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Southern Research Initiative
National Peanut Board

Project Title:

The Influence of Herbicides on Peanut Yield, Grade, and Seed Quality

Investigators:

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Research Objective:

To evaluate the influence of Cadre and 2,4-D on the yield, grade, and seed quality of three peanut varieties (Georgia Green, C-99R, GA-01R).

Materials and Methods:

Small-plot, irrigated field trials were conducted at 2 locations in 2005 (Tifton, Dawson). A split-plot design (variety X herbicide) with four replications was used at both locations. Three peanut varieties (Georgia Green, C-99R, GA-01R) were treated with Cadre (1.44 oz/A) at 30 and 45 days after planting (DAP) or 2,4-DB (1.1 pt/A) at 75 and 90 DAP. The plot areas were maintained weed-free throughout the growing season. All plots received gypsum (18-22% Ca) @ 1000 lbs/A and boron @ 0.50 lb/A. Yield data were collected using a stationary plot harvester in mid to late-September. Grade samples were analyzed by the Georgia Federal State Inspection Service. After harvesting, the pods were shelled using a miniature, commercial-type, shelling machine and medium seed were collected for germination tests. After shelling, the seed were treated with Vitavax PC @ 5 oz/100 lbs. Germination tests were conducted by the Georgia Department of Agriculture in early-December. All data were subjected to analysis of variance (ANOVA) and means separated using Fisher's Protected LSD Test (P = 0.05)

Results:

There were no interactions between variety and herbicide treatment. The results of the main effects of variety or herbicide are presented in Tables 1 and 2.

Variety Effects - TSWV: At Tifton, there were no differences in TSWV between Georgia Green and C-99R. However, these varieties had significantly more TSWV than GA-01R. At Dawson, variety had no effect on TSWV.

Variety Effects - Yield: At Tifton, Georgia Green produced lower yields than either C-99R or GA-01R. C-99R had lower yields than GA-01R. At Dawson, Georgia Green produced the highest yields and C-99R produced the lowest yields.

Variety Effects - Grade: At Tifton, GA-01R had higher grades than either Georgia Green or C-99R. C-99R had higher grades than Georgia Green. At Dawson, variety had no effect on grade.

Variety Effects - Seed Germination: At Tifton, seed germination was greatest with Georgia Green and lowest with GA-01R. At Dawson, there were no differences in germination between Georgia Green and C-99R. However, GA-01R had lower germination than either variety at this location.

Herbicide Effects: When compared to the untreated, the herbicides evaluated in these studies had no effect on TSWV, yield, grade, or seed germination at both locations. At the Dawson location, 2,4-DB at 95 DAP produced higher yields than any Cadre treatment or 2,4-DB at 75 DAP.

Table 1. The influence of peanut variety on TSWV, yield, grade, and seed germination, 2005.[1]

Variety	TSWV - %		Yield - lbs/A		Grade - TSMK (%)		Standard Seed Germination Test - %[2]		Cold Germination Test - %3	
	Tifton	Dawson	Tifton	Dawson	Tifton	Dawson	Tifton	Dawson	Tifton	Dawson
Georgia Green	61	0	3377	4649	73	77	93	92	88	88
C-99R	52	1	4286	3776	75	74	79	86	79	86
GA-01R	39	1	4199	4218	77	76	67	79	66	76
LSD 0.05	**9**	**NS**	**478**	**231**	**1**	**NS**	**10**	**6**	**3**	**5**

[1]Averaged over 5 herbicide treatments (20 replications).
[2]Standard seed germination test conducted at 25°C or 77°F.
[3]Cold germination test conducted at 15°C or 59°F.

Table 2. The influence of herbicides on TSWV, yield, grade, and seed germination, 2005.[1]

Herbicide[2]	TSWV - %		Yield - lbs/A		Grade - TSMK (%)		Standard Seed Germination Test - %3		Cold Germination Test - %4	
	Tifton	Dawson	Tifton	Dawson	Tifton	Dawson	Tifton	Dawson	Tifton	Dawson
Untreated	45	0	4233	4343	75	76	79	86	76	82
Cadre - 30 DAP[5]	52	0	4104	4138	75	74	79	86	75	81
Cadre - 45 DAP	49	1	4134	4064	75	76	84	87	79	85
2,4-DB - 75 DAP	53	0	4057	4076	75	75	79	83	79	83
2,4-DB - 95 DAP	53	1	4240	4451	75	76	77	87	77	85
LSD 0.05	**NS**	**NS**	**NS**	**299**	**NS**	**NS**	**NS**	**NS**	**NS**	**NS**

[1]Averaged over 3 varieties (12 replications).
[2]Cadre 70DG applied at 1.44 oz/A + Herbimax at 1% v/v; 2,4-DB 1.75EC applied at 1.1 pt/A + Herbimax at 1% v/v.
[3]Standard seed germination test conducted at 25°C (77°F).
[4]Cold germination test conducted at 15°C (59°F). [5]DAP = days after planting.