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The influence of winter vegetation on seedbed preparation and weed control in cotton : 1983-1987 (II)

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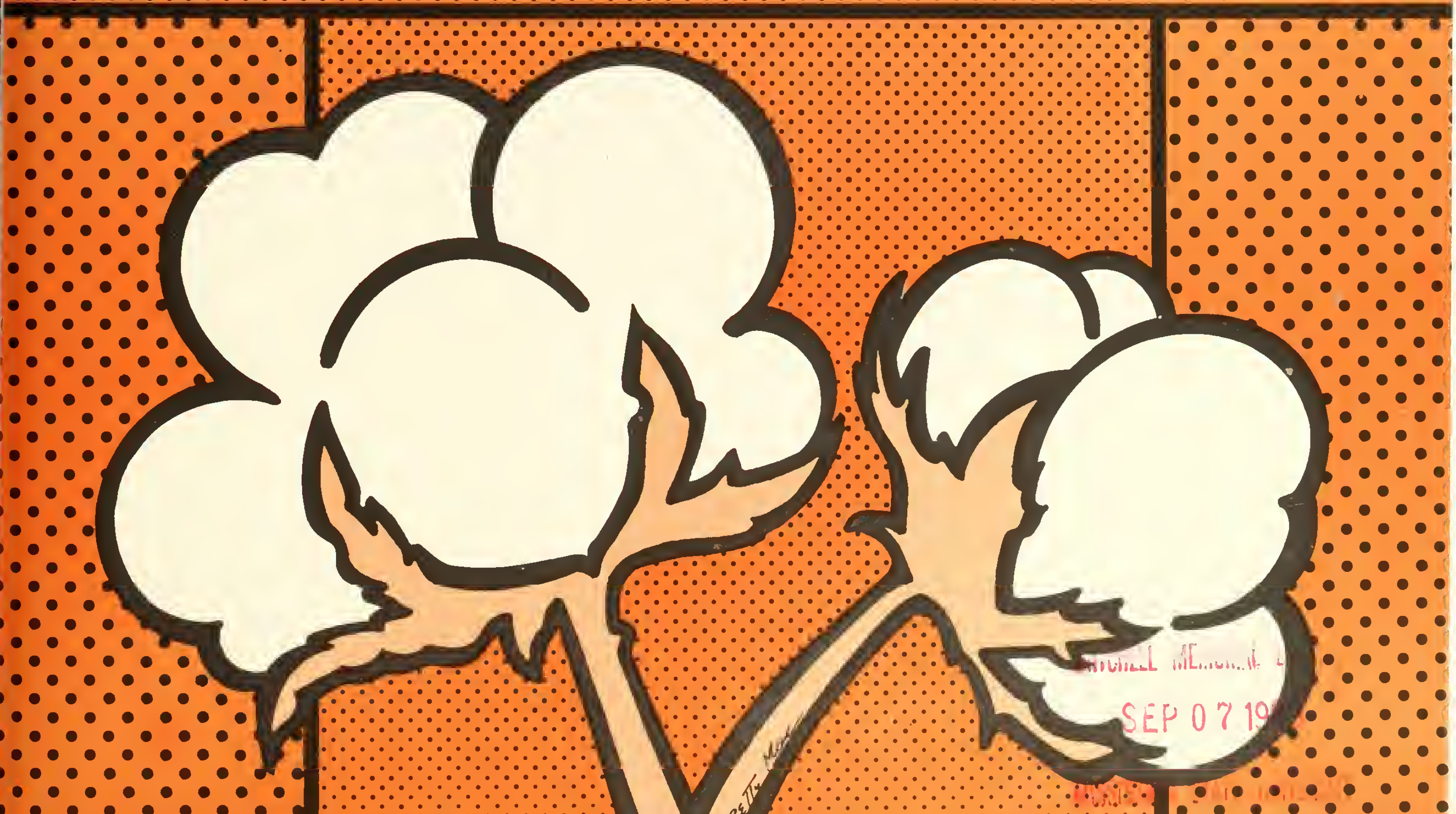

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The Influence of Winter Vegetation on Seedbed Preparation and Weed Control in Cotton – (II) 1983-1987

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spray shields and two nozzles per row. Over-the-top (OT) treatments (1984-86) were applied broadcast as described above.

General postemergence herbicides and broadcast rates used in these studies (see Table 1 for dates of application) were Cotoran at 1.5 lb/acre plus surfactant at 0.25% v/v (DIR) in 1983; Cotoran at 1.5 lb/acre plus surfactant at 0.25% v/v (OT), Poast® (sethoxydim) to treatment 1 only at 0.3 lb a.i./acre plus surfactant at 0.5% v/v (OT), and Cobra® (lactofen) at 0.2 lb a.i./acre plus surfactant at 0.25% v/v (DIR) in 1984; Verdict® (haloxyfop) at 0.0625 lb a.i./acre plus crop oil concentrate at 1.25% v/v (OT) in 1985; Poast at 0.2 lb/acre plus crop oil concentrate at 1.25% v/v (OT), Bladex® (cyanazine) at 0.6 lba.i./acre plus MSMA at 2.0 lb a.i./acre (DIR) in 1986; and Cotton-Pro® (prometryn) at 0.5 lb a.i./acre plus surfactant at 0.25% v/v (DIR) in 1987.

Estimates of the winter vegetation population were made in February or March 1983-86, and in November 1986, by counting individual plants by species on randomly placed 1 x 3-foot metal frames within each main plot. Counts were combined and are reported as plants per 15 square feet. All vegetative plant material above the soil line in randomly selected areas (each 1 by 3 feet) was removed by hand in March or April of each year to estimate the amount of plant residue for each cover crop area. These samples were dried to a constant weight in a forced air drier at 120°F, and the dry weight per acre was calculated.

Beds were formed with a conventional four-row disk hipper on the indicated dates (Table 1). The experiment was drill planted to 'DES 119' or 'DES 422' cotton with a John Deere 7100® four-row planter. All row middles were cultivated on the dates indicated with a two- or four-row cultivator equipped with spray shields positioned 6 inches from each side of the row. Cotton stand was determined by counting plants from one row in each plot. Plants per acre were calculated from these counts. Evaluation of summer weed control was made by counting weed plants by species and by determining the hoe time required to remove summer weeds (1984 and 1985 only). Weed counts were made 2 or 3 weeks after cotton emergence on randomly selected areas of 1 by 3 feet centered on row two of each subplot. These counts were combined and are reported as plants per 15 square feet. The time required to hoe the two center rows of each plot in 1984 and 1985 was determined 7-8 weeks after cotton emergence and is reported as hours per acre.

Cotton yield was determined by harvesting the two center rows of each plot with a one-row spindle picker adapted to harvest small plots. Plot yields were converted to pounds of seed cotton per acre.

An analysis of variance for a split plot design was used. Means were separated using Duncan's Multiple Range Test. The 5% confidence level was used.

Results and Discussion

Winter vegetation

The 1982-83 wheat stand was very poor (Table 2). However, the total dry weight harvested in April 1983

Figure 2. Field condition 5 days before planting in 1983 in the vetch area (top), winter weeds area (center) and wheat area (bottom). The left four rows in each photo were given a once-over treatment with a row conditioner one day before Treflan application.

was an acceptable yield compared to yields from most years in this study. The 1983-84 vetch stand was almost completely winterkilled due to an extremely cold December 1983 and resulted in a very low yield. The record low temperature in December 1983 adversely affected the winter growth of both vetch and weeds.

Winter weeds encountered in this study were: Annual bluegrass–*Poa annua* L.; Common chickweed–*Stellaria media* (L.) Vill; Corn speedwell–*Veronica arvensis* L.; Cutleaf eveningprimrose–*Oenothera laciniata* Hill; Hairy bittercress–*Cardamine hirsuta* L.; Henbit–*Lamium amplexicaule* L.; Mouseear chickweed–*Cerastium vulgatum* L.; Mousetail–*Myosurus minimus* L.; and Water foxtail–*Alopecurus geniculatus* L.

There were about as many winter weeds in 1984 as in 1983 (Table 2). The total numbers of winter weeds in all cover crop areas were 574.3 and 514.4 plants per 15 square feet for 1983 and 1984, respectively (Table 2). The low temperature probably suppressed plant growth severely enough to prevent an abundance of early growth in the spring of 1984.

The extreme low numbers of winter weeds in 1985 and in February 1986 indicate that germination and emergence were adversely affected by the cold, wet conditions in 1984-85 and the very wet fall of 1985. The dry weight yield in April 1985 reflected this very low number of winter weeds (total of 60.7 plants per 15 square feet). However, the dry weight yield in March 1986 reflected a greater number of winter weeds such as those that occurred in 1983. This yield

Table 2. Effect of winter cover crops and production operations on the composition and yield of winter vegetation on plots used to grow cotton with the production operations presented in Table 1. MAFES Delta Branch, 1983-87.

		Winter Vegetation										
		Plants per 15 square feet					Total dry weight when harvested on[1]					
Cover		1983	1984	1985	1986		1983	1984	1985	1986	1987	
Crop	Weed Species	Feb.	Mar.	Mar.	Feb.	Nov.	4/12	3/29	4/10	3/4	3/11	4/8
		(no.)					(tons/acre)					
Wheat		3.1	62.1	[3]	284.9	293.4	1.74	0.04 a	0.81 a	1.44 b	3.40	3.36 b
	Annual bluegrass	21.5	–	1.9	2.6	6.5						
	Common chickweed	23.9	3.1	–	6.0	18.9						
	Corn speedwell	5.8	2.3	2.3	0.3	0.9						
	Cutleaf eveningprimrose	6.4	–	–	2.3	–						
	Hairy bittercress	29.3	31.0	4.8	8.8	58.2						
	Henbit	41.3	56.6	0.9	17.1	245.3						
	Mouseear chickweed	–	–	–	2.9	7.5						
	Mousetail	–	20.0	0.6	–	9.2						
	Water foxtail	56.1	14.8	5.7	22.6	10.2						
Vetch		86.0	0.6[2]	[3]	437.0	297.8	1.56	0.03 ab	0.78 a	2.38 a	4.31	5.38 a
	Annual bluegrass	24.3	–	1.8	0.5	8.7						
	Common chickweed	57.3	6.3	–	1.7	20.9						
	Corn speedwell	9.3	5.0	0.7	–	1.5						
	Cutleaf eveningprimrose	5.9	–	–	0.1	–						
	Hairy bittercress	32.0	71.9	3.4	2.7	30.9						
	Henbit	41.0	84.4	0.5	13.5	294.5						
	Mouseear chickweed	–	–	–	0.6	8.0						
	Mousetail	–	13.5	2.0	–	6.5						
	Water foxtail	30.9	42.9	1.7	4.4	9.0						
Winter Weeds Only		–	–	–	–	–	1.37	0.01 b	0.28 b	1.29 b	4.00	4.37 ab
	Annual bluegrass	23.1	–	6.4	0.3	8.7						
	Common chickweed	38.3	5.6	2.0	6.8	20.1						
	Corn speedwell	9.0	1.0	0.3	1.5	2.9						
	Cutleaf eveningprimrose	12.3	–	–	0.6	–						
	Hairy bittercress	33.0	46.9	1.3	10.1	99.0						
	Henbit	44.5	47.5	2.0	12.4	227.9						
	Mouseear chickweed	–	–	6.1	2.9	10.4						
	Mousetail	–	43.1	2.3	–	9.0						
	Water foxtail	29.1	18.5	14.0	20.1	13.2						

[1] Means within columns followed by the same letter are not different (P = 0.05) according to Duncan's Multiple Range Test.

[2] Severe winterkill in December 1983.

[3] Not determined.

Figure 3. The growth of winter vegetation in the vetch area is pictured on November 21, 1986 (left) and April 6, 1987 (right).

level can be explained by more growth in the late winter and early spring of 1985 when dry conditions prevailed.

The March and April 1987 dry weight yields reflected the very high numbers of wheat, vetch, and winter weeds that emerged during the fall and winter of 1986 (November 1986 counts, Table 2). For an unknown reason, henbit was the species with the greatest number of plants emerging under the conditions of the fall and early winter of 1986-87. The dry weight yields from the March 11 harvest date resulted in greater numerical yield from the vetch and winter weed areas but were not significantly different from those harvested from wheat areas. However, the later harvest on April 8 resulted in significantly higher dry weight from the vetch area when compared to the wheat area.

It is generally accepted that undisturbed areas which allow commonly occurring winter weeds to germinate without benefit of overseeding of cover crops result in less total dry weight in the spring. This occurred in this study with significantly less dry weight than vetch and wheat from the March 1984, April 1985, and March 1986 harvest dates. There were no dry matter yield differences from the April 1983 or the March 1987 harvest dates. The April 1987 harvest date resulted in a dry weight value for winter weeds intermediate between wheat and vetch.

Winter weed species were not different between any of the cover crops areas (Table 2). The outstanding difference among winter weeds species was the very high population of henbit occurring with the November 1986 count. Henbit was among the predominant weed species in 1983, 1984, and February 1986, but at lower levels. Water foxtail, common chickweed, hairy bittercress, and annual bluegrass were present most years at populations that resulted in a predominant position.

Figure 4. The growth of winter vegetation in the winter weeds area is pictured on November 21, 1986 (left) and April 6, 1987 (right).

 

Figure 5. The growth of winter vegetation in the wheat area is pictured on November 21 (left) and April 6, 1987 (right).

Summer weeds

There were no main plot or main plot by subplot treatment interaction differences with any of the summer weed species counts. Individual species are discussed in the following paragraphs.

Entireleaf morningglory
***Ipomoea hederacea* var. *integriuscula* Gray**

Ivyleaf morningglory
***Ipomoea hederacea* (L.)**

Significant subplot treatment differences in numbers of entireleaf/ivyleaf morningglory plants were observed in 1983 and in 1985 through 1987 (Table 3). Highest counts were obtained from plots that had not been treated with any herbicide. In 1985 and 1986, the Bed-Cotoran PRE treatment (4) was not different from the Bed-only treatment (1); and in 1987, plots treated with Roundup/Ignite PPF-Cotoran PRE (2) were not different from the Bed-only treatment (1).

Pitted morningglory
***Ipomoea lacunosa* L.**

Significant differences for pitted morningglory occurred only in 1983 and 1986 (Table 3). In 1983, the Roundup PPF-Cotoran PRE treatment (2) reduced the population from that obtained with the Bed-only treatment (1). In 1986, all herbicide treatments reduced the level of pitted morningglory below that of the Bed-only treatment (1).

Smooth pigweed
***Amaranthus hybridus* L.**

Differences in count numbers for smooth pigweed occurred in each of the 5 years (Table 3). In 1983, and in 1985 through 1987, all herbicide treatments reduced smooth pigweed numbers below those of the Bed-only treatment (1). In 1984, the Roundup PFF-Cotoran PRE treatment (2) did not reduce the number of smooth pigweed plants below that of the Bed-only treatment (1).

Prickly sida
***Sida spinosa* L.**

Prickly sida counts resulted in lower numbers from all herbicide treatments when compared with the Bed-only treatment (1) in all years (Table 3).

Spurred anoda
***Anoda cristata* (L.) Schlecht.**

Spurred anoda did not occur in sufficient numbers to report until 1986 (Table 3). In 1986, there were no differences between counts with any treatment. In 1987, all herbicide treatments reduced the population of spurred anoda below that obtained in the Bed-only treatment (1).

Hyssop spurge
***Euphorbia hyssopifolia* L.**

The population of hyssop spurge was inconsistent and occurred in numbers high enough to report only during 1984 and 1986 (Table 3). In 1984, no herbicide treatment resulted in adequate control probably because of the variable population. Highest numbers occurred with Bed-Cotoran PRE (4), which were significantly greater than the Bed-only (1) or Bed-Treflan PPI-Cotoran PRE (5) treatments. In 1986, hyssop spurge populations were higher and all herbicide treatments reduced the spurge numbers below those obtained with the Bed-only treatment (1).

Table 3. Effect of winter cover crops and production operations on summer weed control as determined by weed counts, by weed species. MAFES Delta Branch, 1983-1987.

Treatment	Entireleaf/ivyleaf Morningglory[1]					Pitted morningglory[1]				
	1983	1984	1985	1986	1987	1983	1984	1985	1986	1987
	(No./15 sq. ft.)					(No./15 sq. ft.)				
Main Plot										
A. Wheat	1.0	0.6	0.5	7.8	4.1	7.3	3.7	2.9	0.9	3.5
B. Vetch	1.8	2.1	0.9	6.3	12.0	2.3	3.5	2.1	1.2	2.3
C. Winter Weeds	0.6	0.3	0.5	5.6	8.0	2.4	2.5	2.1	0.9	3.2
Subplot										
1. Bed only	3.8 a	1.4	1.4 a	11.1 a	14.3 a	6.5 a	2.7	1.8	4.2 a	4.2
2. Roundup/Ignite PPF Bed Cotoran PRE	0.6 b	0.8	0.3 b	5.4 b	11.1 ab	2.3 b	2.4	2.7	0.0 b	2.0
3. Roundup/Ignite PPF Bed Treflan PPI Cotoran PRE	0.5 b	0.9	0.3 b	4.5 b	5.1 b	3.0 ab	4.1	3.0	0.3 b	1.5
4. Bed Cotoran PRE	0.4 b	0.5	0.8 ab	7.7 ab	6.2 b	3.9 ab	4.3	2.0	0.3 b	4.7
5. Bed Treflan PPI Cotoran PRE	0.0 b	1.3	0.3 b	4.2 b	3.2 b	4.1 ab	2.6	2.0	0.2 b	2.7
	Smooth Pigweed					Prickly Sida				
Main Plot										
A. Wheat	0.9 a	0.1	0.3	3.2	6.2	20.0	14.1	1.4	9.2	8.0 a
B. Vetch	5.3 a	1.6	4.8	12.8	8.6	12.4	15.5	3.2	15.5	2.3 b
C. Winter Weeds	0.8 b	0.8	0.3	4.2	2.0	16.6	9.2	2.0	6.2	1.8 b
Subplot										
1. Bed only	10.4 a	3.8 a	6.5 a	33.0 a	27.8 a	68.5 a	47.7 a	6.3 a	41.7 a	17.4 a
2. Roundup/Ignite PPF Bed Cotoran PRE	0.4 b	0.3 ab	0.8 b	0.0 b	0.0 b	2.3 b	2.6 b	0.6 b	1.5 b	2.0 b
3. Roundup/Ignite PPF Bed Treflan PPI Cotoran PRE	0.4 b	0.0 b	0.0 b	0.0 b	0.0 b	4.0 b	5.8 b	1.5 b	0.9 b	0.2 b
4. Bed Cotoran PRE	0.3 b	0.0 b	1.2 b	0.0 b	0.0 b	5.4 b	3.5 b	1.7 b	3.8 b	0.5 b
5. Bed Treflan PPI Cotoran PRE	0.1 b	0.0 b	0.3 b	0.5 b	0.0 b	1.6 b	5.1 b	0.5 b	3.3 b	0.0 b
	Hyssop Spurge					Spurred anoda				
Main Plot										
A. Wheat	–	2.9	–	3.2	–	–	–	–	0.9	7.4
B. Vetch	–	0.8	–	5.4	–	–	–	–	0.6	3.3
C. Winter Weeds	–	0.4	–	3.5	–	–	–	–	0.2	4.4
Subplot										
1. Bed only	–	0.2 b	–	18.0 a	–	–	–	–	1.4	14.7 a
2. Roundup/Ignite PPF Bed Cotoran PRE	–	1.8 ab	–	0.5 b	–	–	–	–	0.2	3.3 b
3. Roundup/Ignite PPF Bed Treflan PPI Cotoran PRE	–	1.6 ab	–	0.5 b	–	–	–	–	0.2	0.8 b
4. Bed Cotoran PRE	–	2.7 a	–	0.2 b	–	–	–	–	0.6	1.2 b
5. Bed Treflan PPI Cotoran PRE	–	0.5 b	–	0.8 b	–	–	–	–	0.3	4.8 b
	Annual grasses									
Main Plot										
A. Wheat	37.8	12.3	2.4	35.6	14.0					
B. Vetch	26.3	12.4	14.9	45.5	24.8					
C. Winter Weeds	33.6	16.1	10.1	29.6	48.2					
Subplot										
1. Bed only	142.5 a	61.9 a	31.1 a	151.7 a	132.8 a					
2. Roundup/Ignite PPF Bed Cotoran PRE	7.9 b	2.5 b	3.0 b	9.8 b	3.5 b					
3. Roundup/Ignite PPF Bed Treflan PPI Cotoran PRE	2.6 b	0.2 b	0.5 b	7.8 b	0.0 b					
4. Bed Cotoran PRE	8.1 b	3.1 b	10.2 b	9.8 b	8.1 b					
5. Bed Treflan PPI Cotoran PRE	1.5 b	0.2 b	0.9 b	5.4 b	0.2 b					

[1] Means within columns for main-plot treatments and subplot treatments followed by the same letter are not different (P = 0.05) according to Duncan's Multiple Range Test. PPF = preplant to cover-crop foliage; PPI = preplant incorporated shallow; PRE = preemergence.

Annual grasses

Broadleaf signalgrass
***Brachiaria platyphylla* (Griseb.) Nash**

Browntop panicum
***Panicum fasciculatum* Sw.**

Barnyardgrass
***Echinochloa crus-galli* (L.) Beauv.**

Populations were extremely high in most years with the Bed-only treatment (1). All herbicide treatments had fewer annual grass plants when compared with the Bed-only treatment.

Hoe time

Hoe time for 1984 ranged from 10.1 to 15.3 hours per acre for subplot herbicide treatments (data not presented). These times were lower than that for the Bed-only treatment (43.1 hours per acre). In 1985, valu es were much higher, ranging from 61.8 to 92.3 hours per acre for the subplot herbicide treatments. Again, these were lower than the Bed-only treatment (211.0 hours per acre). Only subplot treatment means were significantly different.

Cotton stand

The stands of cotton determined shortly after emergence were less than adequate in 2 of 5 years (1983 and 1985–Table 4). Cotton stand was considered marginal in 1984 and 1986. Only in 1987 was the stand adequate. Averaged over subplot treatments, significantly fewer cotton plants emerged on the vetch and winter weeds areas than on the wheat area in 1983. In 1985, reduced stands occurred only on the vetch area. In 1987, fewer cotton plants emerged on the wheat area than on the vetch and winter weeds areas. However, cotton stand for all main plot areas in 1987 was sufficient to produce maximum yield. In 1984 and 1986, there were no differences in cotton stand with any of the main plot treatments.

There were no main plot by subplot interactions for cotton stand. Subplot treatments did not result in cotton stand differences in 1983 (Table 4). Cotton stand differences were observed in 1984 through 1987 with subplot treatments. The Roundup PPF-Bed-Treflan PPI-Cotoran PRE treatment (3) resulted in cotton plant counts higher than those obtained from the Bed-only treatment (1) in 1984. In 1985, the same treatment along, with Roundup PPF-Cotoran PRE (2), resulted in greater stands than the Bed-only (1) or Treflan PPI-Cotoran PRE (5) treatments. Stands in 1985 were considerably below those considered minimal for adequate production. In fact, the highest number of cotton plants (14,300 plants per acre) was only about 40% of what would normally be considered a minimum stand for this soil type. Stand differences in 1986 followed the same trend as were obtained in 1985. In 1987, Roundup/Ignite PPF-Bed -Treflan PPI-Cotoran PRE (3) resulted in a greater cotton stand than the Bed-only (1), Bed-Cotoran PRE (4), and Bed-Treflan PPI-Cotoran PRE (5) treatments. All subplot treatments in 1987 produced an adequate stand for optimum yield.

Table 4. Effect of winter cover crops and production operations on stand of cotton. MAFES Delta Branch, 1983-1987.

Treatment	Cotton Stand				
	1983	1984	1985	1986	1987
	(Plants/A in thousands)				
Main Plot[1]					
A. Wheat	29.3 a	31.2	14.6 a	27.6	42.0 b
B. Vetch	18.7 b	31.9	5.8 b	30.0	55.2 a
C. Winter Weeds	23.1 b	33.6	14.2 a	30.4	57.2 a
Subplot[1]					
1. Bed only	25.2	25.4 b	9.0 b	25.2 b	48.7 b
2. Roundup/Ignite PPF Bed Cotoran PRE	27.1	32.1 ab	14.0 a	33.6 a	54.1 ab
3. Roundup/Ignite PPF Bed Treflan PPI Cotoran PRE	23.0	35.6 a	14.3 a	34.9 a	56.4 a
4. Bed Cotoran PRE	21.7	34.2 ab	11.9 ab	28.0 ab	49.3 b
5. Bed Treflan PPI Cotoran PRE	21.4	34.0 ab	8.5 b	25.0 b	48.9 b

[1] Means within columns followed by the same letter are not different (P = 0.05) according to Duncan's Multiple Range Test. PPF = preplant to cover crop foliage; PPI = preplant incorporated shallow; PRE = preemergence.

Seed cotton yield

The wheat main plot treatment re sulted in lower yields in 1986 and 1987 (Table 5). There were no main plot or main plot by subplot yield differences in 1983 and 1984. Seed cotton yield in 1985 resulted in a significant main plot by subplot treatment interaction.

When averaged over main plot treatments in 1983, all herbicide subplot treatments resulted in greater yield than the Bed-only treatment (1) with the Bed-Treflan PPI-Cotoran PRE treatment (5) greater than the other herbicide treatments. In 1984, 1986, and 1987 all herbicide treatments resulted in greater yield than the Bed-only treatment (1). Also in 1984, the yield from the Roundup PPF-Bed-Treflan PPI-Cotoran PRE treatment (3) resulted in greater yield than that obtained with the Bed-Cotoran PRE (4) treatment. In 1986 and 1987, there were no seed cotton yield differences among treatments using herbicides.

Talbe 6 presents the seed cotton yield means for the 1985 main plot x subplot interaction. No differences occurred between cover crops with the Bed-only subplot treatment. Within the Roundup PPF-Bed-Cotoran PRE subplot treatment, each main plot treatment resulted in seed cotton yields different from the other. The highest yield was harvested from the winter weeds area, an intermediate yield was harvested from the wheat area and the lowest yield was from the vetch area. With the subplot treatment of Roundup PPF-Bed-Treflan PPI-Cotoran PRE, lowest yield was obtained from the vetch area, which was significantly different from each of the other main plot treatments. With the Bed-Cotoran PRE subplot treatment, yield from the winter weeds area was significantly greater than yield from each of the other areas. There were no differences in yield between the three cover crops with the subplot treatment of Bed-Treflan PPI-Cotoran PRE.

When subplot treatments are compared within a main plot treatment (Table 6), it is found that with wheat as the cover crop, highest yield was obtained with Roundup PPF-Bed-Treflan PPI-Cotoran PRE. The lowest seed cotton yield was obtained from the Bed-only treatment but this was not significantly lower than the yield obtained from the Bed-Cotoran PRE treatment. Within the vetch main plot treatment, higher yields resulted from all herbicide treatments when compared to the Bed-only treatment. There were no differences among the herbicide subplot treatments. Within the winter weeds main plot treatment, lowest yield was obtained from the Bed-only treatment, the next lowest yield was obtained with the Bed -Treflan PPI-Cotoran PRE treatment. The remaining subplot treatments resulted in highest yields and were not different.

Summary and Conclusions

Cotton was grown after three cover crops (wheat, vetch, winter weeds) for 5 years (1983-1987). The winter vegetation was characterized by indigenous species and was not altered by the herbicide treatments used. Preplant foliar application of Roundup or Ignite to the cover crops did not make it easier

Table 5. Effect of winter cover crops and production operations on seed cotton yield. MAFES Delta Branch, 1983-1987.

Treatment	Seed Cotton Yield				
	1983	1984	1985[2]	1986	1987
	(lb/A)				
Main Plot[1]					
A. Wheat	674	574	1,008	926 b	1,244 b
B. Vetch	500	482	489	1,191 a	1,863 a
C. Winter Weeds	743	804	1,377	1,180 a	1,671 a
Subplot[1]					
1. Bed only	71 c	367 c	306	266 b	246 b
2. Roundup/Ignite PPF Bed Cotoran PRE	704 b	729 ab	1,289	1,363 a	1,964 a
3. Roundup/Ignite PPF Bed Treflan PPI Cotoran PRE	749 b	776 a	1,355	1,401 a	1,964 a
4. Bed Cotoran PRE	674 b	566 b	977	1,202 a	1,743 a
5. Bed Treflan PPI Cotoran PRE	998 a	662 ab	863	1,263 a	2,046 a

[1] Means within columns followed by the same letter are not different ($P = 0.05$) according to Duncan's Multiple Range Test. PPF = preplant to cover crop foliage; PPI = preplant incorporated shallow; PRE = preemergence.

[2] A significant cover crop x herbicide treatment interaction. See Table 6 for mean separation.

Table 6. Effect of winter cover crops and herbicide treatments on seed cotton yield from plots used to grow cotton with the production operations presented in Table 1. MAFES Delta Branch, 1985.

	Subplot treatments[1]				
Main-plot treatments	Bed only	Roundup Bed-Cotoran[1]	Roundup Bed-Treflan Cotoran	Bed-Cotoran	Bed-Treflan Cotoran
	(lb/A)				
A. Wheat	392 aD	1,254 bB	1,752 aA	703 bCD	940 aBC
B. Vetch	57 aB	633 cA	711 bA	684 bA	560 aA
C. Winter Weeds	470 aC	1,981 aA	1,601 aA	1,744 aA	1,090 aB

[1] Means within colums followed by the same lower case letter or within rows followed by the same capital letter are not different (P=0.05) according to Duncan's Multiple Range Test.

to perform subsequent preplant tillage operations. The winter vegetation did not interfere with spring re-bedding or planting operations nor with incorporating Treflan on top of the bed with a bed conditioner. The cover crops did not affect the composition and control of summer weeds.

All herbicide treatments provided acceptable control of summer weeds. Cotton stand was less than acceptable in 2 of 5 years (1983 and 1985) and in 1985 the stand was reduced 59% on the vetch area. Seed cotton yield was not affected consistently by the type of winter cover but seed cotton yield was lower with reduced plant population, especially in 1983 and 1985. Seed cotton yields from herbicide treatments ranged from 409 (1984) to 1,800 pounds per acre (1987) more than yields from plots without herbicides.

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