# Using Strongarm for Weed Control in Texas Peanut

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## ABSTRACT

**Field experiments were conducted in 1995 through 1997 in south and west Texas to evaluate Strongarm (diclosulam) for weed control in peanut. Strongarm applied preplant incorporated (PPI) at 0.15 oz product/A in combination with Sonalan at 1.1 qt/A controlled ≥ 95% Texas panicum, Palmer amaranth, morningglory species, and golden crownbeard and 91% devil's-claw. When Strongarm rates were increased to 0.44 oz/A, yellow and purple nutsedge were controlled at least 89% and 72%, respectively.**

**KEYWORDS**: *Arachis hypogaea* L., broadleaf weeds, groundnut, purple nutsedge, preplant incorporated, yellow nutsedge.

Peanuts (*Arachis hypogaea L.*) in Texas are infested with several problem weeds, including Palmer amaranth (*Amaranthus palmeri* S. Wats.), Texas panicum (*Panicum texanum* Buckl.), golden crownbeard [*Verbesina enceliodes* (Cav.) Benth. & Hook. f. ex. A. Gray], yellow nutsedge (*Cyperus esculentus* L.), and purple nutsedge (*C. rotundus* L.) (Dowler, 1997). With increasing peanut acreage in west Texas, weeds such as devil's claw [*Proboscidea louisianica* (Mill.)Thellung], lanceleaf sage (*Salvia reflexa* Hornem.), prairie sunflower *(Helianthus petiolaris* Nutt.), woollyleaf bursage [*Ambrosia grayi* (A. Nels.) Shinners], Texas blueweed (*Helianthus ciliaris* DC.), and silverleaf nightshade (*Solanum elaeagnifolium* Cav.) may soon become problematic weeds in peanut.

The imidazolinone herbicides, Pursuit (imazethapyr) and Cadre (imazapic), partially control many of these weeds (Wilcut et al., 1991b; Webster et al., 1997; Grichar et al., 1992). However, Pursuit does not consistently control yellow nutsedge (Grichar et al., 1992; Wilcut et al., 1991a). Cadre controlled purple and yellow nutsedge as well or better than Pursuit at all application timings (Dotray and Keeling, 1997; Grichar and Nester, 1997) and provided better control of purple and yellow nutsedge in field experiments than other currently registered herbicides in peanut (Colvin and Brecke, 1993; Gooden and Wixson, 1992; Grichar and Nester, 1993; Wilcut et al., 1994a). Cadre also has a longer period of residual weed control when applied postemergence (POST) than Pursuit.

The 18 mo crop rotation restriction following imidazolinone herbicide use on peanut with cotton (*Gossypium hirsutum*) planting limits the use of the imidazoline herbicides, especially in west Texas (Richburg et. al., 1994; Wilcut et al., 1993). Common crop rotation

Table 1. Annual weed species and density at each location.

| Location | Year | Weed Species | Density No./m$^2$ | Applic. timing |
|---|---|---|---|---|
| LDS Farm | 1995 | Texas pancium | 8-10 | PPI |
| | 1996 | Palmer amaranth | 12-14 | PPI |
| | | Texas pancium | 10-12 | PPI |
| | | Yellow nutsedge | 16-20 | PPI |
| | 1997 | Palmer amaranth | 16-18 | PPI |
| | | Texas panicum | 10-12 | PPI |
| | | Golden crownbeard | 6-8 | PPI |
| Lubbock | 1997 | Palmer amaranth | 25-30 | PPI |
| | | Devil's claw | 4-6 | PPI |
| | | Yellow nutsedge | 2-4 | PPI |
| Mann | 1996 | Texas panicum | 10-12 | PPI |
| | | Palmer amaranth | 6-8 | PPI |
| | | Purple nutsedge | 4-6 | PPI |
| | 1997 | Yellow nutsedge | 14-16 | POST |
| | | Palmer amaranth | 4-6 | PPI |
| | | Texas panicum | 6-8 | PPI |
| O'Donnell | 1996 | Palmer amaranth | 2-6 | PPI |
| Seminole | 1995 | Purple nutsedge | 3-4 | PPI |
| Wier | 1995 | Yellow nutsedge | 12-14 | PPI |
| | | Golden crownbeard | 16-18 | PPI |
| Yoakum | 1995 | Texas panicum | 6 | PPI |
| | | Yellow nutsedge | | PPI |
| | 1996 | Yellow nutsedge | 15-20 | POST |
| | 1996 | Texas panicum | 8-10 | POST |
| | | Yellow nutsedge | 30-40 | POST |

with peanut in west Texas is cotton-peanut-cotton. In south and central Texas, the common rotation is usually corn (*Zea mays* L.) or grain sorghum [*Sorghum bicolor* (L.) Moench] followed by peanut. The third year may be a grain crop or another year of peanut before the rotation back to a grain crop. In some areas of south and central Texas, watermelon (*Citrullus lanatus* L.) or other vegetable crops may be included in a rotation with peanut.

Cadre and Pursuit crop rotation restrictions after applying either in peanut include 9 mo for corn, 18 mo for cotton and grain sorghum, and 26 mo for most other crops excluding potatoes (*Solanum tuberosum* L.) which has a 40 mo rotation restriction (Anonymous, 1999). Rotation restrictions following Strongarm use in peanut include 18 mo for corn and grain sorghum, and 30 mo for all other crops (R. Lassiter, personal communication).

Strongarm is a recently registered triazolopyrimidine sulfonanilide herbicide for use in peanut. A petition for registration of Strongarm for use in soybean [*Glycine max* (L.) Merr.](Gander et al., 1997; Sheppard et al.,1997; Stafford et al., 1997) has been submitted and is pending at the U.S. EPA. As a preplant incorporated (PPI) or preemergence (PRE) treatment, Strongarm controlled many weeds found in soybean and peanut, including common cocklebur (*Xanthium strumarium* L.), morningglory species (*Ipomoea* spp.), common ragweed (*Ambrosia Artemisiifolia* L.), pigweed species (*Amaranthus* spp.), common lambsquarter (*Chenopodium album* L.), prickly sida (*Sida spinosa L.),* Florida beggarweed [*Desmodium tortuosum* (Sw.) DC.], bristly starbur (*Acanthospermum hispidum* DC.) and yellow nutsedge (Sheppard et al., 1997; Richburg et al., 1997; Braxton et al., 1997; Langston et al. 1997).

However, several studies have reported that Strongarm applied PPI or PRE did not control sicklepod *[Senna obtusifolia* (L.) Irwin Barneby] (Wilcut et al., 1997; Braxton et al., 1997). Strongarm applied POST also did not control prickly sida or common lambsquarters (Wilcut et al., 1997).

Field experiments were conducted in the Texas peanut growing regions with the following objectives: a) to evaluate Strongarm applied PPI or POST for weed control in peanut, b) to determine peanut tolerance to Strongarm, and c) to compare weed control and peanut yield with Strongarm to a commercial standard herbicide system.

## MATERIALS AND METHODS

Field studies were conducted at twelve south and west Texas locations during the 1995 through 1997 growing seasons. In south Texas, studies were conducted at the following locations: Texas Agricultural Experiment Station near Yoakum in 1995 and1996, James Mann Farm near Pearsall in 1996 and 1997, Church of Latter Day Saints (LDS) Farm near Pearsall in 1995, 1996, and 1997, and the Joe Wier Farm near Charlotte in 1995. Soil type at the Yoakum location was a Tremona loamy fine sand (thermic Aquic Arenic Palenstalf) with less than 1% organic matter and pH of 6.8 to 7.2. At the James Mann Farm, the soil type was a Duval loamy fine sand (fine-loamy, mixed, hyperthermic Aridic Haplustalfs) with less than 1% organic matter and a pH of 7.0 to 7.2. Soil type at the LDS Farm was a Duval fine sandy loam (fine loamy, mixed, hyperthermic Aridic Haplustalfs) with less than 1% organic matter and a pH of 7.2 . At the Joe Wier Farm, the soil type was a Neuces loamy fine sand (loamy, mixed, hyperthermic Aquic Arinic Palenstalfs) with less than 1% organic matter and a pH of 7.2. In west Texas, studies were conducted near Seminole in 1995, near O'Donnell in 1996, and near Lubbock in 1997. Soil type near Seminole and O=Donnell was an Amarillo fine sandy loam (fine-loamy, mixed, thermic Aridic Palenstalf) with less than 1% organic matter and a pH of 7.8. Soil type near Lubbock was an Amarillo sandy clay loam (fine-loamy, mixed, thermic Aridic Palenstalf) with less than 1% organic matter and a pH of 7.8. These experimental sites are representative of the major peanut produing areas in south and west Texas.

GK-7peanut was used at all south Texas locations except the LDS farm in 1997 where the cultivar AT-108 was used. Peanut seed at 112 lb/A was planted approximately 2 in. deep immediately after the PPI herbicide applications. In west Texas, Tamrun 88 was planted 2 in. deep at 112 lb/A in a well-prepared seedbed using conventional equipment within one week of herbicide application. PPI treatments in south Texas were incorporated immediately after application with a power-driven tiller operated at a 2 in.depth. In west Texas, PPI treatments were incorporated with a rolling cultivator to a depth of 1 to 2 in. POST treatments were applied 3-4 wk after crop emergence.

The experimental design for all studies was a randomized complete block design with 3 to 4 replications. Plots were two rows wide, spaced 36 in apart and 25 ft long in south Texas and four rows wide, spaced 40 in apart and 30 ft long in west Texas. Naturally occurring weed species composition and densities are identified in Table 1.

In south Texas, herbicides were applied with a compressed-air bicycle sprayer using Teejet 11002[3] flat fan nozzles that delivered a spray volume of 20 gal/A at 28 psi. In west Texas, herbicides were applied using a tractor-mounted compressed-air sprayer using Teejet 8002[3] flat fan nozzles delivering 15 gal/A at 35 psi. POST applications of Cadre included an organosilicone-based surfactant[4] at 0.25% by vol. in south Texas and a crop oil concentrate[5] at 1.25% by vol. in west Texas. Weed control ratings were taken throughout the growing season; however, only late season ratings are presented. Visual estimates of weed control were based on a scale of 0% (no control or peanut injury) to 100% (complete control or death of the peanut) relative to the non-treated check. Peanut injury was estimated visually starting 2 wk after PPI treatments or 1 week after POST treatments and were recorded throughout the growing season. Peanut stunting was the parameter used in making the visual injury estimates.

Herbicide treatments were Sonalan applied PPI at 1.1 qt/A alone or in combination with Strongarm at 0.15, 0.30, 0.44 oz product/A, and Sonalan at 1.1 qt/A applied PPI followed by Cadre applied early postemergence (EPOST) at 1.44 oz product/A. A nontreated check was included at each location.

Data collected included visual estimates of crop injury and weed control (on a scale of 0% to 100% relative to the nontreated check) and peanut yield. Weed control and peanut injury were visually estimated early, mid-, and late-season during each year. Late weed ratings taken approximately 3 weeks prior to harvest are presented.

Peanut yields were obtained at four locations in south Texas. Yields were obtained by digging each plot separately, air-drying in the field for 5 to 8 days, and harvesting peanut pods with a combine. Weights were recorded after soil and foreign material were removed from the plot samples. Visible weed control data were subjected to arcsine transformation prior to analysis of variance, and significant differences among means for weed control and peanut yield were determined using Fisher's Protected LSD Test at the 5% level.

Since a treatment by year interaction occurred in soil-applied studies that examined peanut injury, yellow nutsedge control and in peanut yield, data are presented by year. Since there were no year by treatment interactions for devil=s claw, Texas panicum, Palmer amaranth, golden crownbeard, or morningglory species control, data were pooled over years.

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[3]Spraying Systems Co., P.O. Box 7900, Wheaton, IL 60189.

[4]Kinetic HV, proprietary blend of polyalkyleneoxide modified polydimethylsiloxone and non-ionic surfactant (99.5%). Helena Chemical Co., 5100 Poplar Avenue, Memphis, TN 38137.

[5]Agri-Dex, an 83% paraffin based petroleum oil with 17% polyoxyethlylated polyol fatty acid ester and polyol fatty acid ester. Helena Chemical Co., 5100 Poplar Avenue, Memphis, TN 38137.

# RESULTS AND DISCUSSION

**Peanut injury.** Slight early season peanut injury (stunting) was observed in all three years following Strongarm PPI applications (Table 2). In 1995, Strongarm at 0.44 oz/A caused 3% stunting at Yoakum when rated 40 days after treatment (DAT) whileStrongarm caused no stunting 17 DAT at Wier. In 1996, Strongarm at 0.3 and 0.44 oz/A injured peanut 3% and 5%, respectively, when rated 44 DAT. In 1997, at the Mann Farm, Strongarm caused $\leq$ 8% peanut stunt while Cadre at 1.44 oz/A caused 3% stunting at the Lubbock location. No peanut stunting was observed at harvest in any of the three years.

Table 2. Peanut stunting following application of Strongarm PPI.

| | | | 1995 | | 1996 | 1997 | |
|---|---|---|---|---|---|---|---|
| Treatment | Rate product/A | Appl. timing | Yoakum 40 DAT[a] | Wier 17 DAT | Yoakum 44 DAT | Mann 21 DAT | Lubbock 26 DAT |
| | | | | | % | | |
| Check | - | - | 0 | 0 | 0 | 0 | 0 |
| Strongarm | 0.15oz | PPI | 1 | 0 | 0 | 0 | 0 |
| Strongarm | 0.3 oz | PPI | 1 | 0 | 3 | 3 | 0 |
| Strongarm | 0.44 oz | PPI | 3 | 0 | 5 | 8 | 0 |
| Cadre | 1.44 oz | POST | 0 | - | - | 0 | 3 |
| LSD (0.05) | | | 2 | NS | 4 | 2 | 3 |

[a]DAT = days after PPI treatment

**Texas panicum control.** Strongarm and Cadre improved Texas panicum control over Sonalan alone (Table 3). Dinitroaniline herbicides, such as Sonalan, usually control large seeded annual grasses including Texas panicum (Wilcut et al., 1994b, 1995). Cadre applied POST controls small Texas panicum escaping earlier control efforts (Wilcut et al., 1993).

Table 3. Texas panicum and broadleaf weed control using soil applied Strongarm, 1995-97.

| | | | Weed species | | | | |
|---|---|---|---|---|---|---|---|
| Treatment | Rate | Appl. timing | Texas panicum | Palmer amaranth | Golden crownbeard | Pitted morningglory | Devil's claw |
| | product/A | | % | | | | |
| Check | - | - | - | 0 | 0 | 0 | 0 |
| Strongarm | 0.15 oz | PPI | 97 | 95 | 100 | 99 | 91 |
| Strongarm | 0.3 oz | PPI | 97 | 98 | 100 | 98 | 95 |
| Strongarm | 0.44 oz | PPI | 99 | 99 | 100 | 99 | 96 |
| Cadre | 1.44 oz | POST | 97 | 99 | 99 | 100 | 100 |
| Sonalan | 1.1 qt | PPI | 87 | 77 | - | - | 38 |

**Palmer amaranth control.** All rates of Strongarm controlled Palmer amaranth $\geq$95% in south and west Texas which is comparable to control from Cadre (Table 3). Cadre provided 99% Palmer amaranth control. In contrast, Sonalan alone controlled Palmer amaranth 77%. In earlier work, Grichar (1997) reported Cadre controlled Palmer amaranth 95 to 100% and spiny amaranth (*Amaranthus spinosus* L.) 72 to 91% (Grichar, 1994).

**Golden crownbeard control.** Strongarm provided 100% golden crownbeard control regardless of rate, while Cadre controlled golden crownbeard 99% (Table 3). Cadre has provided inconsistent golden crownbeard control (personal observation) especially in

low rainfall or irrigation areas. It has been speculated that lower rainfall or irrigation amounts may have resulted in less Cadre root absorption. Richburg et al. (1995) reported less Cadre was absorbed by yellow nutsedge under lower rainfall conditions.

**Pitted morningglory control.** All herbicide treatments controlled pitted morningglory at least 98% (Table 2). Richburg et al. (1997) reported that Strongarm controlled pitted morningglory in soybeans equal to or greater than Scepter (imazaquin). No differential response in control of *Ipomoea* morningglory species with Cadre has been reported (Richburg, et al., 1995; Wilcut et al., 1994a, 1995). In the southeast, morningglory control with Cadre has been greater than 80% in most instances (Richburg et al., 1995; Webster et al., 1997).

**Devil's claw control.** Cadre and all rates of Strongarm effectively controlled devil's-claw. Strongarm at 0.15 oz/A controlled devil's claw 91% at 132 DAT while Strongarm at ≥ 0.3 oz/A controlled devil's claw ≥ 95%. Similarly, Cadre provided 100% devil's-claw control (Table 3).

**Yellow nutsedge control.** In 1995, Strongarm at 0.15 oz/A provided poor yellow nutsedge control (25%) at Yoakum and moderate control (81%) at the Wier location (Table 4). Strongarm at 0.3 oz/A or greater controlled yellow nutsedge at least 94% at both locations, which was equal to control with Cadre.

At the Yoakum location in 1996, Strongarm at 0.15 oz/A provided < 60% yellow nutsedge control while other Strongarm rates provided control similar to Cadre (Table 4). At the LDS Farm location, all herbicide treatments controlled yellow nutsedge at least 88%. Yellow nutsedge control with Cadre was 94%. In 1997 at Lubbock, all Strongarm rates controlled yellow nutsedge at least 91% while Cadre completely controlled yellow nutsedge.

Table 4. Yellow and purple nutsedge control with soil applied Strongarm in 1995-97.

| | | | Yellow nutsedge | | | | | Purple nutsedge | |
|---|---|---|---|---|---|---|---|---|---|
| | | | 1995 | | 1996 | | 1997 | 1995 | 1996 |
| Treatment | Rate product/A | Appl. timing | Yoakum | Wier | Yoakum | LDS | Lubbock | Seminole | Mann |
| | | | % | | | | | | |
| Check | - | - | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Strongarm | 0.15oz | PPI | 25 | 81 | 56 | 88 | 91 | 70 | 53 |
| Strongarm | 0.30 oz | PPI | 96 | 95 | 94 | 96 | 98 | 77 | 75 |
| Strongarm | 0.44 oz | PPI | 95 | 97 | 89 | 90 | 99 | 72 | 80 |
| Cadre | 0.07 oz | POST | 99 | 99 | 89 | 94 | 100 | 92 | 93 |
| LSD (0.05) | | | 22 | 22 | 11 | 12 | 11 | 9 | 13 |

Yellow nutsedge has generally been controlled 80% or more with Strongarm applied PPI or PRE at rates ≥ 0.44 oz/A (Wilcut et al., 1997; Braxton et al., 1997). Cadre has generally provided more consistent control of yellow nutsedge than Pursuit (Grichar et al.,1992; Richburg et al., 1995; Dotray and Keeling, 1997). In greenhouse experiments, Cadre exhibited foliar and soil activity on purple and yellow nutsedge (Richburg, et al., 1994).

**Purple nutsedge control.** In 1995, Strongarm controlled purple nutsedge 70-77% regardless of rate (Table 4). Cadre controlled purple nutsedge 92%. In 1996, Cadre controlled purple nutsedge 93% while Strongarm at 0.3 oz/A or greater controlled purple nutsedge 75 to 80% (Table 4). Strongarm at 0.15 oz/A failed to adequately control purple nutsedge (53%).

**Peanut yield**. All herbicide treatments increased peanut yield over the non-treated check at Yoakum in 1995 and the LDS Farm in 1996 while no yield differences were noted at the Wier location (Table 5). Strongarm at 0.3 and 0.44 oz/A and Cadre increased peanut yield over the nontreated check at the LDS Farm in 1997 (Table 5).

These experiments indicated that Strongarm provides a broad spectrum of weed control similar to Cadre. While Cadre controls a broad spectrum of troublesome weeds, the major limitation for Cadre in southwest peanut production is the follow crop restrictions (Batts et al., 1995; York and Wilcut, 1995). Major crops rotated with peanut in Texas include corn, cotton, grain sorghum, and various vegetable crops. Label restrictions with Strongarm may limit its use in south and central Texas where corn or grain sorghum may be grown in rotation with peanut. However, Strongarm may be used in west Texas where most rotations are peanut followed by cotton.

Table 5. Influence of Strongarm on peanut yield.

| Treatment | Rate | 1995 | | 1996 | 1997 |
|---|---|---|---|---|---|
| | | Yoakum | Weir | LDS | LDS |
| | product/A | ---------- | ---------- | %---------- | ---------- |
| Check | - | 1508 | 2353 | 1033 | 2544 |
| Strongarm | 0.15 | 2141 | 2649 | 2020 | 3342 |
| Strongarm | 0.3 | 2456 | 1959 | 2287 | 3511 |
| Strongarm | 0.44 | 2364 | 2324 | - | 3564 |
| Cadre | 1.44 | 2259 | 2331 | 2482 | 3467 |

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# REFERENCES

Anonymous. 1999. Crop Protection Reference. 15th ed. Chemical and Pharmaceutical Publication Corporation, New York, pp. 137-139.

Batts, R.B., A.C. York, and J.W. Wilcut. 1995. Pursuit and Cadre carryover in peanut/cotton rotations. Proc. Am. Peanut Res. Educ. Soc. 27:59.

Braxton, L.B., J.L. Barrentine, T.C. Geselius, D.L. Grant, V.B. Langston, S.P. Nolting, K.D. Redding, J.S. Richburg, III and B.R. Sheppard. 1997. Efficacy and crop tolerance of diclosulam soil-applied in peanuts. Proc. South Weed Sci. Soc. 50:162.

Colvin, D.L. and B.J. Brecke. 1993. Cadre rate and time of application for peanut (*Arachis hypogaea*) weed control. Proc. South. Weed Sci. Soc. 46:30.

Dotray, P.A. and J.W. Keeling. 1997. Purple nutsedge control in peanut as affected by imazameth and imazethapyr application timing. Peanut Sci. 24:113-116.

Dowler, C.C. 1997. Weed Survey - Southern States. Proc. South. Weed, Sci. Soc. 50:227-246.

Gander, J.R., L.R. Oliver, and D.M. Wallace. 1997. Soybean weed control programs with diclosulam. Proc. South. Weed Sci. Soc. 50:22.

Gooden, D.T. and M.B. Wixson. 1992. Influence of Pursuit and Cadre on nutsedge development. Proc. Am. Peanut Educ. Res. Soc. 24:47.

Grichar, W.J. 1997. Control of Palmer amaranth (*Amaranthus palmeri*) in peanut (*Arachis hypogaea*) with postemergence herbicides. Weed Technol. 11:739-743.

Grichar, W.J. 1994. Spiny amaranth (*Amaranthus spinosus L.*) control in peanut (*Arachis hypogaea* L.) Weed Technol. 8:199-202.

Grichar, W.J. and P.R. Nester. 1997. Nutsedge (*Cyperus* spp.) control in peanut (*Arachis hypogaea*) with postemergence herbicides. Weed Technol. 11:739-743.
Grichar, W.J. 1994. Spiny amaranth (*Amaranthus spinosus L.*) control in peanut (*Arachis hypogaea* L.) Weed Technol. 8:199-202.
Grichar, W.J. and P.R. Nester. 1997. Nutsedge (*Cyperus* spp.) control in peanut (*Arachis hypogaea*) with AC 263,222 and imazethapyr. Weed Technol. 11:714-719.
Grichar, W.J. and P.R. Nester. 1993. Control of nutsedge (*Cyperus* spp.)in peanut with Cadre. Proc. South. Weed Sci. Soc. 46:71.
Grichar, W.J., P.R. Nestor, and A.E. Colburn. 1992. Nutsedge (*Cyperus* spp.) control in peanuts (*Arachis hypogaea*) with imazethapyr. Weed Technol. 6:396-400.
Langston, V.B., L.B. Braxton, J.L. Barrentine, B.R. Sheppard, S.P. Nolting, J.S. Richburg, III, D.L. Grant, K.D. Redding, and T.C. Geselius. 1997. Efficacy and crop tolerance of diclosulam post-applied in peanuts. Proc. South Weed Sci. Soc. 50:162.
Richburg, J.S., J.L. Barrentine, L.B. Braxton, T.C. Geselius, D.L. Grant, V.B. Langston, K.D. Redding, B.R. Sheppard, and S.P. Nolting. 1997. Performance of diclosulam on key broadleaf weeds in southern soybeans. Proc. South. Weed Sci. Soc. 50:161.
Richburg, J.S., III, J.W. Wilcut, and G. Wiley. 1995. AC 263,222 and imazethapyr rates and mixtures for weed management in peanut (*Arachis hypogaea*). Weed Technol. 9:801-806.
Richburg, J.S., III, J.W. Wilcut, and G.R. Wehtje. 1994. Toxicity of foliar and/or soil applied AC 263,222 to purple (*Cyperus rotundus*) and yellow (*C. esculentus*) nutsedge. Weed Sci. 42:398-402.
Sheppard, B.R., L.B. Braxton, J.L. Barrentine, T.C. Geselius, D.L. Grant, V.B. Langston, K.D. Redding, J.S. Richburg, and D.B. Roby. 1997. Diclosulam, a new herbicide for broadleaf weed control in soybeans and peanuts. Proc. South. Weed Sci. Soc. 50:161.
Stafford, L.E., T.S. Lardie, J.D. Magnussen, and A.M. Niedenthal. 1997. Metabolism of diclosulam in soybeans following pre-plant incorporation to soil. Proc. South Weed Sci. Soc. 50:179.
Webster, T.M., J.W. Wilcut, and H.D. Coble. 1997. Influence of AC 263,222 rate and application method on weed management in peanut. (*Arachis hypogaea*). Weed Technol. 11:520-526.
Wilcut, J.W., V.B. Langston, L.B. Braxton, and J.S. Richburg, III. 1997. Evaluation of Strongarm (DE 564) for weed control in southeastern peanuts. Proc. South Weed Sci. Soc. 50:5.
Wilcut, J.W., A.C. York, W.J. Grichar, and G.R. Wehtje. 1995. The biology and management of weeds in peanut (*Arachis hypogaea*) pp. 207-244. In H.E. Pattee and H.T. Stalker (eds.). Advances in Peanut Science. Amer. Peanut Res. Educ. Soc., Inc., Stillwater, OK.
Wilcut, J.W., J.S. Richburg, III, G. Wiley, F.R. Walls, Jr., S.R. Jones, and M.J. Iverson. 1994a. Imidazolinone herbicide systems for peanuts (*Arachis hypogaea* L.). Peanut Sci. 21:23-28.
Wilcut, J.W., A.C. York, and G.R. Wehtje. 1994b. The control and interaction of weeds in peanut (*Arachis hypogaea*). Rev. Weed Sci. 6:177-205.
Wilcut, J.W., E.F. Eastin, J.S. Richburg, III, W.K. Vencil, F.R. Walls, and G. Wiley. 1993. Imidazolinone systems for southern weed management in resistant corn. Weed Science Soc. Amer. 33:5.
Wilcut, J.W., F.R. Walls, Jr. and D.N. Horton. 1991a. Weed control, yield and net returns using imazethapyr in peanuts (*Arachis hypogaea*). Weed Sci. 39:238-242.
Wilcut, J.W., F.R. Walls, Jr., and D.N. Horton. 1991b. Imazethapyr for broadleaf weed control in peanuts (*Arachis hypogaea*). Peanut Sci. 18:26-30.
York, A.C. and J.W. Wilcut. 1995. Potential for Pursuit and Cadre applied to peanuts to carryover to cotton. Proc. Beltwide Cotton Conf. 1:602.