

Title:

**Control of Wild Proso Millet (Panicum miliaceum L.)
in 'Jubilee' Sweet Corn in the Willamette Valley, 1987.**

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Test Site Cooperators: Ray Bartosz, Stayton
Vic Scoggins, Grand Island

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These funds were applied towards salary of Phil Diener, Research Assistant and summer labor. They were also used to pay travel and supplies associated with this project.

Objectives:

The objectives of these studies were to:

1. Obtain data on the weed control efficacy and crop safety of herbicides currently registered for use in sweet corn which may be effective in control of wild proso millet.
2. Identify other herbicides not currently registered in sweet corn which may effectively control millet.
3. Obtain data which could be used toward the registration of Tandem, Eradicane, and Eradicane-Extra.
4. Develop recommendations of weed control options for growers in the Willamette Valley of Oregon.

Progress:

Two field experiments were established for evaluation of Tandem and other non-registered herbicides which may control wild proso millet. In addition Prowl, Lasso, and Surpass, which are registered for use on sweet corn were evaluated for their effectiveness in control of millet with and without Tandem. Attached is a complete report of this research.

Summary:

At this time growers may be able to obtain good control of wild proso millet with Surpass, provided it does not break down rapidly. Rapid breakdown is more likely in fields where repeated use of thiocarbamate herbicides such as Surpass and Eptam has occurred.

When and if Tandem plus atrazine is registered for use on sweet corn it should be applied with Surpass, Lasso, or Prowl applications, which are currently registered in sweet corn. To date, Tandem, .75 lb ai/A, + Aatrex, 1.5 lb ai/A, with crop oil applied early in the season with Surpass (6.14 lb ai/A) applied pre-plant incorporated is the best combination. If a registration is obtained for Eradicane or Eradicane-Extra on sweet corn, these would be other good options to be used with Tandem + Aatrex. Further research is needed to identify timing of both Tandem and Aatrex applications in order to maximize weed control and minimize the amount of herbicide applications.

Signatures:

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INTRODUCTION

Wild proso millet infests approximately 7,000 acres of sweet corn in the Willamette Valley of Oregon. This infestation is rapidly increasing and severely reduces corn yields. Earlier studies indicated tridiphane (Tandem) may aid in the control of millet. Two field trials were established in 1987 to test various herbicides in combination with Aatrex and Tandem for effective control of millet. Excellent control resulted in many of the treatments. Tandem enhanced the level and length of time through the season of control of some of the treatments.

EXPERIMENTAL METHODS

The first experiment was planted on Grand Island at the Vic Scoggins' farm on 18 May, 1987. The soil type at this location is a Chehalis silty clay loam, with a pH of approximately 6.6. The second experimental site was planted at Ray Bartosz's farm near Stayton on 8 June, 1987. The soil type at the Bartosz site was a Clackamas gravelly loam with a pH of about 5.6 and higher organic matter than the Scoggins site. The treatment lists are the same for both sites and are shown in Tables 1 and 2.

Preplant incorporated (ppi) and preemergence (pre) treatments were applied the day of planting. Post-emergence (post) treatments were applied when the millet in the control plot was at the 1 to 3-leaf stage. Exceptions to this were the Surpass treatment (#17) at both locations, the Eradicane-Extra (#18), and the Eradicane (#19) at the Bartosz site. In these cases, just a few millet plants had emerged and were at the 2 to 3-leaf stage. The lack of weed pressure in these treatments was due to the good control from the various thiocarbamate herbicides applied preplant incorporated. Post-emergence applications of Tandem + Aatrex were applied on 6 June, 19 days post planting, and 22 June, 14 days post planting, at the Scoggins and Bartosz sites, respectively.

Visual ratings for weed control and crop injury were taken at 2, 4, 8, 10, and 13 weeks for the Scoggins location and 2, 4, 6, and 14 weeks at the Bartoz trial. The rating scale is 0 for no weed control or injury to 100% for complete control or injury to the crop.

Twenty feet of row was harvested to quantify yield reductions and to determine if ear deformity resulted from any of the treatments. Ear quality and tip fill were visually rated on a scale of 1 to 5, with 5 being the highest quality or best ear fill. The quality rating included evaluation of ear twisting.

RESULTS AND DISCUSSION

Millet Control. Efficacy of millet control is shown in Tables 1 and 2. Poor control occurred with various application rates of Aatrex with and without Tandem (treatment #'s 1 to 8). However, when Tandem (0.75 lb ai/A) plus Aatrex (1.00 lb ai/A) was applied postemergence after a preemergence application of Prowl and Lasso, fair to adequate control was achieved throughout the season (treatment #'s 11, 12). Prowl plus Aatrex but without Tandem plus Aatrex did not satisfactorily control millet (treatment # 9).

Atrazine plus Eradicane or Eradicane Extra provided fair control of millet (treatment #'s 14, 15). These combinations began to lose effectiveness 6 to 8 weeks into the season. Surpass plus Aatrex, however, provided excellent season long control at both locations (treatment # 13).

Improvement of season long millet control by adding tandem + Aatrex to the thiocarbamate + Aatrex combination was small in the case of Surpass, but was significant in the cases of Eradicane and Eradicane- Extra at both sites (treatment #'s 17, 18, 19). In our opinion, the Tandem + Aatrex treatment is an important addition for controlling wild proso millet even if only small gains in control are achieved. The potential for dramatic yield reductions and the importance of controlling the spread of this weed warrant the use of tandem + Aatrex with Surpass or the others. The potential for a buildup of soil microorganisms which feed on and reduce the activity of the thiocarbamate herbicides, further points to the need for a Tandem registration for control of wild proso millet.

Another issue warranting further investigation is the application timing of Tandem + Aatrex when used with thiocarbamate herbicides, especially Surpass. At both experimental sites the Surpass had controlled at least 93% of the millet at the time of the "post emergence" application of Tandem + Aatrex. The lack of emerged millet plants at the time of application coupled with successful season long control, suggests soil activity of the Tandem on millet. However, preemergence treatments of Tandem + Aatrex (treatment #5) had no effectiveness at the Bartosz site, but showed substantial activity at the Scoggins site, although it was not at a commercially acceptable level. Further research should be directed at identification of what stage of millet emergence can Tandem + Aatrex be applied especially when Surpass and other thiocarbamate herbicides are being used.

A further issue is the timing of Aatrex applications. Atrazine applied with a thiocarbamate herbicide may be adequate for a latter application of Tandem without Aatrex. There may be opportunities to cut herbicide application amounts and costs by refining herbicide application timings.

Sweet corn injury. Slight corn injury from treatments which included Tandem + Aatrex was evident at only the Scoggins site, although the

corn grew out of the injury by mid-season (Table 1). The earlier season injury to sweet corn from Tandem + Aatrex was not a major concern because the effective control of wild proso millet in several treatments (see treatment #'s 10, 12, 17, 18, 19; Table 1) promoted high yields. Further evidence of a lack of significant injury to corn from Tandem at Scoggin's farm is found in comparing treatments of Surpass (#13), Eradicane-Extra (#14), and Eradicane (#15) with the same treatments but with Tandem + Aatrex added (treatment #'s 17, 18, 19). The treatments with Tandem tended to have a higher yield, likely due to improved control of millet with only minor injury from the Tandem.

Corn injury was less at the Bartosz site which may be attributed to a soil with a higher clay and organic matter content than at the Scoggin location (Table 2). The high corn injury ratings shown in later evaluations at both sites were the result of competitive effects of the millet, which were evaluated visually as percent reductions in corn biomass production.

Although injury from Tandem was minor in these cases, further testing on other soil types and environments will help determine if unacceptable injury is likely to occur.

Sweet corn yield. The competitive effects of the millet are evident when reviewing the yield data shown in Tables 3 and 4. The number of ears produced, ear quality, and tip fill were severely reduced without millet control, resulting in overall yield reductions of 70 to 80%. This again reinforces the need for millet control and the justification of the increased cost of higher herbicide rates.

Prowl and Lasso with the Tandem + Aatrex treatment resulted in satisfactory yields as did Eradicane, Eradicane-Extra, and Surpass with or without Tandem + Aatrex. There were no important differences in ear quality or tip fill in any of these treatments.

CONCLUSIONS

At this time growers may be able to obtain good control of wild proso millet with surpass, provided it does not break down rapidly. Rapid breakdown is more likely in fields where repeated use of thiocarbamate herbicides such as Surpass and Eptam has occurred. When and if Tandem plus atrazine is registered for use on sweet corn it should be applied with Surpass, Lasso, or Prowl applications, which are currently registered in sweet corn. To date, Tandem, .75 lb ai/A, + Aatrex, 1.5 lb ai/A, with crop oil applied early in the season with Surpass (6.14 lb ai/A) applied pre-plant incorporated is the best combination. If a registration is obtained for Eradicane or Eradicane-Extra on sweet corn, these would be other good options to be used with Tandem + Aatrex. Further research is needed to identify timing of both Tandem and Aatrex applications in order to maximize weed control and minimize the amount of herbicide applications.

Table 1. Visual ratings of sweetcorn injury and wild proso millet control from the field trial conducted on the Scoggins farm, 1987.

TRT. NO.	TRADE NAME	RATE (LBai/A)	APPLI- CATION 1/ TIMING	WILD PROSO MILLET					SWEET CORN				
				-----% CONTROL-----					-----% INJURY-----				
				WEEK OF SEASON 2/-----									
				2	4	7	9	13	2	4	7	9	13
01	AATREX	1.5	PRE	9	16	0	5	14	0	0	0	31	51
02	AATREX CROP OIL 3/	1.5 4.00	POST POST	6	25	5	0	18	4	4	0	41	53
03	AATREX TANDEM AATREX CROP OIL	1.5 0.75 1.5 4.00	PRE POST POST POST	10	78	61	40	48	0	19	0	15	20
04	AATREX TANDEM AATREX CROP OIL	1.0 0.75 1.0 4.00	PRE POST POST POST	3	70	50	30	43	3	16	0	18	28
05	AATREX TANDEM	1.5 0.75	PRE PRE	89	83	68	58	63	14	6	0	8	8
06	TANDEM AATREX CROP OIL	0.38 1.50 4.00	POST POST POST	13	63	40	26	39	3	17	1	25	29
07	TANDEM AATREX CROP OIL	0.75 1.5 4.00	POST POST POST	0	73	64	35	49	5	16	0	16	19
08	TANDEM AATREX CROP OIL	0.75 2.00 4.00	POST POST POST	0	74	54	31	48	0	24	0	20	13
09	PROWL AATREX	1.50 1.50	PRE PRE	81	69	51	39	39	20	3	0	10	18
10	PROWL TANDEM AATREX CROP OIL	2.00 0.75 1.00 4.00	PRE POST POST POST	78	89	81	75	84	6	19	0	3	0
11	PROWL TANDEM AATREX CROP OIL	2.00 0.75 1.00 4.00	POST POST POST POST	3	78	56	43	58	4	23	0	13	18

Table 1 continued.

TRT. NO.	TRADE NAME	RATE (Lb ai/A)	APPLI- CATION TIMING	WILD PROSO MILLET					SWEET CORN					
				-----% CONTROL-----					-----% INJURY-----					
				-----WEEK OF SEASON 2/-----					2	4	7	9	13	2
12	LASSO	4.00	PRE	84	96	92	87	91	0	14	1	3	0	
	TANDEM	0.75	POST											
	AATREX	1.00	POST											
	CROP OIL 3/	4.00	POST											
13	SURPASS	6.14	PPI	81	97	94	92	97	3	5	0	0	0	
	AATREX	1.50	PPI											
14	ERADICANE-EX	4.00	PPI	68	89	79	74	69	1	1	0	6	11	
	AATREX	1.50	PPI											
15	ERADICANE	4.00	PPI	78	95	89	58	80	3	0	0	3	1	
	AATREX	1.50	PPI											
16	ERADICANE	4.00	PPI	69	95	87	81	90	3	5	0	0	0	
	AATREX	1.50	PPI											
	DUAL	2.00	POST											
17	SURPASS	6.14	PPI	93	100	100	100	100	4	18	2	0	0	
	TANDEM	0.75	POST											
	AATREX	1.50	POST											
	CROP OIL	4.00	POST											
18	ERADICANE-EX	4.00	PPI	55	97	97	98	99	9	14	1	0	0	
	TANDEM	0.75	POST											
	AATREX	1.50	POST											
	CROP OIL	4.00	POST											
19	ERADICANE	4.00	PPI	78	100	99	99	99	3	21	0	0	0	
	TANDEM	0.75	POST											
	AATREX	1.50	POST											
	CROP OIL	4.00	POST											
20	CHECK			3	5	0	0	0	3	0	0	50	80	
	LSD(0.05) =			15	11	14	21	18	10	8	1	10	18	
	STANDARD DEVIATION =			10	8	10	15	12	7	6	1	7	13	
	COEFF. OF VARIABILITY =			23	11	15	27	20	60	52	388	53	73	

1/ PPI = pre-plant incorporated treatments applied just prior to planting, 5/18/87.
 PRE = pre-emergence treatments applied prior emergence of the corn and wild proso millet, 5/18/87.

POST = post-emergence treatments applied when wild proso millet at the 1-3 leaf stage, 6/6/87.

2/ Evaluations were recorded on June 6, June 17, July 9, July 22, and August 18.

3/ Crop oil concentration 4.0% by volume.

Table 2. Visual ratings of sweet corn injury and wild proso millet control from the field trial conducted on the Bartosz farm, 1987.

TRT. NO.	TRADE NAME	RATE (LBai/A)	APPLI- CATION TYPE ^{1/}	WILD PROSO MILLET				SWEET CORN INJURY			
				-----% CONTROL-----				-----% CONTROL-----			
				-----WEEK		OF SEASON ^{2/}		-----WEEK		OF SEASON ^{2/}	
2	4	6	15	2	4	6	15				
01	AATREX	1.50	PRE	0	1	0	16	0	0	0	41
02	AATREX CROP OIL ^{3/}	1.50 4.00	POST POST	0	18	5	19	0	0	0	44
03	AATREX TANDEM AATREX CROP OIL	1.50 0.75 1.50 4.00	PRE POST POST POST	0	88	72	54	0	2	3	9
04	AATREX TANDEM AATREX CROP OIL	1.00 0.75 1.00 4.00	PRE POST POST POST	0	72	52	34	0	3	1	15
05	AATREX TANDEM	1.50 0.75	PRE PRE	0	0	0	4	0	0	0	51
06	TANDEM AATREX CROP OIL	0.38 1.50 4.00	POST POST POST	0	64	36	28	0	0	0	23
07	TANDEM AATREX CROP OIL	0.75 1.50 4.00	POST POST POST	0	71	51	41	0	3	6	23
08	TANDEM AATREX CROP OIL	0.75 2.00 4.00	POST POST POST	0	91	67	54	0	6	5	8
09	PROWL AATREX	1.50 1.50	PRE PRE	69	66	28	45	0	0	0	14
10	PROWL TANDEM AATREX CROP OIL	2.00 0.75 1.00 4.00	PRE POST POST POST	78	97	94	96	0	2	3	0
11	PROWL TANDEM AATREX CROP OIL	2.00 0.75 1.00 4.00	POST POST POST POST	0	92	79	64	0	10	6	7

Table 2 continued.

TRT. NO.	TRADE NAME	RATE (Lb/A)	APPLI- CATION TYPE	WILD PROSO MILLET -----% CONTROL-----				SWEET CORN INJURY -----% CONTROL-----			
				1/	2	4	6	15	2	4	6
12	LASSO	4.00	PRE	94	99	98	98	0	5	4	0
	TANDEM	0.75	POST								
	AATREX	1.00	POST								
	CROP OIL 3/	4.00	POST								
13	SURPASS	6.14	PPI	99	98	93	96	0	0	1	0
	AATREX	1.50	PPI								
14	ERADICANE-EX	4.00	PPI	96	92	66	59	1	0	0	8
	AATREX	1.50	PPI								
15	ERADICANE	4.00	PPI	94	81	65	54	0	0	1	6
	AATREX	1.50	PPI								
16	ERADICANE	4.00	PPI	98	93	84	88	0	0	3	3
	AATREX	1.50	PPI								
	DUAL	2.00	POST								
17	SURPASS	6.14	PPI	98	100	98	99	0	8	6	0
	TANDEM	0.75	POST								
	AATREX	1.50	POST								
	CROP OIL	4.00	POST								
18	ERADICANE-EX	4.00	PPI	97	100	98	98	0	0	3	0
	TANDEM	0.75	POST								
	AATREX	1.50	POST								
	CROP OIL	4.00	POST								
19	ERADICANE	4.00	PPI	95	99	96	96	0	3	6	1
	TANDEM	0.75	POST								
	AATREX	1.50	POST								
	CROP OIL	4.00	POST								
20	CHECK			0	6	0	6	0	0	0	55
LSD(0.05) =				7	13	18	25	0	6	5	17
STANDARD DEVIATION =				5	9	13	17	0	4	3	12
COEFF. OF VARIABILITY =				10	13	22	30	894	207	143	76

1/ PPI = pre-plant incorporated treatments applied just prior to planting, 6/8/87.
 PRE = pre-emergence treatments applied prior to the emergence of the corn and wild proso millet, 6/8/87.

POST = post-emergence treatments applied when the wild proso millet was at the 1-3 leaf stage, 6/22/87.

2/ Evaluations were recorded on June 22, July 7, July 20 and September 22.
 3/ Crop oil concentrations were 4% by volume.

Table 3. Total weight, ear number, ear quality, and tipfill of sweet corn when treated with various combinations of herbicides, Scoggins site. (Harvested 9/16/87)

TRT. NO.	TRADE NAME	RATE LBai/A	APPLI-CATION TYPE 1/	YIELD (T/A)	EAR NUMBER (#/A)	EAR QUAL (1-5)	EAR TIPFILL (1-5)
01	AATREX	1.50	PRE	2.3	10000	1.3	1.3
02	AATREX CROP OIL 2/	1.50 4.00	POST POST	2.3	10900	1.4	1.0
03	AATREX TANDEM AATREX CROP OIL	1.50 0.75 1.50 4.00	PRE POST POST POST	8.4	24500	3.0	2.8
04	AATREX TANDEM AATREX CROP OIL	1.00 0.75 1.00 4.00	PRE POST POST POST	6.3	20900	2.8	2.3
05	AATREX TANDEM	1.50 0.75	PRE PRE	8.3	23600	3.9	3.5
06	TANDEM AATREX CROP OIL	0.38 1.50 4.00	POST POST POST	6.0	20900	2.5	1.8
07	TANDEM AATREX CROP OIL	0.75 1.50 4.00	POST POST POST	7.7	22700	2.6	3.0
08	TANDEM AATREX CROP OIL	0.75 2.00 4.00	POST POST POST	7.8	24500	3.0	2.0
09	PROWL AATREX	1.50 1.50	PRE PRE	6.9	20900	2.9	1.9
10	PROWL TANDEM AATREX CROP OIL	2.00 0.75 1.00 4.00	PRE POST POST POST	11.2	32700	4.4	3.5
11	PROWL TANDEM AATREX CROP OIL	2.00 0.75 1.00 4.00	POST POST POST POST	7.7	22700	3.6	2.9

Table 3 continued.

TRT. NO.	TRADE NAME	RATE LBai/A	APPLI-CATION TYPE 1/	YIELD (T/A)	EAR NUMBER (#/A)	EAR QUAL (1-5)	EAR TIPFILL (1-5)
12	LASSO TANDEM AATREX CROP OIL 2/	4.00 0.75 1.00 4.00	PRE POST POST POST	12.0	31800	3.9	3.9
13	SURPASS AATREX	6.14 1.50	PPI PPI	7.9	23600	3.1	2.9
14	ERADADICANE-EX AATREX	4.00 1.50	PPI PPI	10.7	30000	3.8	3.1
15	ERADICANE AATREX	4.00 1.50	PPI PPI	11.9	33600	4.6	3.8
16	ERADICANE AATREX DUAL	4.00 1.50 2.00	PPI PPI POST	12.2	32700	4.8	3.9
17	SURPASS TANDEM AATREX CROP OIL	6.14 0.75 1.50 4.00	PPI POST POST POST	11.7	30900	4.3	3.4
18	ERADADICANE-EX TANDEM AATREX CROP OIL	4.00 0.75 1.50 4.00	PPI POST POST POST	11.7	35400	4.0	3.3
19	ERADICANE TANDEM AATREX CROP OIL	4.00 0.75 1.50 4.00	PPI POST POST POST	13.2	35400	4.9	3.9
20	CHECK			4.6	16300	2.4	1.9
LSD(0.05) =				3.4	8100	1.5	1.1
STANDARD DEVIATION =				2.4	5400	1.0	.8
COEFF. OF VARIABILITY =				27.9	22	30.5	27.6

1/ PPI = pre-plant incorporated treatments applied just prior to planting, 5/18/87.
 PRE = pre-emergence treatments applied prior to emergence of the corn and wild proso millet, 5/18/87.
 POST = post-emergence treatments applied when wild proso millet at the 1-3 leaf stage, 6/6/87.

2/ Crop oil concentration 4% by volume.

Table 4. Total yield, ear number, ear quality, and tipfill of sweet corn when treated with various combinations of herbicides, Bartosz site. (Harvested 9/29/87)

TRT. NO.	TRADE NAME	RATE LBai/A	APPLI-CATION TYPE 1/	TOTAL YIELD (T/A)	EAR NUMBER (#/A)	EAR QUAL (1-5)	EAR TIPFILL (1-5)
01	AATREX	1.50	PRE	3.6	24500	1.1	1.3
02	AATREX CROP OIL 2/	1.50 4.00	POST POST	4.1	22700	1.8	1.1
03	AATREX TANDEM AATREX CROP OIL	1.50 0.75 1.50 4.00	PRE POST POST POST	9.5	34500	3.6	2.0
04	AATREX TANDEM AATREX CROP OIL	1.00 0.75 1.00 4.00	PRE POST POST POST	8.6	31800	2.6	1.9
05	AATREX TANDEM	1.50 0.75	PRE PRE	3.6	22700	1.3	1.0
06	TANDEM AATREX CROP OIL	0.38 1.50 4.00	POST POST POST	6.4	28200	2.1	1.3
07	TANDEM AATREX CROP OIL	0.75 1.5 4.00	POST POST POST	7.7	29100	2.9	1.9
08	TANDEM AATREX CROP OIL	0.75 2.00 4.00	POST POST POST	9.5	32700	3.3	2.1
09	PROWL AATREX	1.50 1.50	PRE PRE	9.1	33600	2.6	2.0
10	PROWL TANDEM AATREX CROP OIL	2.00 0.75 1.00 4.00	PRE POST POST POST	16.4	49100	4.4	3.6
11	PROWL TANDEM AATREX CROP OIL	2.00 0.75 1.00 4.00	POST POST POST POST	10.4	30900	4.3	3.3

Table 4. continued.

TRT. NO.	TRADE NAME	RATE LBai/A	APPLI-CATION TYPE 1/	TOTAL YIELD (T/A)	EAR NUMBER (#/A)	EAR QUAL (1-5)	EAR TIPFILL (1-5)
12	LASSO	4.00	PRE	14.5	42700	4.4	3.3
	TANDEM	0.75	POST				
	AATREX	1.00	POST				
	CROP OIL 2/	4.00	POST				
13	SURPASS	6.14	PPI	15.4	49000	4.4	3.5
	AATREX	1.50	PPI				
14	ERADADICANE-EX	4.00	PPI	10.0	31800	3.9	3.0
	AATREX	1.50	PPI				
15	ERADICANE	4.00	PPI	10.0	31800	3.3	2.1
	AATREX	1.50	PPI				
16	ERADICANE	4.00	PPI	11.8	37300	4.3	3.3
	AATREX	1.50	PPI				
	DUAL	2.00	POST				
17	SURPASS	6.14	PPI	13.6	43600	4.5	4.0
	TANDEM	0.75	POST				
	AATREX	1.50	POST				
	CROP OIL	4.00	POST				
18	ERADADICANE-EX	4.00	PPI	14.1	44500	4.3	3.5
	TANDEM	0.75	POST				
	AATREX	1.50	POST				
	CROP OIL	4.00	POST				
19	ERADICANE	4.00	PPI	14.5	43600	4.8	4.0
	TANDEM	0.75	POST				
	AATREX	1.50	POST				
	CROP OIL	4.00	POST				
20	CHECK			3.6	21800	1.1	1.0
	LSD(0.05) =			2.7	8	.9	1.1
	STANDARD DEVIATION =			1.8	5	.6	.7
	COEFF. OF VARIABILITY =			18.0	14	18.5	29.8

1/ PPI = pre-plant incorporated treatments applied just prior to planting, 6/8/87.
 PRE = pre-emergence treatments applied prior to the emergence of the corn and wild proso millet, 6/8/87.
 POST = post-emergence treatments applied when wild proso millet at the 1-3 leaf stage, 6/22/87.

2/ Crop oil concentrations 4% by volume.