Progress Report Series No. 32* *February 1947*

AGRICULTURAL EXPERIMENT STATION
***of The* Alabama Polytechnic Institute, Auburn, Ala.**
M. J. Funchess, *Director*

STUDIES of the CONTROL of PEANUT LEAFSPOT

J. P. WILSON, *Superintendent*
Wiregrass Substation
COYT WILSON, *Plant Pathologist*

Cercospora leafspot of peanuts causes two types of losses. Total yields are reduced when the leaves are destroyed, and plants that have lost their leaves shed their peanuts in the soil very quickly.

Dusting peanuts with sulfur or sulfur-copper mixtures for the control of leafspot has been recommended by experiment station workers in Georgia, North Carolina, and Virginia for several years. A considerable amount of the experimental work on which these recommendations are based has been done on Spanish peanuts. Since more than 95 per cent of Alabama's peanuts are runners, it has been necessary to test under Alabama conditions the value of different dusts on both runner and Spanish types. Such a study was begun in 1944. The results presented here cover a period of 2 years.

Experimental Methods

Dusts were applied to the plants with a hand duster early in the morning or late in the afternoon. Although an effort was made to apply the dusts at the rate of 30 pounds per acre, the amount varied at times. The plots of Spanish peanuts were 50 feet long and six rows wide, while the plots of runner peanuts were 33-1/3 feet long and six rows wide. Each of the plots was separated by six rows of untreated peanuts, to prevent any possible over-lapping of treatments.

At harvest time the plots were divided into sub-plots, and yield records were obtained by digging the peanuts in 100 square feet from each sub-plot and picking the nuts by hand. The green weight of peanuts per plot was obtained and a 1-pound sample from each treatment was air-dried to determine the curing percentage. One or two weeks later yield records were taken from the other sub-plots in the same way. This provided information on the effect of dusting on the date at which the peanuts should be harvested. Yield records on the field test in Houston County were obtained by running the peanuts from each plot through a commercial picker and weighing the nuts obtained.

At each time of digging, sample screenings were made to determine the weight of the peanuts left in the soil. Where appreciable shedding had occurred, peanuts in the ground were screened from each plot and weighed. However, the yields reported here include only those peanuts on the vines at the time of digging.

Results from 1945 Experiments

All the dusts resulted in increased yields of Spanish peanuts at each digging date. Kolocop was the most effective on Spanish peanuts. At the first digging, the peanuts were mature and ready for harvesting. By the second digging (2 weeks later) the undusted Spanish peanuts had lost 600 pounds per acre by shedding, and the undusted runners had lost 350 pounds per acre. On the dusted plots, there was considerably less shedding (Table 1).

In Table 2 are given the results of a field test conducted in Houston County on less fertile land. The runner peanuts made considerably less vine growth; and, on the undusted check plots, leafspot caused more defoliation than at the Wiregrass Substation. In this test sulfur dust resulted in an increased yield of Spanish peanuts of 262 pounds per acre and of runners 416 pounds. The increases from sulfur-copper dust were 298 pounds on Spanish and 575 pounds per acre on runners.

*Formerly Mimeograph Series.

Table 1. Effect of Four Different Dusts on Control of Cercospora Leafspot of Peanuts as shown by Yields at Two Digging Dates, Wiregrass Substation, 1945

Digging dates	Yield per acre for the different treatments[1]				
	No treatment	Sulfur	Sulfur copper[2]	Talc copper[3]	Kolocop[4]
	Pounds	Pounds	Pounds	Pounds	Pounds
			Spanish peanuts		
August 13	1,560	1,614	1,768	1,614	1,862
August 27	945	1,432	1,681	1,257	1,851
			Runner peanuts		
Sept. 5	1,541	1,411	1,631	1,564	1,457
Sept. 19	1,194	1,307	1,567	1,259	1,194

[1] Average of four replications. Three applications made: June 21, July 2, and July 18.
[2] Ninety parts dusting sulfur and 10 parts copper oxychloride sulfate.
[3] Ninety parts talc and 10 parts copper oxchloride sulfate.
[4] Trade name for a dust having the following composition: sulfur not less than 60 per cent, of which 13.5 per cent is Bentonite sulfur; metallic copper not less than 6 per cent.

Table 2. Effect of Sulfur Dust and of Sulfur-Copper Dust[1] on Control of Cercospora Leafspot of Spanish and Runner Peanuts as Shown by Yields in Field Test,[2] Houston County, Alabama, 1945

Type of Peanut	Yield per acre for the different treatments		
	No treatment	Sulfur	Sulfur Copper
	Pounds	Pounds	Pounds
Spanish	918	1,180	1,216
Runner	780	1,196	1,355

[1] Ninety parts dusting sulfur and 10 parts copper oxychloride sulfate.
[2] One plot 12 rows wide (0.245 acre) of each treatment. Test conducted on farm of Mr. Ivan Ivy Webb, Alabama. Two applications made on Spanish peanuts, June 23 and July 3; three applications made on runners: June 23, July 3, and July 18.

Results from 1946 Experiments

Dry weather in July and August lowered the yields on Spanish peanuts. Lack of uniformity of maturity made the determination of harvesting dates difficult. Since the yields on the check plots increased at successive diggings, the first and second digging of Spanish peanuts, and the first digging date of runners were too early (Table 3).

Good control of leafspot on Spanish peanuts was obtained by the use of either of the sulfur copper dusts, but the plants were slightly stunted. This probably was caused by the combined action of the hot, dry weather and the copper in the dust. Fair control was obtained with sulfur dust. Plots dusted with Zerlate had about as much leafspot as the undusted plots. In spite of the lack of leafspot control Zerlate increased the yields of Spanish peanuts as much as did any of the other dusts.

The results from the tests on runner peanuts were slightly different. At harvest time, there was no visible difference in the amount of leafspot on the plots receiving different treatments. Even on the undusted checks there was very little disease. Higher yields were obtained, however, on the plots that had been dusted with sulfur or with sulfur copper dusts than on the undusted plots. This was true at each of the two harvesting dates. The plots dusted with Zerlate did not produce any more runner peanuts than those that were not dusted.

Table 3. Effect of Four Different Dusts on Control of Cercospora Leafspot of Spanish and Runner Peanuts as Shown by Yields on Successive Digging Dates, Wiregrass Substation, 1946

Digging dates	Yield per acre for the different treatments[1]				
	No treatment	Sulfur	Sulfur copper[2]	Sulfur copper[3]	Zerlate[4]
	Pounds	Pounds	Pounds	Pounds	Pounds
			Spanish peanuts		
August 5	894	876	959	1,047	1,067
August 14	920	1,161	1,247	1,329	1,224
August 20	1,001	1,256	1,292	1,291	1,352
			Runner peanuts		
Sept. 6	1,692	1,884	1,743	1,751	1,503
Sept. 13	1,932	2,405	2,465	2,358	1,952

[1]Average of four replications. Four applications applied to Spanish on June 15, June 27, July 9, and July 19. Applied to runners June 27, July 9, July 19, and July 31.
[2]Ninety parts dusting sulfur and 10 parts copper oxychloride sulfate.
[3]Ninety parts dusting sulfur and 10 parts tribasic copper sulfate.
[4]Ten per cent zinc dimethyl dithiocarbamate.

SUMMARY and CONCLUSIONS

1) In addition to increasing the yields by controlling leafspot, dusting peanuts prevents shedding of leaves and thus reduces the amount of shedding of peanuts in the ground. Therefore, the period of harvest may be lengthened by 1 to 2 weeks.

2) Leafspot on Spanish peanuts can be controlled by dusting. Sulfur or sulfur-copper mixtures may be used. Experiments conducted for 2 years have shown an increase of 200 to 225 pounds of peanuts per acre from dusting with sulfur and from 300 to 325 pounds per acre from dusting with sulfur-copper mixtures.

3) For Spanish peanuts, three or four applications are made, beginning when the peanuts are about 65 days old. In southern Alabama, this will usually be June 15 to June 30. Dust is applied at the rate of 30 pounds per acre at 10-day to 2 week intervals.

4) Results on runners have been less consistent. Apparently, leafspot causes more trouble in some fields than in others. Field observations indicate that leafspot is more destructive to runners on soils of medium to low fertility than on fertile land where vine growth is heavier. On the thin or light soils, dusting has been more profitable for runners than for Spanish peanuts.

5) Runner peanuts require the same rate and number of applications as do Spanish, but the first application is made about July 1.