RESEARCH UPDATE
1993
PEANUTS

The 1992 Alabama Performance Comparison of Peanut Varieties

The number of peanut varieties available to Alabama growers has increased in recent years, thus placing greater need for unbiased performance data regarding varietal selection for production.

In 1992 a peanut variety test was conducted at the Wiregrass Substation in Headland. The experimental design for the test was a randomized complete block consisting of two row plots, 20 ft. long replicated four times. The test was planted on April 30, 1992, with a cone planter at a rate of six seed/ft. Recommended agronomic procedures were followed regarding fertility, disease, and insect control. The test was conducted under irrigation.

Entries considered to be earlier than Florunner in maturity were dug on September 4, 1992. These entries included Marc I, AgraTech 127, VC 1, and NC 9. All other entries except Southern Runner were dug on September 15, 1992. Southern Runner, considered to be later in maturity, was dug on October 2, 1992. Information concerning relative maturity was provided by the plant breeder responsible for developing the variety.

The information presented here represents data for only one year and one location. Under these circumstances performance trends can not be adequately evaluated, however, performance comparisons between varieties can be judiciously drawn.

J.P. Bostick, H.W. Ivey, and B.E. Gamble

Table 1. Yield of Peanut Varieties at the Wiregrass Substation, Headland, 1992

Variety	Yield/acre
	Lb.
(R) Marc I	4,538
(V) NC V11	4,392
(R) AgraTech 127	4,263
(R) GK 7	4,084
(V) VC 1	3,902
(V) NC 7	3,902
(R) Florunner	3,902
(R) Georgia Runner	3,721
(R) Sunrunner	3,648
(R) Okrun	3,648
(V) NC 9	3,467
(V) Florigiant	3,449
(R) Tamrun	3,285
(V) NC 10C	3,285
(R) Southern Runne	2,886

(R) Runner Type
(V) Virginia Type

Table 2. Grade of Peanut Varieties at the Wiregrass Substation, Headland, 1992

Variety	Sound mature	Sound splits	Total sound mature kernels	Other kernels
	Pct.	*Pct.*	*Pct.*	*Pct.*
(R) Marc I	65	1	66	8
(V) NC V11	67	1	68	3
(R) AgraTech 127	68	3	71	6
(R) GK 7	67	3	70	7
(V) VC 1	66	1	67	6
(V) NC 7	65	2	67	4
(R) Florunner	66	3	69	6
(R) Georgia Runner	67	3	70	6
(R) Sunrunner	71	2	73	4
(R) Okrun	69	2	71	6
(V) NC 9	66	2	68	4
(V) Florigiant	67	2	69	2
(R) Tamrun	67	4	71	6
(V) NC 10C	66	1	67	4
(R) Southern Runner	67	5	72	7

(R) Runner Type
(V) Virginia Type

ALABAMA AGRICULTURAL EXPERIMENT STATION AUBURN UNIVERSITY
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New Formulation of Dyfonate Effective Against Lesser Cornstalk Borers

The lesser cornstalk borer is an economically important insect pest of peanuts grown in Alabama. The larvae of this insect feed on the root crown and on developing pegs and pods, with losses in yield exceeding 70% in severe population outbreaks. Granular insecticides that are applied to the soil at flowering or at pegging are commonly used to manage lesser cornstalk borers. Previous studies have shown that Lorsban® 15G and Dyfonate® 20G reduced survival of lesser cornstalk borer larvae, compared with larval survival in soil from untreated plots, five to 14 days after applications in four field tests. Lorsban also was the longest lasting insecticide in four experiments.

A new formulation of Dyfonate has been produced that contains insecticide granules that are coated with plastic to increase the length of time that the granules remain effective in the soil. How does this compare with the old Dyfonate 20G? AAES scientists did a field test in 1992 to compare this new formulation of Dyfonate with several other granular insecticides, including Dyfonate 20G.

Peanuts were conventionally planted in a light loamy sand soil at the Wiregrass Substation in Headland. Twelve treatments and a control were replicated four times in a randomized complete block design, with each plot being six rows wide and 50 ft. long. Insecticides were applied at flowering (June 30) in a seven-in. band over the row with a small plot granular applicator.

Survival of larvae in untreated soil was good, ranging from 67 to 94%. This is expected, since no insecticides were in the soil. Both of the Dyfonate formulations gave equivalent percentage survivals on the date of application and on July 8. The new plastic-coated Dyfonate 20G appeared to give better control of lesser cornstalk borers than Dyfonate 20G on July 14, 23, and 27.

The new formulation of Dyfonate should give peanut growers a better tool to fight invasion by lesser cornstalk borers. In 1992 test, the plastic coating on the granule did appear to extend the effectiveness of the product.

T.P. Mack, S.D. Wolf, and Z. DeLamar

Percentage Survival of Small Larvae of the Lesser Cornstalk Borer in Field Plots

Treatment	Rate/acre	Sample Date				
		Jun 30[1]	Jul 8	Jul 14	Jul 23	Jul 27
	Lb./a.i.	*Pct.*	*Pct.*	*Pct.*	*Pct.*	*Pct.*
Untreated		94	67	83	75	72
Dyfonate 20G	2.0	0	0	17	14	47
Plastic coated Dyfonate20G	2.0	0	6	0	3	39

[1] Date of application.

Virus Infections in Peanuts Greater Than Expected in State

An AAES study was conducted from mid-July to mid-August in 1990 and 1991 to determine the identity and distribution of the major virus pathogens of peanuts in Alabama. Leaves from peanut plants showing virus-like symptoms were collected from fields selected at random in the 14 counties making up the major peanut production area. Symptoms on suspect virus-infected plants included leaf chlorosis, mottling, necrosis, line patterns, and distortion, as well as overall plant stunting. Leaf samples also were taken in most of these same fields from plants showing no apparent symptoms. Sap was extracted from all samples and tested for peanut mottle virus (PMV), peanut stripe virus (PStV), peanut stunt virus (PSV), and tomato spotted wilt virus (TSWV) by bioassays on indicator plants in the greenhouse, and by enzyme-linked immunosorbent assays in the laboratory.

A total of 1,885 peanut plants from 158 fields throughout the 14 county area were assayed for viruses during the 1990 and 1991 growing seasons, as shown in the table. PMV and TSWV, singly or in combination, were identified in every county and generally at high frequency in most counties. PSV was found in all but one of the counties, but at much lower frequency. PMV and TSWV were detected in samples from a majority of the fields in all 14 counties. PSV was identified in about one-fourth of the fields surveyed, but these fields were in 13 counties. No other viruses, including PStV, were identified in any sample during the two-year period.

These results show that PMV and

Continued on page 4

Viruses Identified in Peanut Plants During 1990 and 1991 Growing Seasons in Alabama

County	Fields	Plants	Plants infected with:			
			PMV	PSV	TSWV	PMV+TSWV
	No.	*No.*	*No.*	*No.*	*No.*	*No.*
Barbour	12	37	40	1	48	17
Bullock	8	113	51	4	35	27
Butler	6	79	11	0	7	2
Coffe	17	111	25	1	23	10
Conecuh	7	108	27	14	39	12
Covington	10	118	37	1	20	6
Crenshaw	7	73	23	4	30	22
Dale	12	149	24	3	56	16
Escambia	7	80	26	12	46	16
Geneva	16	214	56	13	91	37
Henry	19	243	70	6	101	37
Houston	18	184	49	4	44	21
Pike	12	167	31	19	46	18
Russell	7	109	10	8	27	2
Totals	158	1,885	480	90	613	243

SM-9 Spray Adjuvant Fails to Control Southern Stem Rot of Peanuts in Alabama

In late winter 1992, the spray adjuvant SM-9 was being marketed to Alabama peanut producers for the control of white mold and several other destructive diseases of peanuts. Claims of white mold control were based solely on a single laboratory study and several farmer testimonials. Extensive field research information documenting the activity of SM-9 against any peanut disease does not exist. Finally, SM-9 is not registered as a pesticide in accordance with the requirements of FIFRA and can only be marketed as a surfactant. The objective of this study was to determine if SM-9 spray adjuvant had any effect on white mold and yield of peanut.

Trials were conducted in two nonirrigated fields in Henry County that had a history of white mold damage. Florunner peanuts were planted in late April and maintained according to recommendations. Fungicides were applied by hand using a backpack sprayer on July 1, 14, 27, and August 4. Hit counts were made the day after digging, and the plots were harvested with a combine.

SM-9 spray adjuvant did not protect peanuts from white mold. The numbers of white mold hits were similar in the plots treated with SM-9 and the nontreated control plots. On the other hand, two or four sprays of Folicur[1] and single application of Moncut[1] gave excellent disease control. In addition, considerable foliar burn on the newer peanut leaves was seen in both fields after each application of SM-9. No damage to the foliage was seen in the plots sprayed with Folicur or Moncut.

Yield from the SM-9 treated plots also were similar to those from the nontreated plots. Yields from all other fungicide-treated plots were considerably higher than those in the SM-9 or nontreated control plots. Greatest yield increases occurred in the plots treated with two or four applications of Folicur or a single application of Moncut.

A.K. Hagan and J.R. Weeks

[1]Folicur and Moncut are not registered for use on peanuts.

New White Mold Fungicide Increases Peanut Yields

White mold is the most damaging disease of peanuts in Alabama, with annual losses estimated at 20% of expected yields. Greatest losses usually have occurred in fields cropped to peanut every other year. However, a recent two year AAES study indicates the fungicide Moncut[1] can drastically reduce peanut yield loss to white mold.

Trials were conducted in 16 farm fields in 1991, and in 21 fields in 1992. One of the following cropping patterns was followed in each field: continuous peanut production (three years minimum), one year peanuts behind one year corn/grain sorghum/clean fallow, peanuts after two to three years cotton/corn, and peanuts behind bahiagrass (five years minimum). Six nontreated control plots were paired with treated plots. Treatments were applied approximately 60 to 70 days after planting with Moncut 50W at two lb. per acre as a full canopy spray at 15 gal. total volume per acre. The occurrence of other diseases and nematodes was periodically monitored. Plots were rated for white mold and Rhizoctonia limb rot after inverting, then harvested.

[1]Moncut is not currently registered for use on peanuts.

In 1991, an 82% reduction in the incidence of white mold was seen in all Moncut-treated plots across all four rotations. Lowest level of disease control (60%) occurred in those fields where peanuts followed bahiagrass, while the best protection from white mold was noted where peanuts followed two or more years of corn or cotton. Despite heavy disease pressure, yield increases after treatment with Moncut (23.3%) were largest where peanuts were grown every other year. Despite modest disease pressure, yield increases of 14% also were obtained in fields cropped to peanuts every third year. Smaller yield increases were seen in fields in continuous peanut production. In peanuts behind bahiagrass, disease pressure was light and no yield gains were noted. Overall, an application of Moncut increased average peanut yields across all rotations by 18.1% over that of the untreated plots. Yield increases in selected fields under severe white mold pressure were in the range of 40 to 45% (1,700 lb. per acre).

In 1992, Moncut provided 85% control of white mold across all rotations, see table. Best disease control occurred in those rotations with heaviest white mold pressure. Sizable yield increases were noted in all rotations except bahiagrass-peanut, where little white mold was present. Overall, yields from the Moncut-treated plots were 19.4% higher than from the untreated controls across all rotations.

In both years, superior control of white mold and yield increases were obtained with a single application of the unregistered fungicide, Moncut. Greatest yield increases consistently occurred in those fields where white mold historically has caused extensive damage. Where disease pressure was low, such as whenever peanuts were cropped after bahiagrass, Moncut had little impact on yield.

A.K. Hagan, J.R. Weeks, K.L. Bowen, W.A. Miller, and D.L. Hartzog.

White Mold Control and Yield Increases in Peanuts Treated with Moncut, 1992

Rotation	Control	Yield increases	
	Pct.	*Lb./a*	*Pct.*
Peanuts after bahia (5) ...	60	-63	-1.6
Peanuts every 3 year (9)	78	502	11.1
Peanuts every 2 year (4)	85	743	20.4
Continuous peanuts (2) ..	89	768	19.3
Average	85		19.4

AU-Pnuts Expert System Looks Promising For Management of Peanut Leafspot

Peanut producers interested in protecting their crops, their profit margins, and the environment don't have to exhaust their pest defense budgets on high-tech weapons. They can enlist the help of two long-time agricultural allies—a rain gauge and a weather forecast.

These tools can be put to use via an overall pest management program known as AU-Pnuts that is now being developed by the Alabama Agricultural Experiment Station at Auburn. AU-Pnuts is a rule-based "expert system" that utilizes the same logic an expert would apply to make management decisions.

The need for a low-cost, environmentally sound management system was the stimulus for AU-Pnuts, which is being developed through support from the Experiment Station, the Alabama Peanut Producers Association, and a USDA Southern IPM grant. The goal of the project is to develop and evaluate a system to manage diseases, and nematodes attacking peanuts in Alabama.

The total AU-Pnuts program eventually will encompass management schedules for leafspot and other diseases such as white mold and limb rot, and also for other peanut pests such as nematodes.

Research has shown that leafspot can be effectively managed if the first fungicide application is made when six rain events of 1/10-in. or greater have occurred following emergence of the plants. Subsequent sprays can then be made following the 10-day protection window when it has rained or is predicted to rain for three additional days.

On-farm validation tests of the module have been conducted at sites in five counties in Alabama's eastern peanut belt in the southeastern part of the state. On farms where AU-Pnuts was used correctly, the program significantly improved season-long disease control and also increased yields an average of 258 lb. per acre in four of the five fields where yields were compared.

These tests also showed that farmers can use AU-Pnuts without too much trouble once they have undergone a brief training session to explain the rules.

Though the total AU-Pnuts system is not yet ready for use, researchers are optimistic that this will soon provide peanut growers an effective option for pest management at a cost that is peanuts compared to the computerized models.

For more information on AU-Pnuts or for detailed rules, contact your local Cooperative Extension Service office.

P.A. Backman

Virus Infections , continued

TSWV were prevalent throughout the peanut production area, and that PSV occurred at lesser, but significant levels as well. Generally, incidence of all the viruses was higher than was previously suspected. The impact of these viruses on the peanut crop in Alabama has not been determined; however, their potential for causing serious losses has been well documented in other states.

R.T. Gudauskas, K.B. Burch, P. Jin, A.K. Hagan, and J.R. Weeks

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