WEED CONTROL PROGRAMS FOR NO-TILL PEANUTS

B. J. Brecke, University of Florida, Agricultural Research and Education Center, Jay, Florida 32565-9524.

Soil erosion is becoming an increasingly serious problem in the southeastern U. S. Wind erosion in fields planted to peanuts (Arachis hypogaea L.) results in the loss of valuable top soil along with any nutrients and/or pesticides which may have been applied. In addition, the wind driven soil often causes serious injury to the seedling peanut plants. No-till planting of the peanuts into some type of cover crop could greatly reduce this wind erosion and subsequent crop damage.

Peanuts is one crop, however, where extensive tillage is an important part of recommended production practices. Deep turning of the soil with a moldboard plow to bury any surface trash has been shown to reduce the incidence of disease. In addition, a power drive tiller is often used to incorporate herbicides and prepare the seedbed. For these reasons only a limited amount of research has been conducted to evaluate the feasibility of no-till peanuts.

In order for no-till peanut production to be successful, weeds will need to be controlled. This study was conducted to compare weed control obtained witn several herbicide programs in both no-till and conventionally planted peanuts.

MATERIALS AND METHODS

Studies were conducted during 1981-83 at the University of Florida Agricultural Research Center, Jay, FL to evaluate several herbicide programs for weed control in peanuts grown under three different tillage systems. Peanuts were planted during early May into - a) a conventionally prepared seedbed (moldboard plowed and disked), b) small grain stubble after harvest of the forage, and c) standing small grain covercrop. In all instances the peanuts were planted with an in-row subsoil no-till planter at a rate of 15 seeds per meter in rows spaced 76 cm apart.

Herbicide treatments were applied with a tractor mounted air propellant sprayer in 190 L/ha total spray volume. Weed control by species was visually rated periodically throughout the growing season. A standard fungicide program was used for control of foliar disease. The peanuts were harvested at maturity using commercially available equipment.

RESULTS AND DISCUSSION

Peanuts no-till planted into small grain stubble following forage harvest produced yields comparable to those produced under the conventional tillage system over the three year period of this study (Tables 1, 2, 3). Yields of no-till peanuts in stubble were somewhat higher than for those grown under conventional tillage in 1981 and 1982 and were somewhat lower

than for the plow-disk system in 1983 (Tables 1 and 2 VS 3). No-till peanuts in standing cover-crop produced consistently lower yields than either of the other two tillage systems.

The herbicide programs of alachlor preemergence (PRE) plus alachlor + alanap + dinoseb "at cracking" (AC) plus dinoseb postemergence (POST) and pendimethalin (PRE) plus alachlor + alanap + dinoseb AC plus dinoseb POST provided good to excellent control of both annual grass and broadleaf weed species in both conventionally and no-till planted peanuts in at least two of the three year test period. Alachlor + paraquat AC plus alachlor + paraquat POST provided excellent crabgrass and sicklepod control but less than adequate tall morningglory control in 1983.

The results from the three year study indicate that no-till peanut production is feasible and that with the proper choice of herbicides weeds can be controlled under no-till peanut culture.

Table 1. Weed control and peanut yield resulting from various herbicide programs under three tillage systems, Jay, FL 1981.

				Weed Control[L]						
				Rated 6-23-81			Rated 8-7-81			
Treatment	Rate	Applied[1]	Tillage	GG	TM	SP	SP	TM	FB	Yield
	(kg/ha)			-----(%)-----			-----(%)----			(kg/ha)
Alachlor +	3.4	PRE	Conv.	95	100	100	80	100	98	5214
alachlor +	3.4	AC	NT stu[3]	83	100	98	76	100	86	6016
alanap +	3.4	AC	NT sta[4]	100	98	95	73	100	96	4084
dinoseb +	1.7	AC								
dinoseb	0.8	POST								
Alachlor +	3.3	PRE	Conv.	100	88	100	58	76	100	4485
alachlor +	3.3	AC	NT stu	98	85	100	73	94	98	4558
metribuzin	0.6	AC	NT sta	100	95	100	78	68	100	3245
Ethalfluralin +	1.7	PRE	Conv.	100	100	53	15	100	76	3683
ethalfluralin +	1.7	AC	NT stu	95	98	98	56	100	71	4557
alanap +	3.4	AC	NT sta	100	98	75	5	95	78	3245
dinoseb +	1.7	AC								
dinoseb	0.8	POST								
CHECK	---	----	Conv.	0	0	0	0		0	2990
			NT stu	0	0	0	0		0	3718
			NT sta	0	0	0	0		0	2406

[1]PRE = preemergence; AC = at cracking; POST = postemergence.
[2]GG = goosegrass; TM = tall morningglory; SP = sicklepod; FB = Florida beggarweed.
[3]NT stu = No-Till stubble.
[4]NT sta = No-Till standing cover crop.

Table 2. Weed control and peanut yield resulting from various herbicide programs under three tillage systems, Jay, FL 1982.

Treatment	Rate	Applied[1]	Tillage	Weed Control[2] Rated 6-23-82 CG	SP	TM	Rated 8-30-82 CG	SP	TM	Yield
	(kg/ha)			-----(%)-----			-----(%)-----			(kg/ha)
Alachlor +	3.4	PRE	Conv.	100	90	98	100	78	90	3160
alachlor +	3.4	AC	NT stu[3]	100	95	95	98	75	83	3569
alanap +	3.4	AC	NT sta[4]	100	90	93	93	70	83	2997
dinoseb +	1.7	AC								
dinoseb	0.8	POST								
Pendimethalin +	1.1	PRE	Conv.	100	88	93	100	70	78	2607
alachlor +	3.4	AC	NT stu	98	89	100	100	80	88	3222
alanap +	3.4	AC	NT sta	100	93	88	90	78	73	2950
dinoseb	1.7	AC								
CHECK	---	--	Conv.							1481
			NT stu							1331
			NT sta							1625

[1]PRE = preemergence; AC = at cracking; POST = postemergence.
[2]CG = crabgrass; SP = sicklepod; TM = tall morningglory.
[3]NT stu = No-Till stubble
[4]NT sta = No-Till standing cover crop.

Table 3. Weed control and peanut yield resulting from various herbicide programs under three tillage system, Jay, FL 1983.

Treatment	Rate	Applied[1]	Tillage	Weed Control[2] Rated 6-3-83 CG	TM	SP	Rated 7-9-83 CG	TM	SP	Yield
	(kg/ha)			-----(%)----			-----(%)----			(kg/ha)
Alachlor +	3.4	PRE	Conv.	100	95	88	100	100	94	5265
alachlor +	3.4	AC	NT stu[3]	100	78	100	85	95	90	3841
alanap +	3.4	AC	NT sta[4]	100	93	100	60	88	88	2932
dinoseb +	1.7	AC								
dinoseb	0.8	POST								
Pendimethalin +	1.1	PRE	Conv.	100	90	98	90	100	95	4666
alachlor +	3.4	AC	NT stu	100	90	100	88	95	90	4199
alanap +	3.4	AC	NT sta	100	88	98	73	93	100	3662
dinoseb +	1.7	AC								
dinoseb	0.8	POST								
Alachlor +	3.4	AC	Conv.	100	58	100	93	68	100	4715
paraquat +	0.14	AC	NT stu	100	70	98	93	98	100	4023
alachlor +	3.4	POST	NT sta	100	63	95	95	95	100	3910
paraquat	0.14	POST								
CHECK	----	----	Conv.	0	0	0	0	0	0	1000
			NT stu	0	0	0	0	0	0	1900
			NT sta	0	0	0	0	0	0	1486

[1]PRE = preemergence; AC = at cracking; POST = postemergence.
[2]CG = crabgrass; SP = sicklepod; TM = tall morningglory.
[3]NT stu = No-Till stubble.
[4]NT sta = No-Till standing cover crop.