan nozzel per row; IV=12-14" band over the row applied with a Gandy 901 Jr. applicator mounted on a tool bar; VIII-basal spray with 2-8003 fan nozzels per row with Hi-Boy sprayer. Plots were 2-36" rows 100 feet long and replicated 4 times in a randomized block. The plots were planted to 'Tamnut' variety peanuts on June 4, dug October 18 and threshed October 21.
2. Difference in yield is increase or decrease of yield when compared to the non-treated plots.
3. Grade was determined by the Oklahoma Federal-State Inspection Service.

Table 3. Evaluation of Fungicides for control of Sclerotinia Blight: Joe Spencer farm, Oney, Oklahoma 1977

| Treatment[1] Chemical & Rate Formulation/a Method & Time of Application | Yield lbs/a | Value/a | Percent[2] Disease |
|---|---|---|---|
| 1. Terr 6F 6.7 qts. VIII 7/12 + TSX 2-0.5 EC 10 qts.X 8/14 | 4281 | 875 | 20 |
| 2. Terr 6F 6.7 qts. VIII 7/12 + TSX 2-0.5 EC 10 qts. X 8/13 | 4108 | 840 | 15 |
| 3. Botran 75W 4 lbs. VIII 7/12 | 3992 | 816 | 10 |
| 4. Terr 75W 10 lbs. VIII 7/12 + TSX 2-0.5 EC 10 qts. X 8/12 | 3963 | 810 | 5 |
| 5. Terr 10G 100 lbs. IV 7/5 + TSX 2-0.5 EC 10 qts X 8/11 | 3832 | 783 | 10 |
| 6. Vitavax 3F 6 pts VIII 7/12 | 3819 | 781 | 18 |
| 7. Botran 75W 2 lbs. VIII 7/12 + Botran 75W 2 lbs. X 8/17 | 3790 | 775 | 10 |
| 8. Vitavax 200 6 pts. VIII 7/12 + Vitavax 200 6 pts. X 8/16 | 3704 | 724 | 20 |

1. Method of Application: IV=12-14" band applied with Gandy 901 Jr. applicator; VIII=applied with one 8003 fan nozzel per row; X=applied by overhead irrigation. Plots were planted June 4 to 'Tamnut' variety peanuts, dug October 10, threshed October 14. Plots were 3.6 acres.
2. Percent of peanut plants infected with Sclerotinia Blight (Sclerotinia sclerotiorium).

Table 4. Evaluation of Fungicides for Control of Sclerotinia Blight: Hack Black Jr., farm, Calvin, Oklahoma 1977.

| Treatment[1] Chemical & Rate Formulation/Acre | Yield[2] lbs/a | Diff-Ck lbs/a | Grade[3] | Value/a | Increased Value/a |
|---|---|---|---|---|---|
| 1. TSX 2-0.5 EC 2 gal. & Botran 75W 4 lbs. | 4115 | 1142 | 76 | $953 | $290 |
| 2. TSX 2-0.5 EC 2 gal & Botran 75W 4 lbs. | 4010 | 1037 | 74 | 907 | 244 |
| 3. Benlate 50W 2 lbs. & Botran 75W 2 lbs. | 3842 | 899 | 75 | 878 | 215 |
| 4. Botran 75W 4 lbs. | 3710 | 737 | 74 | 839 | 176 |
| 5. TSX 2-0.5 EC 2½ gal. | 3565 | 592 | 76 | 820 | 157 |
| 6. No Treatment | 2973 | - | 73 | 663 | - |
| 7. Benlate 50W 4 lbs. | 2830 | -143 | 73 | 632 | -31 |

1. All plots received an application of Terraclor 2 EC 1½ gal. at plant and an application of Terraclor Super-X 2-0.5 EC 2 gal. by irrigation the first week of August. All treatments were applied by irrigation the last week of August. Plots were planted to Florunner peanuts May 25 and harvested October 25.
2. Difference in yield is increase or decrease of yield when compared to non-treated plots.
3. Grade was determined by the Oklahoma Federal-State Inspection Service.



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