Weed Control and Response of Peanuts *(Arachis Hypogaea)* To Chlorimuron[1]

Gregory R. Sims[1], Glenn Wehtje*, John A. McGuire, and T. Vint Hicks

ABSTRACT

Experiments were conducted in 1984 and 1985 on a Dothan loamy sand (Plinthic Paleudults) at Headland, Alabama, to evaluate the effects of the ethyl ester formulation of chlorimuron [2-[[[[4-chloro-6-methoxy-2-pyrimidinyl]amino]carbonyl] amino]sulfonyl]benzoic acid] on Florida beggarweed *(Desmodium tortuosum* (SW) DC.) and sicklepod (*Cassia obtusifolia* L.) control, and yield and grade of peanuts (*Arachis hypogaea* L.). Treatments consisted of a factorial arrangement of five chlorimuron rates (17.5, 35.0, 52.5, 70.0 for 87.5 g ai/ha) and four application times, preplant incorporated (PPI), preemergence (PRE), ground cracking (EPOT) or postemergence over the top (POT). Crop injury, as indicated by visual ratings at 8 weeks after planting (WAP) and yield, was excessive with 52.5 g/ha and higher applied PRE or EPOT and with 35.0 g/ha and higher applied POT. Florida beggarweed control at 8 WAP was good with all rates; however, full season control was unacceptable. Control of sicklepod remained good through the entire season. In a separate study, several herbicide systems utilizing chlorimuron in combination with other herbicides were compared to a standard weed control system. While most herbicide systems which included chlorimuron provided yields comparable to the untreated check, none offered any advantage in terms of weed control and yield over the standard.

Key Words: *Desmodium tortuosum,* Cassia obtusifolia, DPX-F6025.

Effective weed control in peanuts is essential not only from the standpoint of minimizing crop/weed competition, but is also required for effective disease control and harvest efficiency (4). Herbicides currently available frequently provide inconsistent weed control (7). Fewer options are available for weed control in peanuts than other agronomic crops since the use of postemergence directed sprays or late-season cultivations are not practical due to the prostrate-growing nature of the peanut plant (4).

Two of the most troublesome weeds in peanuts grown in the Southeastern United States are Florida beggarweed and sicklepod (3,8). Research by Hauser *et al.* (9) revealed that each Florida beggarweed or sicklepod plant per 10 m^2, when allowed to compete for the entire season, reduced peanut yield 15.8 to 30.2 kg/ha and 6.1 to 22.3 kg/ha, respectively. One of the most widely used herbicides for control of these broadleaf weeds in peanuts is dinoseb [2-(1-methylpropyl)-4,6-dinitrophenol]. Dinoseb is usually applied between ground cracking and early postemergence, generally when peanut seedlings are no more than 5 to 8 cm in diameter. Within this period, rates of up to 3.4 kg ai/ha may be applied. Lower rates (0.4 to 0.8 kg/ha) may be applied to more mature peanuts[2]. The addition of preemergence herbicides such as alachlor [2-chloro--N-(2,6-diethylphenyl)-N-(methoxymenthyl)acetamide], chloramben (3-amino-2,5-dichlorobenzoic acid) and/or naptalam 2-[(1-naphthalenylamino)carbonyl] benzoic acid to ground cracking treatments of dinoseb generally increases control, but results can still be erratic (2,7). Control of several species of broadleaf weeds is further enhanced by the addition of 2,4-DB (10).

Recently, chlorimuron has been registered for the control of a wide spectrum of broadleaf weeds in soybeans [*Glycine max* (L.) Merr.], which, like peanuts, is a legume. Chlorimuron has been shown to be effective against several weed species including sicklepod and Florida beggarweed when applied either preemergence or postemergence (6,11). Soybean tolerance has been excellent.

The objectives of this research were first to evaluate weed control and peanut yield and grade as influenced by chlorimuron rate and time of application (Experiment 1) and secondly to evaluate several herbicide systems which include chlorimuron and compare their efficiency relative to currently used practices. (Experiment 2).

Materials and Methods

Procedures common to both experiments. Field experiments were conducted during 1984 and 1985 at Headland, Alabama, on a Dothan loamy sand (organic matter of 1.3%, pH 6.3). The experimental design in both experiments was a randomised complete block with four replications. Plots were 3.7 by 6.1 m, consisting of four 91-cm rows. The test area was fertilized and limed in the fall according to soil test results of the Auburn University Soil Testing Laboratory. Weed populations were the result of natural infestations of Florida beggarweed and sicklepod. The experimental area was turned with a moldboard plow in the spring following a winter cover crop of rye. The area had most recently been planted to corn *(Zea mays L.)* as part of a 4-yr corn-corn-peanut-peanut rotation with winter cover crop of rye (Secale cereale L.) each year. Different test sites within the area were used each year of the experiment. For the control of annual grasses, experiment 1 was treated with a broadcast, preplant incorporated (PPI) application of pendimethalin [N-(1-ehtylpropyl)-3,4-dimethyl-2,6-dinitrobenzenamine] at 1.1 kg ai/ha. Experiment 2 received a PPI treatment of benefin [N-butyl-N-ethyl-2,6-dinitro-4-(trifluoromethyl)benzenamine] (1.3 kg ai/ha) plus vernolate (S-propyl dipropylcarbamothioate) (2.2 kg ai/ha). Peanuts were planted with conventional equipment at a seeding rate of 112 kg/ha.

All chlorimuron applications were made with a tractor-mounted compressed-air sprayer delivering 140 L/ha. Preplant incorporated treatments were incorporated once with a horizontal action tiller running to a depth of 5 cm. Preemergence (PRE) treatments were applied immediately after planting, early postemergence (EPOT)

[1]Res. Assoc. and Assoc. Prof., Dept. Agronomy and Soils, Prof., Res. Data Analysis, and Res. Assoc., Dept. Agronomy and Soils, Alabama Agric. Exp. Stn., Auburn University, AL 36849. AAES Journal No. 3-861087.

[2]In October of 1986, the Environmental Protection Agency suspended all registrations for the use of dinoseb. Though it was not our original purpose, the data reported herein can be used to evaluate chlorimuron as a replacement for dinoseb. This topic will be addressed later.

[3]Surfactant used was X-77. EPOT and POT application of chlorimuron in combination with either dinoseb or 2,4-DB did not include surfactant.

treatments were applied at 2 weeks after planting (WAP) when seedling peanuts were 5 to 8 cm in diameter [corresponding to the V-2 to V-3 stage according to Boote (1)] and postemergence over-the-top (POT) treatments at 5 weeks after planting when peanuts were 15 to 20 cm in diameter (the V-8 to V-9 stage). All EPOT and POT treatments of chlorimuron applied alone included nonionic surfactant at 0.25% V/V[3]

Two rows of each plot were cultivated and hand-hoed so that peanut yields would reflect only the effects of herbicide treatment. The two remaining rows were neither cultivated nor hoed so that chemical weed control could be evaluated. Two untreated checks were included; one which was maintained weed free by weekly hand-hoeing, the other, a weedy check received neither herbicide or hand-hoeing. In 1984, weed fresh weights were taken at approximately 16 WAP from the uncultivated row middles. The removal of weeds at this time was deemed to have no further effect on peanut yield (8).

Data collected included visual rating of weed control peanut injury ratings (both 8 and 14 WAP), weed weights (1984 only, at 16 WAP), cultivated yields, uncultivated yields, and grade. Peanuts were dug with a conventional digger-shaker-invertor 140 days after planting, and harvested with a peanut combine harvester after air drying for 3 days. Peanut grade was determined for all treatments in both experiments using standard grading equipment (5). Grade was recorded as the sum of percent sound mature kernels and sound split kernels.

Experiment 1. This experiment consisted of a factorial arrangement with four times of application (PPI, PRE, EPOT, and POT) and five chlorimuron rates (17.5, 35.0, 52.5, 70.0, and 87.5 g ai/ha). These rates bracket the rates currently labeled for PRE use in soybeans (when applied in combination with metribuzin [4-amino-6-(1,1-dimethylethyl)-3-(methylthio)-1,2,4-triazin-5(4H)-one]). Data from experiment 1 were analyzed as a factorial, i.e. five rates and four times of application. Since the intent was to identify the rates and times of application of chlorimuron which provided the best balance between weed control and crop safety, a mean separation procedure (Duncan's multiple range test) was used in lieu of a mathematical expression of variable responses. Linear and quadratic responses were determined for treatment effects where applicable.

Experiment 2. In this experiment, chlorimuron was integrated into various comprehensive weed control programs (herein referred to as herbicide systems) which were compared to the standard weed control program currently used in the Southeastern United States (Table 1). In these treatments chlorimuron was applied either as a single preemergence treatment or as a split application i.e. a preemergence application followed by either a EPOT or POT application. These treatments were structured to utilize chlorimuron as either a supplement to or replacement for components in the standard weed control program based upon its known herbicidal activity. The total amount of chlorimuron did not exceed 52.5 g/ha. Data from experiment 2 were subjected to an analysis of variance and a treatment means separation by Duncan's multiple range test at the 5% level of probability.

Results and Discussions

Experiment 1 - weed control. No significant rate by time of application interactions were detected for either Florida beggarweed or sicklepod control. Furthermore, no significant differences between years were evident; therefore, only the main effects of these variables, as averaged over both years, are presented.

Florida beggarweed control at 8 WAP was affected by both rate and time of application (Table 2). The lowest rate provided 86% control, and rates of 52.5 g/ha or higher provided at least 90% control. Control from the earlier applications (PPI or PRE) was significantly less effective than POT (95%) applications with EPOT applications being intermediate (91%). At the later rating (14 WAP), even the highest rate (87.5 g/ha) provided only 70% control. As in the early rating, the later applications were more effective. Chlorimuron applied POT provided 94% control at 14 WAP. Florida beggarweed fresh weights (1984 only) taken at 16 WAP, were reduced by all rates and times of application relative to the untreated weedy check (Table 2). No significant differences between individual combinations of rate and time of application were detected; control as averaged across all rates and times of application was 86%.

Sicklepod control as rated at 8 WAP was at least 84% (Table 2). A slight, but significant upward trend in control with increasing rate was evident. With either PPI, PRE or EPOT applications control was approximately 85%. Maximum control (98%) was achieved with POT applications. At 14 WAP, control with EPOT or POT applications was 89% and 94% respectively. This was greater than the control achieved by either PPI (79%) or PRE (78%) applications. As rate increased, sicklepod control increased from approximately 80% to 91% (Table 2).

Crop Response. Visual crop injury, as rated at 8 WAP, was similiar for both years; therefore, data are presented averaged across both years (Table 3). Injury was characterized by chlorosis (which was more pronounced with EPOT and POT applications) and an overall reduction in rate of vegetable growth. When applied PPI or PRE, injury was minimal even at the highest application rate. However, with the EPOT and POT applications, injury increased with rate. At 14 WAP, no injury was detectable with either the PPI or PRE applications regardless of rate (Table 3). With EPOT and POT applications, crop injury increased with up to 70 g/ha.

Peanut yield and grade response to chlorimuron were not significantly different between years; therefore, means as averaged over years are presented. Within the PPI applications, yields were not significantly affected by rate, but were significantly less than the untreated weed-free check (Table 3), but were superior to the yield of the untreated weedy check. However, with PRE, EPOT or POT applications, yield decreased as rate increased. As averaged across application times, rates of 17.5 and 35.0 g/ha reduced yield as compared to the weed-free check, but yielded significantly greater than higher rates and the weedy check. Likewise, as averaged across rate, yields from PPI applications were reduced from the weed-free check but were higher than later time of application and the weedy check. Grade was not as sensitive to chlorimuron as was yield. Only the highest rate and POT applications reduced peanut grade. Grades from all other treatments were equivalent to the untreated check (Table 3).

At present, chlorimuron is registered for POT applications to soybeans at rates of 8.8 to 17.5 g/ha. Chlorimuron is also registered for PPI and PRE applications to soybeans, but only as a prepackaged mixture with metribuzin. This product (6 parts metribuzin to 1 part chlorimuron) can be applied at rates of up to 520 g/ha, which results in a chlorimuron rate of 70 g/ha. Thus, peanuts are apparently not as tolerant to chlorimuron as are soybeans. In our study, 17.5 g/ha was the maximum rate applied either PRE, EPOT or POT that did not significantly reduce yield as compared to the hoed check.

Experiment 2 - weed control. Florida beggarweed control at 8 WAP revealed no significant year by treatment interaction, therefore, data were averaged over

Table 1. Herbicide systems evaluated utilizing chlorimuron for broadleaf control in peanuts.

System no.	PPI[a]	PRE[b]	EPOT[b]	POT[b]
	Rates and times of herbicide application (ai/ha)			
1	Benefin (1.7 kg) Vernolate (2.2 kg)	chlorimuron (52.5 g)	-----	-----
2	Benefin (1.7 kg) Vernolate (2.2 kg)	chlorimuron (52.5 g)	dinoseb (3.4 kg) naptalam (1.7 kg)	-----
3	Benefin (1.7 kg) Vernolate (2.2 kg)	chlorimuron (26.3 g)	dinoseb (3.4 kg) naptalam (1.7 kg) chlorimuron (26.3 g)	-----
4	Benefin (1.7 kg) Vernolate (2.2 kg)	chlorimuron (26.3 g)	dinoseb (3.4 kg) naptalam (1.7 kg)	chlorimuron (26.3 g)[c]
5	Benefin (1.7 kg) Vernolate (2.2 kg)	chlorimuron (52.5 g)	-----	2,4-DB (0.2 kg)
6	Benefin (1.7 kg) Vernolate (2.2 kg)	chlorimuron (52.5 g)	dinoseb (3.4 kg) naptalam (1.7 kg) chlorimuron (26.3 g)	2,4-DB (0.2 kg)
7	Benefin (1.7 kg) Vernolate (2.2 kg)	chlorimuron (26.3 g)	dinoseb (3.4 kg) naptalam (1.7 kg)	2,4-DB (0.2 kg)
8	Benefin (1.7 kg) Vernolate (2.2 kg)	chlorimuron (26.3 g)	dinoseb (3.4 kg) naptalam (1.7 kg)	2,4-DB (0.2 kg) chlorimuron (26.3 g)
9	Benefin (1.7 kg) Vernolate (2.2 kg)	-----	alachlor (3.4 kg) dinoseb (3.4 kg) naptalam (1.7 kg)	2,4-DB (0.2 kg)
10	Benefin (1.7 kg) Vernolate (2.2 kg)	untreated hoed check		
11	Benefin (1.7 kg) Vernolate (2.2 kg)	untreated weed check		

[a]Broadcast treatment for control of annual grasses and nutsedges.

[b]PRE = application preemergence to crop and weed; EPOT = application 2 weeks after planting; POT = application 5 weeks after planting.

[c]POT treatments of chlorimuron (alone) included 0.25% v/v nonionic surfactant (Triton AG-98).

both years (Table 4). Control of Florida beggarweed was excellent with all chlorimuron systems tested; however, the standard (treatment No. 9) provided comparable control. At 14 WAP, control had decreased from that at 8 WAP, and systems which included dinoseb (that is all systems except 1 and 5) provided control equivalent to the standard treatment (90%). All systems, including the standard system, reduced Florida beggarweed fresh weights (1984 only) relative to the untreated weedy check, but there were no significant differences between individual systems.

Sicklepod control at 8 WAP varied between years (Table 4). However, in neither year did the control by the systems that included chlorimuron surpass the control that was provided by the standard system. This was also apparent at the later rating, and with the sicklepod fresh weight. Control of Florida beggarweed and sicklepod provided by chlorimuron applied alone (System 1) as determined by fresh weight was 95 to 74% respectively. Comparable values for the standard system were 94 ands 99% respectively. Control as determined by reduction in fresh weight indicated greater control than by visual evaluation. This was particularly evident with Florida beggarweed. This may in part be due to the tendancy of chlorimuron to stunt weeds as opposed to producing an obvious kill.

Crop response. No differences in crop injury, yield or grade of peanuts were detected between years; therefore, data presented are averaged across years (Table 5). Only systems which included POT applications of chlorimuron resulted in excessive crop injury as determined visually at 8 WAP. Crop injury from all other treatments had diminished by 14 WAP, however, injury from POT applications remained excessive. The cultivated yields of all systems tested (except where chlorimuron was applied POT with surfactant) were equivalent to those of the standard treatment and the

Table 2. Florida beggarweed and sicklepod control as influenced by rate and time of chlorimuron application (average of 1984 and 1985).

Chlorimuron rate (g/ha)	Florida beggarweed 8 WAP[a]	Florida beggarweed 14 WAP	Florida beggarweed Fresh weight (1984)	Sicklepod 8 WAP	Sicklepod 14 WAP
	---------(%)--------		(kg/ha)	--------(%)---------	
17.5	86 b[c]	48 c	500 a	87 a	81 b
35.0	88 ab	56 bc	320 a	84 a	79 b
52.5	90 ab	66 ab	380 a	89 a	84 ab
70.0	93 a	60 bc	290 a	90 a	87 ab
87.5	92 a	70 a	440 a	93 a	91 a
Untreated	0 c	0 d	2810 b	0 b	0 c
Time of application[b]					
PPI	85 c	42 c	310 a	81 b	79 b
PRE	89 bc	47 c	290 a	84 b	78 b
EPOT	91 ab	59 b	310 a	88 b	89 a
POT	95 a	94 a	620 a	98 a	94 a
Untreated	0 d	0 d	2810 b	0 c	0 c

[a]Weeks after planting.

[b]PPI = preplant incorporated; PRE = preemergence, EPOT = application at 2 WAP,

POT = application at 5 WAP.

[c]Means followed by the same letter within a column and rate or time of application are not significantly different according to Duncan's multiple range test (P = 0.05).

Table 3. Peanut response as influenced by rate and time of chlorimuron application (average of 1984 and 1985).

Chlorimruon rate (g/ha)	Peanut injury 8 WAP[a]	Peanut injury 14 WAP	Yield	Grade[c]
	--------(%)---------		kg/ha	--(%)--
17.5	3 b[d]	1 ab	3630 b	75.2 a
35.0	6 b	2 ab	3470 b	74.3 ab
52.5	9 c	3 bc	3240 c	75.8 a
70.0	11 c	5 c	3130 c	74.8 ab
87.5	14 d	5 c	3030 c	73.4 b
Untreated (weed-free)	0 a	0 a	4020 a	75.8 a
Untreated (weedy)	0 a	0 a	3360 bc	75.8 a
Time of application[b]				
PPI	2 b	0 a	3580 b	74.6 ab
PRE	2 b	0 a	3360 c	75.5 a
EPOT	10 c	2 b	3300 c	74.8 ab
POT	19 d	10 c	2950 c	74.0 b
Untreated (weed-free)	0 a	0 a	4020 a	75.8 a
Untreated (weedy)	0 a	0 a	3360 c	75.8 a

[a]Weeks after planting.

[b]PPI = preplant incorporated; PRE = preemergence; EPOT = application at 2 WAP; POT = application at 5 WAP.

[c]Grade = peanut sound mature kernels + percent sound split kernels.

[d]Means followed by the same letter within a column and rate or time of application are not significantly different according to Duncan's multiple range test (P = 0.05).

untreated weed-free check. Chlorimuron applied POT resulted in a reduction in yield of cultivated peanuts. Yields of uncultivated peanuts were reduced where chlorimuron was applied POT with surfactant and by the weedy check (3390 and 3610 kg/ha, respectively) relative to the standard and the weed-free check (4330 and 4410 kg/ha, respecitively). With all other systems, yields were equivalent to the weed-free check and the standard. All herbicide systems with chlorimuron resulted in grades equivalent to the hoed check and the standard treatment. While, chlorimuron offered no im-

Table 4. Florida beggarweed and sicklepod control with chlorimuron-containing herbicide systems.

Herbicide system[a]	Florida beggarweed[c] 8 WAP[b]	Florida beggarweed[c] 14 WAP	Florida beggarweed[c] Fresh weight	Sicklepod 8 WAP 1984	Sicklepod 8 WAP 1985	Sicklepod 14 WAP 1985	Sicklepod Fresh weight
	-------(%)-------		(kg/ha)	--------------(%)-----------			(kg/ha)
1 chl. 1X (PRE)	92 a[d]	40 d	290 a	76 b	97 ab	96 bc	810 a
2 chl. 1X (PRE); din. + nap. (EPOT)	93 a	76 bc	550 a	86 ab	88 c	81 c	500 a
3 chl. ½X (PRE); din. + nap. + chl. ½X (EPOT)	97 a	80 abc	270 a	84 ab	88 c	85 c	500 a
4 chl. ½X (PRE); din. + nap. (EPOT); chl. ½X (POT)	99 a	87 abc	120 a	88 ab	93 bc	88 bc	370 a
5 chl. 1X (PRE); 2,4-DB (POT)	91 a	46 d	330 a	70 b	98 ab	91 bc	1930 ab
6 chl. 1X (PRE); din. + nap. + chl. ½X (EPOT); 2,4-DB (POT)	99 a	74 bc	100 a	82 ab	100 a	98 ab	900 a
7 chl. ½X (PRE); din. + nap. (EPOT); 2,4-DB (POT)	97 a	86 abc	370 a	75 b	99 ab	95 bc	1040 a
8 chl. ½X (PRE); din. + nap. (EPOT); 2,4-DB + chl. ½X (POT)	99 a	92 ab	140 a	90 ab	100 a	89 abc	500 a
9 ala. + din. + nap. (EPOT); 2,4-DB (POT)	93 a	90 abc	350 a	100 a	100 a	99 a	20 a
10 Hoed check	100 a	100 a	---	100 a	100 a	100 a	---
11 Weedy check	0 b	0 e	5390 b	0 c	0 d	0 d	3090 b

[a]Refer to Table for system description. Entire experiment received benefin + vernolate; systems 2, 3, 4, 6, 7 and 8 received dinoseb + naptalam at EPOT; systems, 5, 6, 7 and 8 received 2,4-DB postemergence over the top.

[b]Weeks after planting.

[c]Florida beggarweed control at 8 WAP is averaged across 1984 and 1985.

[d]Means followed by the same letter within a column are not significantly different according to Duncan's multiple range test (P = 0.05).

Table 5. Peanut response as influenced by chlorimuron herbicide systems.

Herbicide system[a]	Crop injury 8 WAP[b]	Crop injury 14 WAP	Yield[c] Uncultivated	Yield[c] Cultivated	Grade[c,d]
	(——%——)		(——kg/ha——)		(%)
1 chl. 1X (PRE)	7 abc	5 abc	4110 abc	4190 a	75 ab
2 chl. 1X (PRE); din.+ nap.(EPOT)	9 bc	4 abc	4440 a	3900 a	75 ab
3 chl. ½X (PRE); din.+ nap.+ chl. ½X (EPOT)	4 ab	3 ab	4590 a	4160 a	76 a
4 chl. ½X (PRE); din.+ nap.(EPOT); chl.½X (POT)	40 e	22 e	3390 d	3090 b	74 b
5 chl. 1X (PRE); 2,4-DB (POT)	3 ab	2 ab	4210 abc	4010 a	74 ab
6 chl. 1X (PRE); din.+ nap.+ chl.½X (EPOT); 2,4-DB (POT)	14 c	8 c	4150 ab	4050 a	76 a
7 chl. ½X (PRE); din.+ nap. (EPOT); 2,4-DB (POT)	3 ab	4 ab	3720 bcd	4430 a	75 ab
8 chl. ½X (PRE); din.+ nap. (EPOT); 2,4-DB + chl. ½X (POT)	26 d	15 d	3950 abcd	3680 ab	75 ab
9 ala. + din. + nap. (EPOT); 2,4-DB (POT)	5 ab	0 a	4330 ab	4240 a	75 ab
10 Hoed check	0 a	0 a	4410 ab	4200 a	75 ab
11 Weedy check	0 a	0 a	3610 cd	--	--

[a]Refer to Table 1 for system description. Entire experiment received benefin + vernolate; systems 2, 3, 4, 6, 7 and 8 received dinoseb + naptalam at EPOT; systems 5, 6, 7 a nd 8 received 2,4-DB postemergence over the top.

[b]Weeks after planting.

[c]Crop injury ratings at 8 WAP are given by year, and at 14 WAP are given for 1985 only; yield and grade data are averaged across 1984 and 1985.

[d]Grade = percent sound mature kernels + percent sound split kernels.

[e]Means followed by the same letter within a column are not significantly different according to Duncan's multiple range test (P = 0.05).

provement over the weed control systems currently in use, the two systems that did not include dinoseb provided yields (cultivated and noncultivated) and grades equivalent to the standard system and the weed free check.

The maximum rate at which chlorimuron was applied PRE (or EPOT) without significant yield suppression was 52.5 g/ha. This did result in weed control comparable to the standard system. In this respect, chlorimuron did serve to replace the standard application of dinoseb + naptalam. However, inspection of the data reveals for all methods of application (except PPI) there is a consistent downward trend in yield as rate increases. The trade-off between weed control and any yield suppression and net returns needs to be examined more fully. Preplant-incorporated applications were generally less injurious than other methods of application. Chlorimuron applied PPI at 52.5 g/ha or higher provided 80% sicklepod control at the later rating. Incorporated applications may be preferable with this herbicide.

Literature Cited

1. Boote, K.J. 1982. Growth stages of peanut *(Arachis hypogaea* L.). Peanut Sci. 9:35-40.
2. Boswell, T.E. 1971. Postemergence weed control in peanuts. Proc. South. Weed Sci. Soc. 24:124-130.
3. Buchanan, G.A., E.W. Hauser, W.J. Ethridge, and S.R. Cecil. 1976. Competition of Florida beggarweed and sicklepod with peanuts II. Effects of cultivation, weeds, and SADH. Weed Sci. 24:29-39.
4. Buchanan, G.A., D.S. Murray, and E.W. Hauser. 1982. Weeds and their control in peanuts. pp. 206-249 **in** H.E. Pattee and C.T. Young (eds.) Peanut Science and Technology. Amer. Peanut Res. and Educ. Soc., Inc. Yoakum, TX 77995.
5. Davidson, J.I., Jr., T.B. Whitaker and J.W. Dickens. 1982. Grading, cleaning, storage, shelling, marketiing of peanuts in the United States. pp. 571-623 **in** H.E. Pattee and C.T. Young (eds.) Peanut Science and Technology. Amer. Peanut Res. and Educ. Soc., Inc. Yoakum, TX 77995.
6. Gamble, B.E., R.H. Walker, and J.R. Harris. 1984. Response of weed species (**Fabaceae**) to DPX-F6025 and AC 252,214 applied preemergence. Proc. South. Weed Sci. Soc. 37:69.
7. Hauser, Ellis W. and Gale A. Buchanan. 1974. Control of Florida beggarweed and sicklepod in peanuts with dinoseb. Peanut Sci. 2:40-44.
8. Hauser, E.W., G.A. Buchanan and W.J. Ethridge. 1975. Competition of Florida beggarweed and sicklepod with peanuts I. Effects of periods of weed-free maintenance or weed competition. Weed Sci. 23:368-372.
9. Hauser, E.W., G.A. Buchanan, R.L. Nichols, and R.M. Patterson. 1982. Effects of Florida beggarweed (Desmodium tortuosum) and sicklepod *(Cassia obtusifolia)* on peanut *(Arachis hypogaea)* yield. Weed Sci.l 30:602-604.
10. Ketchersid, M.L., T.E. Boswell, and M.G. Merkle. 1978. Effects of 2,4-DB on yield and pod development in peanuts. Peanut Sci. 5:35-39.
11. Morton, C.S., G.G. Hammes, K.A. Patterson, S.H. Crowder, M.T. Edwards, F.B. Maxcy, R.E. Seay, and L.B. Gillham. 1984. A new broadleaf herbicide for soybeans. Proc. South. Weed Sci. Soc. 37:74.

Accepted June 20, 1987