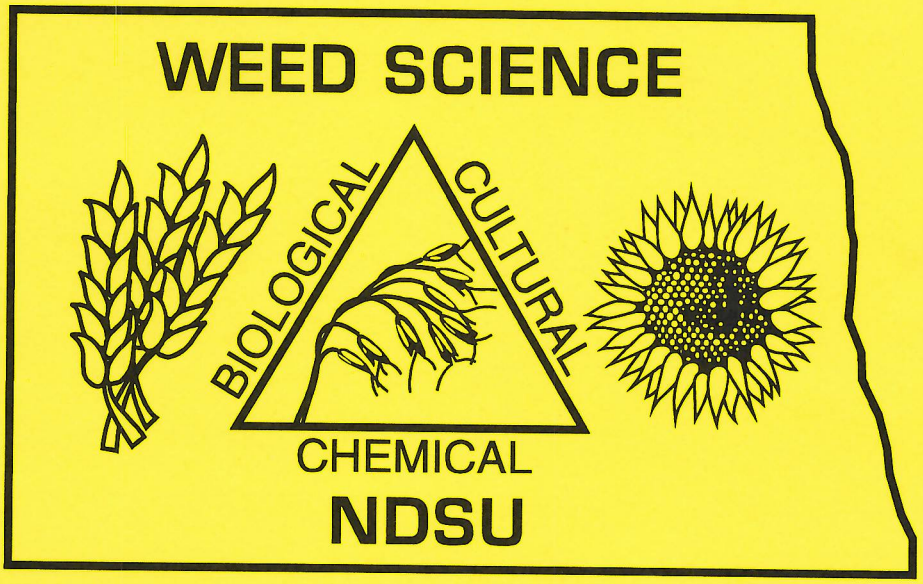
2001
NORTH DAKOTA
Weed Control Research



Weed Research Projects, Department of Plant Sciences
NORTH DAKOTA STATE UNIVERSITY
Fargo, N.D. 58105

NOT FOR PUBLICATION

SUMMARY OF 2001
WEED CONTROL EXPERIMENTS

Plant Sciences Department
North Dakota State University
Fargo, North Dakota

M.J. Christoffers
A. G. Dexter
K. A. Howatt
B. M. Jenks
G. O. Kegode
R. G. Lym
C. G. Messersmith
R. K. Zollinger

Research Scientists

M. Lemma
E. F. Szelezniak
V. Nandula
Z. Woznica
B. K. Ramsdale

Research Specialists/Technicians

M. G. Ciernia
S. F. Mark
K. M. Christianson
J. L. Ries
J. D. Harrington
R. F. Roach
J. L. Luecke

Graduate Research Assistants

M.G. Carlson
S. J. Lockart
S. M. Oltmans
T. R. Wehking
K. J. Deibert
K. J. Mahoney
I. Rothe
A. M. Erickson
E . A. Nelson
D. L. Vincent
B. E. Fronning
J. O'Barr
R. J. Walker II

Experiments conducted in cooperation with:
Tom Teigen, Agronomy Seed Farm at Casselton and Prosper
Greg Endres, Carrington Research Extension Center
Paul Hendrickson, Carrington Research Extension Center
Blain Schatz, Carrington Research Center
Steve Zwinger, Carrington Research Center
Frank Manthey, Cereal Science
Eric Eriksmoen, Hettinger Research Extension Center
John Lukach, Langdon Research Center
Terry Gregoire, NDSU Extension Service
Ken Grafton, Plant Sciences Department
Burton Johnson, Plant Sciences Department
Dwain Meyer, Plant Sciences Department
Paula Peterson, Plant Sciences Department
Mark Bredehoeft, Southern Minnesota Beet Sugar Cooperative
Brad Brummond, Walsh County Extension Service
Neil Riveland, Williston Research Center

Table of Contents

White Section: **Experiment titles, climatic, edaphic and general information.**

Gold Section: **Sugarbeet Weed Control**

Green section: **Weed Control in Small Grains** Page

Green section: **Weed Control in Small Grains** continued ..... Page

Cream section: **Application Technology** continued

Blue Section: **Weed Control in Corn and Soybean**

Blue Section: **Weed Control in Corn and Soybean** continued

Yellow section: **Weed Control in Canola, Chickpea, Dry Edible Bean, Fallow, Field pea, Flax, Onion, Potato, Safflower, Sunflower, and Juneberry.** Page

Yellow section: **Weed Control in Canola, Chickpea, Dry Edible Bean, Fallow, Field pea, Flax, Onion, Potato, Safflower, Sunflower, and Juneberry** continued

Yellow section: **Weed Control in Canola, Chickpea, Dry Edible Bean, Fallow, Field pea, Flax, Onion, Potato, Safflower, Sunflower, and Juneberry** continued

CLIMATIC DATA, 2001 BRECKENRIDGE, MN																		
	Precipitation						April		May		June		July		August		Sept	
Date	April	May	June	July	August	Sept	Max	Min	Max	Min	Max	Min	Max	Min	Max	Min	Max	Min
1	0	0	0.40	0	0	0	36	23	74	52	60	51	68	58	94	69	76	45
2	0	0	0.06	0.11	0	0.43	38	26	74	41	67	49	76	46	83	62	77	60
3	0	0	0	0	0	0	43	24	67	46	66	50	74	53	87	65	86	49
4	0	0	0	0	0	0	44	33	71	44	68	50	85	53	91	70	77	49
5	0	0	0.05	0	0	0	42	35	70	48	68	50	76	51	94	75	84	59
6	0.18	0.32	0	0	0	0	42	31	67	49	65	50	76	55	95	71	91	67
7	0.31	0.41	0.12	0	0	0.93	48	31	57	37	71	55	88	63	92	71	84	64
8	0.07	0	0.10	0	0	1.03	40	37	55	41	80	56	88	64	94	75	61	48
9	0	0	0	0	0.25	0	47	33	62	45	78	60	91	63	95	62	65	52
10	0.81	0	0.44	0	0	0.03	45	36	81	48	82	58	89	65	72	50	70	44
11	0	0	0.40	0	0	0	53	38	67	40	71	62	80	60	75	53	69	44
12	0	0	0.21	0	0	0	44	34	66	42	77	52	82	62	82	55	77	52
13	0	0	0	0	0	0	49	31	75	51	72	60	85	64	81	50	68	44
14	0	0	0.15	0	0	0	53	32	82	56	66	60	87	69	77	50	66	46
15	0	0	0.06	0	0.06	0.67	61	42	93	60	68	53	88	68	83	62	54	49
16	0.64	0	0.20	0.58	0	0	35	21	93	50	68	51	85	68	80	55	55	52
17	0.06	0	0	0.04	0	0	38	21	75	53	69	53	81	68	76	57	57	51
18	0	0	1.24	0.10	0.17	0	44	23	73	49	76	57	92	68	85	55	62	54
19	0	0	0	0.36	0	0	62	35	77	49	73	47	93	64	75	57	66	51
20	0	0	0.30	0.04	0	0	62	45	83	50	75	51	89	64	81	57	71	53
21	0.24	0.27	0	0.38	0	0.28	61	34	75	42	69	50	85	65	81	64	59	47
22	0	0.05	0	0	0	0	36	29	49	41	73	50	87	68	85	64	67	46
23	0	0.13	0	0.03	0	0.11	36	29	47	36	83	59	90	70	89	65	65	45
24	0	0.23	0.02	0	0	0	46	32	52	38	89	61	83	62	90	64	55	35
25	0	0	0	0	0	0	61	32	67	46	95	67	76	57	86	59	61	36
26	0	0.18	0	0	0	0	74	44	72	48	83	71	83	60	86	60	64	41
27	0	0.68	0	0	0.83	0	69	44	66	52	90	70	81	65	83	54	72	41
28	0	0.07	0	1.25	0	0	74	48	62	49	89	72	73	63	87	55	76	46
29	0	0	0.03	0	0.03	0	80	56	73	51	88	69	79	64	84	54	74	48
30	0	0	0	0	0.07	0	83	61	76	53	76	63	84	67	83	53	68	53
31		0.05		0.10	0				72	55			90	73	75	46		
Total/Avg	2.31	2.39	3.78	2.99	1.41	3.48	48	33	68	46	70	53	81	61	82	58	65	46

CLIMATIC DATA, 2001 CANDO																			
	Precipitation						April		May		June		July		August		Sept	
Date	April	May	June	July	August	Sept	Max	Min	Max	Min	Max	Min	Max	Min	Max	Min	Max	Min
1	0	0.05	0.19	0	0	0	35	23	65	44	64	46	66	42	77	58	90	55
2	0	0	0	0.01	0.26	0	40	24	66	41	70	45	81	54	79	52	82	53
3	0	0	0	0	0	0	38	30	65	38	69	48	81	56	91	64	79	45
4	0.57	0	0	0	0	0	36	33	68	39	72	46	73	51	93	74	90	52
5	0	0.37	0	0	0	0	48	33	63	41	60	51	76	46	91	66	101	60
6	0	0.31	0.13	0.05	0	0.07	57	30	55	45	61	52	82	55	93	59	76	56
7	0	0	0	0	0.01	0	41	36	48	42	77	49	84	53	94	67	63	50
8	0	0	0E	0	0.66	0	47	33	65	36	81	53	89	54	92	62	66	42
9	0.07	0	0.46	0	0	0.03	39	34	77	47	85	52	88	62	69	50	66	37
10	0.01	0	0	0	0	0	44	33	58	39	82	54	78	56	74	48	64	36
11	0	0	0.72	0.04	0	0	46	33	64	34	72	54	70	59	85	48	71	43
12	0	0	0.33	0.01	0	0	49	34	76	46	71	48	79	60	72	53	62	43
13	0.50	0	0.37	0.47	0	0	39	33	80	54	65	53	85	62	83	50	61	40
14	0	0	0.43	0	0.01	0	51	25	90	57	57	54	82	62	89	62	62	44
15	0.03	0	0.12	0.05	0	0	28	18	73	51	64	49	82	63	72	51	56	38
16	0	0.28	0.07	1.61	0	0	34	19	76	46	66	48	81	66	79	47	59	44
17	0	0	0.25	0.01	0	0	44	23	72	48	70	47	86	64	77	52	65	39
18	0	0	0.87	0	0	0	63	34	78	45	60	48	85	66	73	50	70	44
19	0.01	0.10	0	0	0	0	68	38	75	53	70	46	87	66	78	51	71	47
20	0.66	0.03	0.34	0.11	0	0.03	52	38	63	48	64	49	86	65	85	57	68	51
21	0	0	0	0.15	0	0	38	25	58	43	73	46	87	66	87	62	69	42
22	0	0	0	0.09	0	0.10	36	28	54	37	75	51	83	66	88	59	56	36
23	0	0.13	0	0	0	0	57	29	48	41	89	57	77	55	87	61	53	31
24	0	0	0	0	0.22	0	65	32	58	41	86	63	73	51	91	66	61	29
25	0	0	0.01	0	0.01	0	78	40	68	40	86	63	76	53	84	55	68	35
26	0	0	0	0.05	0	0	69	40	76	47	75	57	74	63	83	52	70	38
27	0	0	0	0.96	0	0	68	47	70	51	77	60	71	58	83	50	76	40
28	0	0	0.03	0	0	0	78	51	72	47	80	65	80	55	87	53	78	46
29	0	0	0	0	0	0	80	49	74	48	84	60	83	60	77	54	78	53
30	0	0.13	0.01	0	0	0	72	40	64	53	63	46	84	55	68	48	72	37
31		0.01		0.11	0				74	43			73	62	70	38		
Total/Avg	1.85	1.41	4.33	3.72	1.17	0.23	51	33	68	45	72	52	80	58	82	55	70	44

CLIMATIC DATA, 2001 CARRINGTON																			
	Precipitation						April		May		June		July		August		Sept	
Date	April	May	June	July	August	Sept	Max	Min	Max	Min	Max	Min	Max	Min	Max	Min	Max	Min
1	0E	0	0.01	0	0	0.22	42	24	67	50	63	43	65	39	76	58	89	56
2	0E	0	0	0.09	0	0	41	25	67	38	71	43	80	54	83	55	82	50
3	0E	0	0	0	0	0	38	32	63	37	68	50	78	54	94	64	79	43
4	0.21E	0	0	0	0	0	37	33	69	35	69	48	73	51	93	71	86	56
5	0	0.34	0.27	0	0	0	51	32	58	38	58	50	78	49	91	66	98	62
6	0.01	0.80	0.39	0.06	0	0.24	56	30	55	43	58	51	80	57	92	60	78	57
7	0.20	0.02	0.01	0	0.23	0	41	36	51	41	74	48	85	51	96	69	62	52
8	0	0	0	0	0.01	0.09	50	31	66	37	81	55	88	55	90	64	66	44
9	0.18	0	0.59	0	0	0.04	40	33	80	47	84	51	87	61	70	50	67	42
10	0.07	0	0	0	0	0	47	33	61	40	82	56	79	57	76	46	70	41
11	0.01	0	0.38	0.11	0	0	42	29	64	33	72	54	68	59	84	55	73	44
12	0	0	0.51	0.01	0	0	49	32	78	47	71	50	80	60	71	54	63	40
13	0.10	0	0.72	0.83	0	0	43	32	83	48	65	53	84	62	82	53	60	38
14	0	0	0.56	0	0.44	0.03	55	32	84	58	59	55	79	65	88	56	55	48
15	0	0	0.31	0.19	0	0	41	20	78	52	67	50	78	61	73	53	54	48
16	0	0.27	0	0.08	0	0	35	19	78	47	67	50	84	66	79	48	58	50
17	0	0	0.14	0.33	0	0	46	20	71	48	69	47	88	66	81	54	65	42
18	0	0	0.73	0.26	0	0	66	32	80	46	61	47	86	66	72	49	64	44
19	0	0.02	0	0	0	0.01	67	35	78	53	70	47	86	65	77	49	72	48
20	0	0.45	0	0.11	0	0.13	53	39	63	47	67	48	85	64	82	57	65	53
21	0	0	0	0.72	0	0	39	27	58	43	72	42	86	64	84	62	70	45
22	0	0.01	0	1.40	0	0.01	34	26	57	36	75	49	83	64	87	58	66	42
23	0	0.13	0	0	0	0	55	29	52	40	87	60	78	58	87	60	55	32
24	0	0	0	0	0.35	0	67	31	57	40	87	66	71	54	88	66	62	29
25	0	0	0.05	0.02	0.06	0	78	39	69	38	88	66	74	53	84	59	69	38
26	0	0	0	0.04	0.07	0	69	39	75	47	77	59	77	64	84	53	72	36
27	0	0	0	0.89	0	0	74	44	74	48	88	62	74	58	82	50	77	40
28	0	0	0.11	0	0	0	83	49	71	47	80	66	78	52	86	53	79	47
29	0	0	0	0	0	0	84	47	73	49	82	62	83	60	80	56	79	53
30	0	0.06	0.02	0	0	0	74	41	63	52	65	45	82	56	71	50	72	45
31		0.01		0.80	0				76	49			79	66	70	39		
Total/Avg	0.78	2.11	4.80	5.94	1.16	0.77	53	32	68	44	73	52	80	58	82	56	70	45

CLIMATIC DATA, 2001 Casselton

	Precipitation						April		May		June		July		August		Sept	
Date	April	May	June	July	August	Sept	Max	Min	Max	Min	Max	Min	Max	Min	Max	Min	Max	Min
1	0	0	0.44	0	0.08	0	37	27	76	51	75	50	68	41	93	66	74	55
2	0	0	0.10	0.18	0	0	43	27	71	41	61	50	71	42	80	58	87	44
3	0	0	0	0	0	0	43	31	69	41	73	48	75	55	86	64	88	49
4	.001	0	0	0	0	0	44	31	68	42	71	49	84	56	93	82	85	50
5	0	0	0.07	0	0	0	41	35	71	43	73	51	77	49	94	82	85	53
6	1.70	0.80	0.03	0.28	0	0	53	31	56	49	73	49	79	59	96	66	96	65
7	0.10	1.81	0.21	0	0	1.75	47	33	66	42	65	51	82	58	94	66	88	57
8	T	0	0	0	0	0	41	35	52	41	76	51	87	61	95	69	68	47
9	0	0	0.03	0	1.12	0.001	46	36	66	41	83	53	90	67	92	59	68	43
10	0	0	0.33	0	0	0.07	46	36	82	41	82	57	91	61	73	49	72	43
11	0	0	0	0	0	0	47	37	63	68	85	62	81	57	76	53	72	45
12	0.41	0	1.04	0	0	0	43	37	65	45	80	53	78	59	81	49	76	46
13	0	0	0.10	0	0	0	53	32	76	45	80	57	85	60	73	47	65	45
14	0	0	1.35	0	0	0.08	52	37	82	60	71	57	89	60	76	55	64	49
15	0	0	0.35	0	0.35	0.3	61	25	89	54	64	54	82	64	84	56	54	52
16	T	0	0.01	0.01	0	0	33	21	87	50	70	52	89	60	84	56	56	56
17	0	0	0.09	0.03	0	0.05	41	25	78	52	70	53	81	66	78	55	59	60
18	0	0	0.05	0.36	0.01	0	48	25	74	48	71	53	96	66	84	55	66	50
19	0	0.21	0.12	0.13	0	0.1	65	34	82	54	68	48	91	67	73	52	65	50
20	T	0	0	0.60	0	0.11	62	40	81	54	74	49	88	68	80	52	71	49
21	0	0.51	0.10	0.70	0	0.49	62	31	64	44	74	48	91	67	83	58	63	49
22	0	0.07	0	1.40	0	0.12	35	28	52	42	73	49	86	65	84	61	68	37
23	0.42	0.08	0	0	0	0	33	29	52	39	75	56	88	65	86	60	69	32
24	0	0.10	0.10	0	0	0	54	33	52	39	88	66	84	55	90	63	54	33
25	0	0	0	0	0.05	0	62	36	66	45	88	66	78	54	86	63	59	34
26	0	0	0	0.10	0.73	0	75	42	73	53	93	64	84	55	85	60	66	37
27	0	0.25	0	0.08	0	0	75	40	71	52	85	64	78	58	86	54	72	37
28	0	0	0	0.23	0	0	72	47	64	48	92	71	78	63	82	53	77	38
29	0	0	0.08	0	0	0	79	55	74	50	90	69	79	63	84	57	75	42
30	0	0	0	0.10	0.06	0	82	49	77	50	90	63	83	66	82	56	79	50
31	0	0.08		0.36	0				73	56			90	66	74	44		
Total/Avg	2.63	3.91	4.60	4.56	2.40	3.07	53	34	70	47	77	55	83	60	84	58	71	46

CLIMATIC DATA, 2001 CROOKSTON																		
	Precipitation						April		May		June		July		August		Sept	
Date	April	May	June	July	August	Sept	Max	Min	Max	Min	Max	Min	Max	Min	Max	Min	Max	Min
1	0.01	0	0.47	0	2.31	0	33	28	74	54	75	48	67	40	78	67	70	44
2	0	0	0.02	0	0	0	33	27	68	41	61	50	69	49	80	58	81	62
3	0	0	0	0.16	0	0	44	29	68	40	70	48	62	54	84	64	91	46
4	0.05	0	0	0	0	0	47	33	65	39	68	46	80	51	93	69	80	52
5	0	0	0	0	0	0	43	35	70	45	70	51	73	45	95	76	87	58
6	0	0.30	0.15	0	0	1.10	43	32	61	48	63	53	74	58	96	64	95	71
7	0.95	0.33	0	0.06	0.40	0.52	55	33	63	43	67	56	86	54	93	69	89	59
8	0	0	0	0	0.05	0	39	33	54	41	74	55	82	60	96	70	68	50
9	0	0	0	0	1.15	0.10	46	35	61	44	81	54	87	65	87	59	66	47
10	0.09	0	0	0	0	0	44	36	81	42	83	60	88	56	71	49	71	44
11	0.05	0	0	0	0.05	0	42	37	60	37	84	65	79	55	77	55	70	47
12	0.07	0.04	0.13	0	0	0	45	38	64	47	76	50	76	58	84	52	72	50
13	0	0	0.23	0	0	0	48	31	76	48	77	57	83	57	72	46	63	40
14	0	0	0.15	0.65	0.50	0	46	30	83	59	70	57	85	65	79	54	62	42
15	0.02	0	0.05	0	0	0	58	21	82	55	65	55	85	65	89	62	60	44
16	0.09	0.15	0	0	0	0	28	20	87	50	68	48	83	70	74	53	58	49
17	0	0	0	0.03	0.12	0	36	26	81	53	66	51	80	66	78	55	61	53
18	0	0	0	0	0	0	43	30	72	50	73	57	88	65	82	53	71	52
19	0	0	0.30	0.05	0	0	58	38	81	49	72	46	90	64	71	54	71	52
20	0.04	0	0.13	1.07	0	0.52	68	46	79	59	72	48	89	67	82	59	72	54
21	0	0	0	0.20	0	0	55	30	65	43	63	42	87	68	83	63	61	49
22	0.02	0.02	0	0.15	0	0.31	31	28	51	42	71	48	85	66	84	61	65	51
23	0	0.30	0	0.50	0	0	35	31	45	39	73	59	85	64	85	59	58	36
24	0	0.25	0	0	0	0	51	32	51	40	82	65	84	54	86	62	55	33
25	0	0	0	0	0	0	62	40	68	44	85	70	74	52	88	64	59	37
26	0	0	0	0	0.12	0	76	45	71	50	88	60	79	61	85	60	65	37
27	0	0.01	0	0	0.11	0	64	41	74	56	81	63	77	62	84	52	73	39
28	0	0.53	0	0.42	0	0	67	52	65	45	88	69	71	61	81	50	76	41
29	0.30	0	0	0	0	0	76	61	73	50	88	66	80	56	84	57	74	51
30	0	0	0	0.24	0	0	82	49	72	54	86	58	82	64	85	55	78	50
31		0		0.	0				74	56			88	67	70	39		
Total/Avg	1.69	1.93	1.63	3.53	4.81	2.55	47	33	67	46	70	52	78	57	81	57	66	45

ΔX

CLIMATIC DATA, 2001 Dazey (Oriska)																			
	Precipitation						April		May		June		July		August		Sept	
Date	April	May	June	July	August	Sept	Max	Min	Max	Min	Max	Min	Max	Min	Max	Min	Max	Min
1	0	0.01	0.19	0	0	0.07	43	24	68	53	61	46	65	37	77	58	84	57
2	0	0	0	0.10	0E	0	43	23	68	37	70	47	78	53	83E	55E	85	56
3	0	0	0	0	0E	0	40	31	64	39	70	49	80	54	92E	63E	77	46
4	0.07	0	0	0	0E	0	40	35	69	39	71	48	73	50	93E	72E	83	51
5	0.02	0.57	0.05	0	0E	0	48	33	52	42	58	50	76	45	95E	70E	92	64
6	0	0.65	0.59	0.11	0E	0	55	30	63	44	59	50	83	60	92E	63E	85	61
7	0.84	0.01	0.01	0	0E	0.04	41	35	48	40	74	49	85	50	94E	65E	67	51
8	0	0	0.01	0	0.34E	0	48	31	66	40	80	55	87	55	90E	64E	67	44
9	0.03	0	0.21	0	0E	0.06	40	34	82	44	81	51	86	62	71E	52E	68	42
10	0.01	0	0.01	0	0E	0	42	36	62	42	82	55	78	56	76	48	69	41
11	0.39	0	0.26	0	0	0	41	33	66	36	75	54	70	57	83	54	73	45
12	0.01	0	0.01	0	0	0	49	34	75	46	76	50	81	61	72	51	64	44
13	0.02	0	0.53	0	0	0	46	31	82	48	66	54	84	62	78	45	60	40
14	0	0	0.23	0.10	0.71	0.26	59	30	84	56	59	54	83	64	85	58	53	48
15	0	0	0.04	0.02	0.01	0	37	21	86	52	68	52	84	59	75	54	54	48
16	0	0	0	0.09	0	0	35	18	78	47	69	51	82	67	78	50	58	52
17	0	0	0	0	0	0	45	21	71	51	70	47	92	65	83	54	68	50
18	0	0.26	0.28	0.02	0	0	63	32	80	46	64	49	90	68	72	50	63	46
19	0	0	0	0.03	0	0	64	36	77	55	73	46	88	66	77	49	70	46
20	0	0.47	0.08	0.77	0	0.73	58	42	64	46	70	45	86	64	80	57	64	51
21	0	0.03	0	0.70	0	0	42	27	53	44	72	44	88	64	84	62	67	47
22	0	0.06	0	0.63	0	0.08	32	26	53	38	74	50	85	65	85	58	67	44
23	0	0.07	0	0	0	0	53	31	50	39	82	59	80	59	85	61	53	33
24	0	0	0.03	0	0.18	0	67	31	62	41	86	68	71	52	86	65	60	30
25	0	0	0.09	0	1.43	0	79	38	69	43	90	68	75	50	84	59	67	35
26	0	0	0	0.14	0.15	0	70	43	75	51	78	58	75	60	85	57	71	37
27	0	0.11	0	0.88	0	0	71	40	71	50	90	62	72	58	82	52	74	40
28	0	0.01	0	0	0	0	81	50	72	47	88	70	78	56	80	54	76	46
29	0	0	0	0	0	0	81	54	74	49	84	62	82	61	84	56	78	51
30	0	0.11	0	0.04	0	0	76	43	66	53	68	46	87	58	72	54	70	45
31		0.12		0.90	0				72	51			85	66	68	41		
Total/Avg	1.39	2.48	2.62	4.53	2.82	1.24	53	33	68	45	74	53	81	58	82	57	70	46

CLIMATIC DATA, 2001 FARGO																		
	Precipitation						April		May		June		July		August		Sept	
Date	April	May	June	July	August	Sept	Max	Min	Max	Min	Max	Min	Max	Min	Max	Min	Max	Min
1	0	0	0.01	0	0	0.08	43	28	72	53	60	50	70	40	80	65	81	58
2	0	0	0	0.09	0	0	43	32	70	40	71	52	76	54	86	60	87	56
3	0	0	0	0	0E	0	45	33	66	45	71	50	86	57	94	69	79	47
4	0.09	0	0	0	0	0	43	37	70	42	70	52	76	55	96	75	86	58
5	0.01	0.45	0.02	0	0	0	44	34	56	49	60	52	78	46	95	75	97	69
6	0.07	0.77	0.06	0.25	0	0.38	51	33	61	47	66	51	89	63	94	66	89	65
7	1.19	0.01	0	0	0	0.12	42	37	53	43	75	54	89	57	96	71	66	52
8	0	0	0.17	0	0.82	0	45	33	64	41	82	54	91	63	92	66	68	48
9	0	0	0.19	0	0.19	0.03	45	36	80	51	82	55	90	68	72	53	71	47
10	0	0	0.01	0	0	0	47	39	63	46	86	57	80	60	76	50	71	43
11	0.50	0	1.21	0	0	0	44	37	65	40	76	57	78	58	83	59	75	51
12	0.16	0	0.01	0	0	0	50	34	75	48	79	52	84	61	72	52	65	48
13	0	0	0.21	0	0	0	52	33	81	51	74	58	87	65	78	47	63	48
14	0	0	0.09	0	0.44	0.15	61	33	84	59	65	58	89	68	86	60	56	50
15	0	0	0	0	0.45	0	45	24	90	54	70	55	82	68	76	59	57	50
16	0	0	0.01	0.04	0	0	37	21	78	52	70	54	80	69	77	55	59	54
17	0	0	0	0.03	0	0.01	45	24	73	55	72	54	95	68	83	58	64	50
18	0	0.08	0.03	0	0	0.02	63	33	81	51	70	51	92	66	72	55	65	52
19	0	0.01	0	0.20	0	0	62	44	81	58	76	48	89	67	81	53	71	54
20	0	0.07	0.17	0.13	0	0.29	61	45	67	46	75	51	88	68	83	61	62	50
21	0	0.01	0.01	0.57	0	0.01	49	28	51	41	72	48	87	66	85	66	67	46
22	0.15	0.17	0	0.57	0	0.10	34	28	50	40	76	49	88	67	88	62	66	47
23	0.16	0.04	0	0	0	0	52	32	50	39	85	59	85	65	90	67	54	38
24	0	0	0.10	0	0	0	60	34	68	43	89	66	73	56	87	66	60	31
25	0	0	0	0	0.04	0	74	41	71	45	94	75	80	56	87	64	66	41
26	0	0.02	0	0	0.27	0	66	44	73	53	84	64	78	61	83	57	73	40
27	0	0.63	0	0.15	0	0	72	46	65	53	92	69	71	66	82	53	77	39
28	0	0.01	0.01	0	0	0	79	57	74	43	92	72	77	64	84	52	75	51
29	0	0	0	0	0.05	0	84	58	75	52	89	69	84	65	81	60	78	53
30	0	0	0	0.26	0	0	77	51	74	56	70	51	90	69	72	50	69	45
31		0.34		1.07E	0	0.08			72	55			94	71	71	42	81	58
Total/Avg	2.33	2.61	2.31	3.36	2.26	1.19	54	36	69	48	76	56	84	62	83	60	71	49

CLIMATIC DATA, 2001 FELTON

	Precipitation						April		May		June		July		August		Sept	
Date	April	May	June	July	August	Sept	Max	Min	Max	Min	Max	Min	Max	Min	Max	Min	Max	Min
1	0	0	0.23	0	0	0.08	41	26	75	53	68	47	69	39	82	63	80	58
2	0	0	0	0.09	0	0	42	28	71	41	72	52	75	54	84	57	88	54
3	0	0	0	0	0	0	43	31	67	44	71	45	87	56	94	68	79	46
4	0.13	0	0	0	0	0	42	36	70	40	71	47	77	54	94	74	85	52
5	0	0	0	0	0	0	45	33	63	48	62	52	79	45	95	74	95	68
6	0.09	0.45	0	0.33	0	0.24	50	31	61	47	69	46	90	62	93	65	88	65
7	1.05	0.51	0.34	0	0	0.48	41	37	53	42	75	54	88	58	94	69	65	52
8	0	0	0	0	0.64	0	45	32	63	40	83	53	90	63	90	66	68	48
9	0	0	0.10	0	0.26	0.04	45	35	81	50	84	51	91	66	73	53	71	45
10	0	0	0.10	0	0	0	46	39	65	46	86	58	82	60	75	48	70	44
11	0.47	0	0	0	0	0	43	36	68	37	78	62	78	57	84	56	74	49
12	0.14	0	0.46	0	0	0	50	33	77	46	79	52	85	59	72	52	65	48
13	0.10	0	0	0	0	0	44	29	83	47	74	57	88	61	78	45	63	46
14	0	0	0.65	0	0.19	0.19	62	31	84	59	64	58	91	69	87	59	55	50
15	0	0	0.11	0	0.59	0	43	24	90	54	72	55	83	66	77	58	57	50
16	0	0	0.01	0.03	0	0.01	35	19	80	51	70	52	80	68	77	54	59	54
17	0	0	0	0.03	0	0.01	44	26	73	55	75	51	95	64	84	55	63	49
18	0	0	0	0	0	0.02	62	33	82	47	69	58	93	65	72	54	65	50
19	0	0.10	0.14	0.28	0	0	61	43	81	58	76	47	89	67	78	51	71	52
20	0	0	0	0.09	0	0.24	62	47	78	47	73	47	88	68	81	60	62	49
21	0	0.42	0.07	0.67	0	0.01	49	29	51	42	73	46	88	66	84	65	68	45
22	0.38	0.05	0	0.65	0	0.14	34	28	49	39	77	47	88	72	86	60	65	47
23	0.38	0.30	0	0	0.01	0	53	32	51	38	86	57	85	64	87	61	55	35
24	0	0.06	0.10	0	0	0	59	32	67	43	85	66	73	55	85	65	61	30
25	0	0	0	0	0.03	0	76	39	71	45	93	71	79	54	87	60	66	42
26	0	0	0	0	0.32	0	68	42	73	53	92	63	78	61	84	58	73	36
27	0	0.30	0	0.18	0	0	71	42	72	54	92	64	71	64	83	50	75	37
28	0	0.17	0	0	0	0	79	57	74	42	91	71	77	64	83	50	76	51
29	0	0	0	0.01	0.13	0	85	57	76	47	89	71	83	64	81	59	79	53
30	0	0	0	0.22	0	0	77	50	75	54	72	62	88	68	72	50	70	44
31		0		0.57	0				74	51			92	70	70	42		
Total/Avg	2.74	2.36	2.31	3.15	2.17	1.46	50	33	69	46	73	52	81	59	80	56	66	45

CLIMATIC DATA, 2001 Grand Forks																		
	Precipitation						April		May		June		July		August		Sept	
Date	April	May	June	July	August	Sept	Max	Min	Max	Min	Max	Min	Max	Min	Max	Min	Max	Min
1	0	0.05	0	0	0	0	35	28	68	50	61	46	69	41E	78	65	82	50
2	0	0	0	0.12	0	0	44	30	67	40	70	48	75	54	81	60	89	53
3	0	0	0	0	0	0	45	31	65	38	70	47	84	56	92	65	80	48
4	0.06	0	0	0	0	0E	41	34	69	37	74	45	75	51	92	75	85	64
5	0	0.28	0	0	0.02	0	45	34	60	42	63	52	78	43	96	74	94	64
6	0	1.82	0.13	0.34	0	0.11	54	32	64	49	67	48	85	60	93	64	86	62
7	1.18	0	0	0	0	0.45	44	35	53	44	77	54	86	54	92	67	66	54
8	0	0	0	0	0.53	0	47	33	62	41	84	55	90	59	88	64	68	48
9	0	0	0	0	0	0.07	43	36	78	43	87	53	90	64	71	52	70	42
10	0.03	0	0	0	0	0	42	36	58	42	87	62	81	56	75	49	70	46
11	0.16	0	0.12E	0	0	0	45	38	64	37	77E	55E	75	56	81	55	73	45
12	0	0	0E	0	0	0	50	34	73	45	78E	50E	82	57	71	51	64	49
13	0.07	0	0.25E	0	0	0	46	31	80	48	70	59	86	58	76	47	62	39
14	0	0	0.31	0.42	0.62	0	58	31	81	59	62	57	85	67	88	58	57	46
15	0.02	0.23	0.12	0	0.01	0	31	20	81	55	68	53	84	64	75	57	58	46
16	0	0.06	0.02	0.20	0	0	35	20	78	51	68	49	80	68	80	54	62	53
17	0	0	0	0.01	0	0	44	27	72	52	74	52	88	63	81	57	72	49
18	0	0.02	0.58	1.83	0	0	57	33	80	47	72	51	88	63	72	54	69	46
19	0	0	0	0	0	0	66	38	78	56	74	49	86	65	79	51	72	50
20	0.09	0.62	0.17	0.07	0	0.92	57	46	64	46	62	47	87	67	82	58	63	50
21	0	0	0	0.15	0	0	46	27	52	45	72	44	87	68	84	61	68	49
22	0	0.23	0	0.10	0	0.27	35	28E	47	40	77	53	85	65	85	62	57	44
23	0	0.14	0	0	0	0	53	33	49	39	85	59	81	61	84	57	53	34
24	0	0	0	0	0	0E	62	34	64	42	89	65	74	54	85	61	60E	32E
25	0	0	0	0	0.17	0E	77	38	70	45	92	69	77	52	85	60	65	37
26	0	0	0	0	0.43	0	64	44	75	53	82	60	75	61	85	56	70	35
27	0	0.22	0	2.26	0	0E	67	43	66	50	93	62	70	61	81	52	74	36
28	0	0	0	0.01	0	0	74	45	72	45	93	72	77	62	82	50	74	42
29	0	0	0	0	0	0	79	57	73	48	89	64	78	58	86	59	78	49
30	0	0.13	0	0.08	0	0	75	47	73	52	67	49	86	61	71	48	69	47
31		0.18		3.01	0E				75	53			76	67	71E	45E		
Total/Avg	1.61	3.98	1.70	8.60	1.78	1.82	52	35	68	46	76	54	81	59	82	58	70	47

CLIMATIC DATA, 2001 HAZELTON																		
	Precipitation						April		May		June		July		August		Sept	
Date	April	May	June	July	August	Sept	Max	Min	Max	Min	Max	Min	Max	Min	Max	Min	Max	Min
1	0	0	T	0	0		41	20	67	40	75	41	64	44	79	58		
2	T	0	0	0	0		45	22	64	41	71	45	76	55	86	63		
3	0.32	0	0	0	0		46	23	62	46	66	51	84	54	94	69		
4	0.40	0	0.45	0	0		38	30	68	36	67	48	78	54	97	73		
5	0.05	0.72	0.35	0.20	0		40	32	67	47	65	50	83	56	92	63		
6	T	0.38	0.30	0	0		51	32	54	38	65	48	83	58	93	64		
7	0.41	T	0	0	0		54	34	61	38	74	50	87	58	100	70		
8	0.30	0	0	0	0		48	25	71	40	79	58	90	64	97	52		
9	0.10	0	1.22	0	0		49	31	79	44	84	54	91	62	71	48		
10	0	0	0	0	0		43	33	79	44	84	58	85	56	79	48		
11	0	0	0	T	0		53	29	66	45	87	61	69	62	81	45		
12	0.06	0	0.40	0	0		41	29	78	50	74	52	83	62	84	50		
13	T	0	0.10	0	0		49	32	84	53	63	53	88	66	84	56		
14	0	0	0.90	0.55	0		51	34	84	57	60	45	88	61	88	56		
15	0	0	0.27	2.10	0		59	22	88	49	59	47	77	61	77	49		
16	0	T	0	0	0		33	14	73	46	70	52	87	62	80	50		
17	0	0	T	0	0		39	15	70	46	69	56	91	65	82	47		
18	0	0	1.00	T	0		50	15	80	51	61	50	87	64	75	45		
19	0	0.32	T	0.50	0		69	34	80	53	71	49	88	64	79	53		
20	T	T	0	1.05	0		69	46	79	38	72	44	87	59	88	60		
21	0.08	0	0	0.20	0		53	28	56	32	71	49	87	63	91	44		
22	0	0	0	0.05	0		31	24	63	39	76	53	86	63	91	62		
23	0	0.20	0	0	0		35	23	64	38	86	61	83	57	87	62		
24	0	T	0	0	0		58	24	57	35	89	69	75	56	88	56		
25	0	0	T	0.35	0		68	37	58	40	89	70	76	61	88	62		
26	0	0	0	1.55	0		80	44	73	49	78	61	77	64	85	49		
27	0	0	0	0.05	0		76	45	77	51	77	68	76	58	87	53		
28	0	0	T	0	0		81	53	72	51	83	62	80	50	88	57		
29	0	0.25	0	0	0		88	59	65	53	84	62	82	59	81	49		
30	0	0.25	0	0.22	0		82	42	69	51	76	59	89	65	76	42		
31		0		0.10	T				74	44			85	61	77	45		
Total/Avg	1.72	2.12	4.99	7.00	0		54	31	70	45	74	54	83	60	85	55		

CLIMATIC DATA, 2001 HETTINGER																		
	Precipitation						April		May		June		July		August		Sept	
Date	April	May	June	July	August	Sept	Max	Min	Max	Min	Max	Min	Max	Min	Max	Min	Max	Min
1	0.05	0	0	0.10	0	0	46	25	63	38	60	37	56	45	81	54	97	63
2	0.03	0	0	0	0	0	49	23	58	34	68	33	79	51	92	60	85	57
3	0.15	0	0.24	0	0	0	32	29	61	34	56	50	85	56	96	68	85	47
4	0.31	0	0.36	0	0	0	39	31	64	31	55	47	84	53	99	70	99	53
5	0.08	0.18	0.07	0	0	0	56	32	51	37	64	48	90	59	89	61	101	63
6	0.37	0.09	0.08	0.06	0	0	53	29	56	35	69	46	82	66	96	58	74	52
7	0.16	0	0.01	0	0	0.04	50	29	62	38	76	42	86	59	104	66	61	49
8	0.22	0	0	0	0	0	37	28	75	36	79	49	93	53	98	59	61	38
9	0.03	0	0	0	0	0	43	34	76	49	83	56	93	62	73	48	68	35
10	0	0.06	0	0	0	0	55	28	64	38	85	51	82	65	80	46	75	35
11	0	0	0	0.29	0	0	48	29	69	36	75	50	79	61	88	49	79	39
12	0	0	0.28	0	0	0	48	26	81	47	68	46	82	60	82	57	68	44
13	0	0	0.12	0	0	0.08	53	32	91	54	59	51	89	62	91	57	55	45
14	0	0	0.45	0	0.08	0.33	55	30	85	48	55	43	86	66	92	64	51	46
15	0	0	0.09	0.73	0	0.01	37	18	74	47	68	40	79	62	79	53	53	47
16	0	0.08	0.01	0	0	0	40	14	70	44	71	44	86	58	83	43	61	44
17	0	0	0	0	0	0	55	20	68	39	72	51	90	60	85	50	62	44
18	0	0.01	0.98	0.53	0	0	72	29	76	42	61	42	85	60	80	46	71	52
19	0.13	0.20	0.03	0.48	0	0.08	71	46	78	41	69	39	89	57	88	54	81	50
20	0.05	0.02	0.01	0	0	0	54	40	57	43	72	43	88	63	90	56	67	46
21	0.08	0	0	0.04	0	0	43	26	58	35	73	42	85	62	93	62	76	36
22	0	0	0	0	0.06	0	41	25	64	41	83	52	85	62	94	58	69	45
23	0	0	0	0.04	0	0	62	23	62	30	90	60	83	55	87	65	57	41
24	0	0	0	0.02	0	0	68	38	50	38	93	68	76	58	91	62	72	38
25	0	0	0.16	0.90	0	0	78	40	67	28	85	64	78	59	89	50	74	39
26	0	0	0	0.69	0	0	77	40	78	36	76	56	78	61	89	54	75	45
27	0	0	0.02	0.14	0	0	85	52	78	38	97	63	81	59	91	45	79	42
28	0	0	0.01	0.42	0	0	89	56	70	47	86	63	84	63	89	60	82	52
29	0	0.45	0.08	0	0	0	68	44	59	52	85	61	80	58	76	49	76	49
30	0	0.36	0.22	0	0	0	74	36	68	51	75	55	83	60	80	42	78	39
31		0		0.01	0				73	49			80	61	86	49		
Total/Avg	1.66	1.45	3.22	4.45	0.14	0.54	56	32	68	40	74	50	83	59	88	55	73	46

CLIMATIC DATA, 2001 LANGDON

	Precipitation						April		May		June		July		August		Sept	
Date	April	May	June	July	August	Sept	Max	Min	Max	Min	Max	Min	Max	Min	Max	Min	Max	Min
1	0	0.07	0.01	0	0	0	32	24	62	44	61	44	65	39	73	57	83	53
2	0	0	0	0	0.06	0	38	20	63	40	66	43	77	52	77	52	80	56
3	0	0	0	0	0	0	39	28	63	34	67	42	78	55	90	65	79	46
4	0.30	0	0	0	0	0	36	32	68	36	70	42	70	47	91	73	85	52
5	0.01	0.32	0	0	0	0	44	32	65	42	59	49	75	44	88	68	93	59
6	0	0.73	0.11	0.02	0	0.06	52	32	57	45	60	51	81	56	89	62	78	55
7	0.16	0.02	0	0.01	0	0.01	41	34	46	41	76	46	83	54	90	66	63	52
8	0	0	0.05	0	0.27	0	44	32	61	36	79	51	88	52	92	62	65	44
9	0.12	0.02	0	0	0	0	37	33	76	42	85	51	85	60	67	50	65	39
10	0	0	0	0	0	0	41	33	54	36	85	54	75	53	72	45	67	40
11	0	0	0.49	0	0	0	43	35	63	32	71	55	74	57	82	51	63	43
12	0	0.04	0.21	0	0	0	47	33	74	41	72	49	80	57	69	50	59	41
13	0.47	0	0.48	0.61	0	0	36	30	79	49	62	52	83	63	78	46	59	34
14	0.02	0	1.28	0	0.46	0	48	22	87	58	56	53	76	63	82	58	63	41
15	0	0.04	0.20	0.05	0	0	25	14	70	52	62	48	81	61	68	54	57	33
16	0.02	0.25	0.02	0.91	0	0	30	16	76	48	64	46	78	65	76	49	58	44
17	0	0	0.01	0	0	0	41	19	70	48	69	44	85	60	74	54	62	41
18	0	0	1.04	0	0	0	57	33	78	45	59	49	82	64	70	50	68	43
19	0	0.02	0.14	0	0	0	63	37	75	53	64	47	86	63	76	52	69	44
20	0.67	0.06	0.53	0.09	0	0.13	50	36	62	48	63	44	86	65	82	57	65	54
21	0	0	0	0.06	0	0	36	22	50	41	70	48	85	67	86	61	64	44
22	0	0.15	0	0.37	0	0.50	34	26	47	37	74	51	81	65	81	58	54	35
23	0	0.23	0	0	0	0	53	29	45	38	86	58	73	55	83	60	49	31
24	0	0.02	0	0	0.11	0	61	32	56	39	84	61	73	50	84	65	58	32
25	0	0	0.02	0	0	0	74	38	66	42	85	65	74	51	82	57	66	38
26	0	0	0	0.38	0	0	64	38	73	47	75	56	74	62	82	55	68	39
27	0	0.06	0	1.30	0	0	64	44	69	51	76	57	67	56	79	50	74	48
28	0	0	0	0	0	0	75	50	70	44	83	61	79	52	82	49	75	48
29	0	0	0	0	0	0	79	48	72	46	82	61	78	60	74	58	73	53
30	0	0.03	0	0	0	0	69	41	63	46	64	43	82	55	66	47	70	40
31		0.16		0.12	0				71	45			71	62	67	37		
Total/Avg	1.77	2.22	4.59	3.92	0.90	0.70	48	31	66	43	71	51	78	57	79	55	68	44

CLIMATIC DATA, 2000 Mayville																		
	Precipitation						April		May		June		July		August		Sept	
Date	April	May	June	July	August	Sept	Max	Min	Max	Min	Max	Min	Max	Min	Max	Min	Max	Min
1	0	0	0.06	0	0	0	37	28	71	52	60	47	68	39	78	61	84	54
2	0	0	0	0.22	0	0	44	30	69	40	70	49	76	52	82	56	88	54
3	0	0	0	0	0	0	43	30	66	39	71	47	84	56	91	66	80	48
4	0.05	0	0	0	0	0	40	34	69	36	72	48	76	52	92	73	86	52
5	0	0.41	0	0	0.02	0	44	33	58	42	60	53	78	45	96	70	96	67
6	0	2.09	0.21	0.59	0	0.62	53	30	64	47	66	50	86	58	94	63	88	61
7	0.96	0	0.01	0	0	0.18	44	35	50	43	76	52	86	56	92	66	66	52
8	0	0	0	0	0.77	0	46	33	63	39	84	54	90	60	96	65	68	45
9	0.01	0	0.02	0	0	0.11	42	37	79	47	85	52	90	63	70	51	71	42
10	0.14	0	0	0	0	0	43	36	61	43	88	58	80	58	75	47	70	44
11	0.06	0	0.10	0	0.01	0	43	37	64	35	77	54	74	55	82	53	73	42
12	0.03	0	0	0	0	0	50	34	75	44	78	50	82	57	71	49	64	48
13	0	0	0.20	0.10	0	0	47	33	82	47	68	57	88	56	77	44	63	39
14	0	0	0.18	0	0.07	0.19	58	30	84	59	62	56	88	67	87	56	56	50
15	0	0	0	0.01	0.02	0	34	21	86	51	71	54	83	63	74	56	55	49
16	0	0.01	0.01	0.01	0	0	37	20	81	51	68	49	82	69	78	52	60	53
17	0	0	0.03	0.17	0.24	0	45	25	72	52	75	48	90	61	83	56	71	50
18	0	0.01	0.37	0.06	0	0	60	32	81	46	68	50	88	62	72	53	66	43
19	0	0	0.01	0	0	0	65	36	79	57	75	49	87	66	79	49	71	54
20	0	0.56	0.20	0.12	0	0.39	58	46	63	45	70	46	88	67	82	58	62	51
21	0	0	0	0.65	0	0	46	27	51	44	71	44	87	66	84	62	69	49
22	0	0.21	0	0.17	0	0.09	33	27	49	40	76	49	87	64	90	59	61	45
23	0	0.13	0	0	0	0	54	32	48	39	83	56	82	59	88	60	52	35
24	0	0	0.10	0	0	0	65	32	63	42	86	67	72	54	85	62	60	29
25	0	0	0	0	0.10	0	82	35	71	46	91	73	77	50	84	57	66	37
26	0	0	0.01	0.02	0.18	0	67	41	73	52	79	60	74	62	84	56	72	33
27	0	0.17	0	1.10	0	0	70	42	67	49	92	60	69	63	81	52	77	34
28	0	0	0	0	0	0	78	54	73	43	91	70	77	62	83	48	75	46
29	0	0	0	0	0	0	81	54	75	48	88	64	80	60	85	58	79	50
30	0.03	0.13	0	0.21	0	0	77	46	72	53	66	46	88	62	71	48	70	42
31		0.43		0.77	0				73	52			80	67	70	39		
Total/Avg	1.28	4.15	1.51	4.20	1.41	1.58	53	34	69	46	76	54	82	59	83	56	71	47

CLIMATIC DATA, 2001 McLeod (Colfax)																		
	Precipitation						April		May		June		July		August		Sept	
Date	April	May	June	July	August	Sept	Max	Min	Max	Min	Max	Min	Max	Min	Max	Min	Max	Min
1	0	0	0.13	0	0	0.06	47	23	72	48	61	50	69	45	81	62	85	58
2	0	0	0	0.07	0	0	42	23	67	43	69	52	74	52	85	56	88	53
3	0	0	0	0	0	0	39	31	67	46	68	50	84	56	94	64	79	44
4	0.02	0	0	0	0	0	39	35	68	44	69	50	75	57	96	71	84	48
5	0	0.68	0.13	0	0	0	46	29	54	45	59	52	77	48	97	72	95	65
6	0.27	1.27	0.04	0.50	0	0.08	50	27	64	45	61	51	89	64	95	64	89	62
7	1.47	0.07	0	0	0	0	40	36	51	41	74	54	87	59	96	63	68	52
8	0	0	0.40	0	0.33	0	48	29	67	42	82	54	89	64	95	66	68	42
9	0	0	0.95	0.03	0.09	0.03	44	35	79	48	79	58	88	65	75	55	71	41
10	0	0	0.01	0	0	0	51	36	63	49	83	58	80	62	78	50	73	42
11	0.47	0	0.46	0	0	0	42	37	63	41	74	58	78	59	80	55	77	48
12	0.13	0	0.03	0	0	0	52	34	74	45	77	53	84	63	72	51	66	46
13	0	0	0.70	0	0	0	54	30	80	49	70	56	88	60	79	45	65	37
14	0	0	0.28	0	0	0.51	63	30	92	59	65	56	89	65	86	56	55	49
15	0	0	0.39	0	0.14	0.01	45	25	87	57	70	53	78	63	78	56	56	49
16	0	0	0	0.09	0	0.01	40	21	74	51	72	50	81	66	77	53	58	53
17	0	0	0.27	0.03	0	0	48	22	71	52	69	54	93	66	85	54	66	54
18	0	0	0	0.02	0	0	67	30	79	49	69	50	90	64	71	54	66	56
19	0	0	0	0.87	0	0	62	41	80	55	74	46	89	65	79	48	71	51
20	0	0.14	0.15	0.80	0	0.87	62	46	64	45	76	51	86	68	83	58	69	48
21	0	0.01	0	0.62	0	0	48	29	53	43	71	50	88	64	86	62	69	45
22	0	0.02	0	0.01	0	0.02	32	27	54	41	75	50	88	70	86	59	72	47
23	0.15	0.08	0	0	0	0	52	31	49	40	85	55	84	65	87	64	54	34
24	0	0.01	0.01	0	0	0	59	32	64	43	91	65	71	59	85	62	61	27
25	0	0	0	0	0.03	0	74	38	69	46	94	74	78	55	87	61	67	35
26	0	0	0	0	0.07	0	69	47	71	52	83	67	78	62	85	57	73	33
27	0	0.09	0	0.28	0	0	71	44	69	54	90	66	71	65	83	49	77	35
28	0	0	0.02	0	0	0	83	52	72	53	90	68	80	60	84	50	76	44
29	0	0	0	0	0	0	83	58	73	50	90	68	88	63	84	56	79	48
30	0	0	0	0.02	0	0	76	49	73	54	71	53	88	67	75	50	72	40
31		0.19		0.02	0				74	54			93	71	71	40		
Total/Avg	2.51	2.56	3.97	3.36	0.66	1.59	54	34	69	48	75	56	83	62	84	57	72	46

CLIMATIC DATA, 2001 MINOT																		
	Precipitation						April		May		June		July		August		Sept	
Date	April	May	June	July	August	Sept	Max	Min	Max	Min	Max	Min	Max	Min	Max	Min	Max	Min
1	0	0.11	0	0	0	0	45	18	66	42	63	45	64	43	76	57	96	48
2	0	0	0	0	0	0	43	18	66	41	70	40	80	53	88	54	79	54
3	0.04	0	0	0	0	0	38	30	64	35	70	48	79	55	96	62	84	46
4	0.18	0	0	0	0	0	39	31	68	39	69	50	76	52	100	74	91	61
5	0	0.24	0.49	0	0	0	54	26	66	44	59	50	83	50	91	64	103	58
6	0.05	0.12	0	0.21	0	0.09	60	31	54	42	69	50	76	56	96	59	68	53
7	0.04	0.03	0	0	0.12	0.39	49	32	60	38	75	48	83	56	93	65	66	52
8	0	0	0	0	0.44	0	49	27	70	32	81	51	90	58	91	59	65	46
9	0.22	0	0	0	0	0	39	32	76	49	85	52	89	58	70	50	61	42
10	0.01	0	0.07	0	0	0	50	34	61	40	85	50	80	59	77	46	71	40
11	0	0	0.82	0.55	0	0	48	28	66	35	72	53	62	59	88	53	66	44
12	0	0	0.23	0.10	0	0	46	30	82	50	64	51	80	59	76	52	65	41
13	0.34	0	0.57	0	0	0	45	30	90	58	59	52	83	65	91	55	60	37
14	0.03	0	0.10	0	0	0.05	53	26	89	61	59	51	78	63	88	64	54	46
15	0.01	0	0.05	0.27	0	0	27	17	73	49	69	47	76	64	75	52	56	48
16	0	0	0.07	0.02	0	0	36	16	75	47	65	51	83	66	82	49	61	49
17	0	0	0.18	0	0	0	50	18	72	47	72	46	86	61	82	56	63	45
18	0	0	0.26	0	0	0.02	75	34	78	47	59	49	84	64	76	46	68	45
19	0	0.03	0	0.03	0	0	67	35	80	48	71	48	87	60	82	50	78	49
20	0.21	0.01	0	0.44	0	0	51	34	60	45	67	50	85	61	86	58	63	48
21	0	0	0	0.05	0.02	0	34	25	59	37	73	48	84	61	93	56	71	42
22	0	0	0	0.18	0	0	41	24	62	35	79	56	82	63	93	57	60	42
23	0	0	0	0	0	0	62	25	57	40	87	61	74	53	92	65	56	34
24	0	0.05	0	0	0	0	70	35	57	38	89	62	72	48	92	59	67	35
25	0	0	0	0	0	0	78	44	70	33	84	60	78	56	86	52	76	41
26	0	0	0.02	0	0	0	72	40	77	40	73	54	82	62	84	54	76	41
27	0	0.17	0	0.10	0	0	82	50	77	48	72	61	79	62	86	52	81	41
28	0	0	0	0	0	0	92	52	72	52	83	59	84	58	93	50	82	53
29	0	0.07	0.08	0	0	0	74	43	73	47	83	62	80	59	74	53	76	47
30	0	0.48	0	0	0	0	71	40	69	54	63	47	81	60	72	49	78	38
31		0		0	0				70	44			74	60	77	44		
Total/Avg	1.13	1.31	2.94	1.95	0.58	0.55	55	31	70	44	72	52	80	58	85	55	71	45

CLIMATIC DATA, 2000 Northwood (Hatton)																		
	Precipitation						April		May		June		July		August		Sept	
Date	April	May	June	July	August	Sept	Max	Min	Max	Min	Max	Min	Max	Min	Max	Min	Max	Min
1	0	0.02	0.02	0	0	0.03	36	28	69	50	69	50	68	40	77	58	82	51
2	0	0	0	0.05	0	0	43	29	68	40	68	40	77	53	82	54	88	58
3	0	0	0	0	0	0	43	30	65	36	65	36	79	58	92	65	80	48
4	0.08	0	0	0	0	0	39	33	70	35	70	35	72	50	91	74	85	45
5	0	0.46	0.46	0	0.17	0	50	33	59	37	59	37	77	44	94	70	92	65
6	0	1.54	1.54	0.23	0	0.12	55	32	61	46	61	46	83	60	93	61	85	60
7	0.88	0	0	0	0	0.63	44	36	50	43	50	43	84	54	92	66	66	52
8	0	0	0	0	0.71	0	47	33	64	39	64	39	88	59	86	64	67	45
9	0.02	0	0	0	0	0	42	37	81	42	81	42	86	62	71	51	69	39
10	0.10	0	0	0	0	0	41	36	60	41	60	41	78	56	76	48	70	46
11	0.20	0	0	0	0.01	0	45	37	64	35	64	35	73	54	84	53	74	41
12	0	0	0	0	0	0	49	33	76	45	76	45	82	56	71	48	63	48
13	0.06	0	0	0	0	0	44	32	82	46	82	46	86	55	76	43	62	39
14	0	0	0	0.01	0.07	0	57	30	83	58	83	58	84	66	87	55	57	48
15	0	0	0	0	0.02	0	30	19	84	52	84	52	84	61	75	56	56	48
16	0	0.20	0.20	0.05	0	0	36	19	79	51	79	51	83	68	78	52	61	52
17	0	0	0	0.01	0.09	0	45	23	72	50	72	50	88	60	82	56	71	46
18	0	0.04	0.04	0.18	0	0	59	31	81	48	81	48	87	60	70	50	68	44
19	0	0	0	0	0	0	64	34	77	56	77	56	88	65	77	47	72	48
20	0	0.50	0.50	0.11	0	0.48	59	44	65	45	65	45	87	64	81	52	62	48
21	0	0	0	0.29	0	0	44	26	51	44	51	44	87	66	83	59	67	50
22	0	0.13	0.13	0.11	0	0.05	33	26	49	39	49	39	84	63	85	61	60	42
23	0	0.08	0.08	0	0	0	54	32	48	39	48	39	80	58	85	59	52	31
24	0	0	0	0	0.42	0	65	34	62	42	62	42	74	52	84	63	60	27
25	0	0	0	0	0.07	0	78	38	71	44	71	44	77	49	85	55	67	32
26	0	0	0	0.01	0.06	0	67	43	75	50	75	50	73	61	85	54	72	31
27	0	0.01	0.01	0.58	0	0	70	41	67	49	67	49	69	62	82	54	77	33
28	0	0	0	0	0	0	77	52	73	45	73	45	78	60	81	47	76	38
29	0	0	0	0	0	0	81	53	74	46	74	46	81	60	87	57	81	49
30	0	0.01	0.01	0	0	0	76	47	69	53	69	53	87	57	70	49	71	41
31		0.06		1.80	0				74	51			78	67	69	39		
Total/Avg	1.34	3.05	3.05	3.43	1.62	1.31	52	34	68	45	68	45	81	58	82	56	70	45

CLIMATIC DATA, 2001 Prosper																		
	Precipitation						April		May		June		July		August		Sept	
Date	April	May	June	July	August	Sept	Max	Min	Max	Min	Max	Min	Max	Min	Max	Min	Max	Min
1	0	0	0.08	0	0	0.08	39	28	69	49	61	49	69	43	80	62	82	56
2	0	0	0	0.05	0	0	41	30	68	39	72	51	75	54	84	57	89	52
3	0	0	0	0	0	0	42	32	66	42	71	47	85	55	92	65	81	45
4	0.12	0	0	0	0	0	41	34	69	39	72	47	76	52	92	73	87	48
5	0.01	0.57	0.01	0	0	0	42	32	54	42	60	52	79	46	95	70	96	66
6	0.14	1.97	0.24	0.20	0	0.73	50	31	63	46	66	47	88	60	94	63	90	62
7	1.52	0	0.01	0	0	0.09	42	36	53	42	75	52	87	57	93	63	68	52
8	0	0	0.06	0	0.58	0	46	33	65	41	84	52	90	62	90	66	70	46
9	0	0	0.15	0	0.15	0.02	44	35	79	46	84	52	89	63	72	52	73	42
10	0	0	0	0	0	0.01	46	38	61	46	86	57	79	59	77	48	72	42
11	0.30	0	0.69	0	0	0	43	36	63	40	75	56	77	56	81	53	76	42
12	0.10	0	0	0	0	0	50	34	75	41	78	52	83	56	72	49	66	46
13	0	0	0.77	0	0	0	50	33	82	47	70	57	88	55	77	44	64	45
14	0	0	0.13	0.01	0.64	0.35	60	31	86	59	64	57	88	65	84	56	54	49
15	0	0	0.08	0.70	0.44	0	43	24	87	55	70	55	82	62	76	58	57	49
16	0	0	0	0.01	0	0	37	21	80	50	71	51	80	67	80	55	60	53
17	0	0	0	0.11	0.07	0.02	45	27	74	51	72	52	92	64	82	52	66	48
18	0	0.10	0.09	0.13	0	0.06	62	32	74	47	68	51	88	65	72	55	65	48
19	0	0.12	0	0.40	0	0	62	39	81	57	76	48	86	66	80	50	72	53
20	0	0.38	0.04	0.33	0	0.46	60	45	66	46	73	49	88	68	81	58	62	50
21	0	0.06	0	0.56	0	0	47	28	52	44	74	49	88	66	84	63	70	47
22	0.06	0.10	0	0.67	0	0.13	33	28	51	40	77	49	88	67	86	60	66	46
23	0.04	0.13	0	0	0	0	52	32	50	39	86	56	83	62	87	60	55	35
24	0	0.01	0.10	0	0	0	63	32	66	43	88	66	71	56	84	62	61	30
25	0	0	0	0	0.01	0	74	37	73	47	96	72	78	53	86	59	68	36
26	0	0	0	0	0.15	0	66	44	74	54	83	64	77	60	85	55	73	32
27	0	0.26	0	0.33	0	0	70	40	67	52	94	64	70	65	82	50	77	36
28	0	0	0	0	0	0	78	54	74	45	92	69	78	63	82	49	76	43
29	0	0	0	0	0	0	81	54	76	49	89	68	83	61	81	56	81	50
30	0	0	0	0.24	0	0	75	48	74	55	70	49	88	66	73	49	71	42
31		0.11		1.92	0				75	53			88	69	71	40		
Total/Avg	2.29	3.81	2.45	5.66	2.04	1.95	53	35	69	47	77	55	83	60	82	57	72	46

CLIMATIC DATA, 2001 St. Thomas

	Precipitation						April		May		June		July		August		Sept	
Date	April	May	June	July	August	Sept	Max	Min	Max	Min	Max	Min	Max	Min	Max	Min	Max	Min
1	0	0.06	0.06	0	0	0	33	29	66	48	61	47	69	38	78	60	86	49
2	0	0	0	0.04	0.02	0	41	30	69	42	68	48	78	53	81	55	89	60
3	0	0	0	0	0.04	0	46	31	64	38	69	45	81	58	93	65	82	52
4	0.38	0	0	0	0	0	39	33	70	36	72	43	73	46	93	76	88	47
5	0	0.44	0	0	0	0	52	35	67	40	64	51	78	39	93	72	96	62
6	0	1.22	0.05	0.02	0	0	53	33	64	48	64	52	84	60	96	66	80	62
7	M	0.03	0.01	0	0	0.04	44	38E	51	44	75	49	85	54	93	66	68	55
8	M	0.01	0.01	0	0.31	0	48E	34E	62	39	82	50	90	54	92	66	72	49
9	M	0	0	0	0	0	41E	35E	76	43	86	50	88	60	70	50	72	38
10	0	0	0	0	0	0	43	35	58	40	88	56	78	53	78	46	73	46
11	0.03	0	0.44	0	0.06	0	48	35	64	35	74	56	77	54	86	50	68	40
12	0	0	0.09	0	0	0	49	35	75	46	76	52	84	52	72	47	63	43
13	0.42	0	0.23	0.03	0	0	40	32	82	54	64	55	87	62	79	44	63	34
14	0	0	0.23	0.01	0.72	0	52	26	82	59	61	55	81	65	88	58	66	43
15	M	0	0.25	0	0.01	0	27	20E	77	54	66	49	84	61	72	57	64	34
16	0	0.07	0	1.12	0	0	34	20	80	51	68	48	79	68	82	52	62	47
17	0	0	0.11	0	0.22	0	45	26	74	52	74	45	86	65	77	56	71	39
18	0	0	0.73	1.39	0	0	56	33	81	46	66	50	88	66	71	52	73	46
19	0	0	0.02	0	0	0	65	34	78	58	69	50	86	66	79	48	74	44
20	0.20	0.32	0.02	0.02	0	0.24	59	37	60	45	66	45	87	67	84	57	62	52
21	0	0	0	0.08	0	0	37	25	54	44	74	46	89	68	86	63	69	49
22	0	0.28	0	0	0	0.19	35	29	48	40	77	49	86	64	85	60	55	39
23	0	0.11	0	0	0	0	55	32	48	40	87	58	79	57	86	53	51	34
24	0	0	0	0	0.10	0	64	34	62	41	89	62	76	51	86	64	60	30
25	0	0	0	0	0.01	0	78	37	73	47	88	63	79	52	86	57	68	37
26	0	0	0	0.05	0	0	65	43	78	52	78	59	78	63	89	54	72	36
27	0	0.20	0	2.41	0	0	63	41	64	48	85	60	67	62	83	54	77	35
28	0	0	0	0	0	0	77	44	73	43	88	64	81	60	85	47	77	44
29	0.07	0	0	0	0	0	83	56	73	47	86	60	77	58	87	58	82	51
30	0	0	0	0	0	0	76	45	68	48	66	44	86	54	72	47	74	48
31		0.38		1.36	0				76	46			76	66	72	42		
Total/Avg	1.47	3.12	2.25	6.53	1.49	0.47	52	34	68	46	74	52	81	58	83	56	72	45

Soil Test Results at Various Weed Experimen Locations						
		Organic		lb/A	PPM	
	Soil Texture	Matter	pH	N	P	K
A. K. Eckre Grassland Preserve (ND)	Loamy sand	2.9	6.8	3	3	70
Camp Grafton, ND	Loamy sand	2.8	7.0	3	3	98
Carrington, ND	Loam	3.6	6.1	Fertilized by test		
Carrington, ND	Silt loam	3.9	6.2			
Casselton, ND	Silty clay	3.8	7.8	Fertilized by test		
Chaffee, ND	Loamy sand	1.9	5.6			
Colfax, ND (corn)	Sandy loam	2.4	7.8			
Colfax, ND (soybean)	Sandy loam	2.9	6.9			
Crookston, MN	Silty clay loam	3.2	8.1	55	8	215
Cuba, ND	Sandy loam	7.0	8.2	3	4	100
Dawson, MN	Sandy loam	7.7	2.6			
Fargo, ND (campus)	Silty clay	6.8	7.2	Fertilized by test		
Fargo, ND (Dexter)	Silty clay	5.4	7.2	60	11	475
Fargo, ND (section 22)	Silty clay	4.9	7.1	Fertilized by test		
Felton, MN (Dexter)	Silt loam	5.4	7.9	134	11	240
Felton, MN (Zollinger)	Sandy loam	7.8	4.1			
Foxhome, MN	Clay loam	5.0	8.0	59	24	200
Geneseo, ND	Loam	6.0	4.0			
Glasston, ND	Silty clay loam	5.6	8.3	13	13	360
Glyndon, MN	Silt loam	3.8	7.9			
Grand Forks, ND (English coulee)	Loam	5.1	8.3	17	14	225
Hatton, ND	Sandy loam	2.3	7.6	Fertilized by test		
Hazelton, ND	Silt loam	4.5	6.4			
Hawley, MN	Loam	2.2	8.5	3	4	105
Hettinger, ND	Silty loam	2.9	6.7	Fertilized by test		
Jamestown, ND (Pipestream Dam)	Loam	6.8	6.8	28	5	290
Manvel, ND	Silt loam	6.4	7.8	72	10	190
Mayville, ND	Sandy loam	1.7	7.9			
Medora, ND	Silty clay loam	3.6	8.2	10	2	230
Minot, ND	Loam	2.7	7.0	Fertilized by test		
Mooreton, ND	Silt loam	3.2	7.8	77	15	120
Oriska, ND	Silty clay	4.1	7.4	Fertilized by test		
Oriska, ND (Howatt)	Clay loam	3.2	7.8	Fertilized by test		
Oriska, ND (sunflower)	Sandy loam	5.9	3.2			
Oriska, ND (wheat)	Loam	7.4	4.2			
Prosper, ND	Loam	4.0	7.5			
Prosper, ND (Zollinger)	Loam	3.5	6.6	Fertilized by test		
Sheyenne, ND, Grasslands (Insect)	Loamy sand	2.5	6.9	3	7	125
St. Thomas, ND	Silt loam	5.1	7.9	223	22	340
Valley City, ND	Fine loam	8.2	6.7	11	15	640
Valley City, ND (wheat)	Sandy loam	3.6	6.0			
Wahpeton, ND	Silty clay	7.2	6.4	Fertilized by test		
West Fargo, ND	Silty clay	3.6	7.2	8	42	1460
Williston, ND	Loam	2.3	6.8	Fertilized by test		
Wyndmere, ND	Loamy sand	1.9	5.7	Fertilized by test		

KEY TO ABBREVIATIONS AND EVALUATIONS

Crop injury, crop stand and weed control ratings are based on a visual estimate using a scale of 0 = no effect to 100 = complete kill.

Alfa = Alfalfa	Mesa = Meadow salsify
Amaz = Amaranth	Nabe = Navy bean
Barl, Bar = Barley	Nfcf = Nightflowering catchfly
Bdlf = Broadleaf	Oats = Tame oats
Biww = Biennial wormwood	Pagf = Pale goosefoot
Bubu = Buffalobur	Pest = Perennial sowthistle
Bygr = Barnyardgrass	Pesw = Pennsylvania smartweed
Cath = Canada thistle	Pibe = Pinto bean
Cano = Canola	Poam = Powell amaranth
Cocb = Common cocklebur	Pota = Potato
Colq = Common lambsquarters	Powe = Ponweed
Coma = Common mallow	Prle = Prickley lettuce
Copu = Common purslane	Prmi = Proso millet (tame)
Corw = Common ragweed	Prpw = Prostrate pigweed
Cram = Crambe	Qugr = Quackgrass
Dali = Dandelion	Rrpw = Redroot pigweed
Dobr = Downy brome	Ruth = Russian thistle
Drbe = Dry bean	Safl, Saff = Safflower
Duru = Durum wheat	Shpu = Shepherdspurse
Ebns = Eastern black nightshade	Smwe = Annual smartweed
Fach = False chamomile	Soyb, Sobe = Soybean
Fibw = Field bindweed	Spsp = Spotted spurge
Fipc = Field pennycress	Sugb, Sgbt = Sugarbeet
Fisb = Field sandbur	Snfl, Sufl = Sunflower
Flwe = Flixweed	Swcl = Sweet clover
Foba = Foxtail barley	Tabw = Tame buckwheat
Fomi, Ftmi = Foxtail millet	Tamu = Tansy mustard
Fota, Fxtl = Foxtail species	Tumu = Tumble mustard
Girw = Giant ragweed	Tymu = Tame yellow mustard
Grft = Green foxtail	Vowh = Volunteer wheat
Gsft = Goosefoot	Vele = Velevetleaf
HNS, Hans = Hairy nightshade	Vema = Venice mallow
Howe = Horseweed	Wht = Volunteer wheat
HRSW = Hard red spring wheat	Wibw = Wild buckwheat
KOCZ = Kochia	Wigr = witchgrass
Lath = Ladysthumb	Wimu = Wild mustard
Lent = Lentils	Wioa = Wild oat
Llsa = Lanceleaf sage	Wipm = Wild-proso millet
Mael = marshelder	Yeft = Yellow foxtail

METHODS

PPI = Preplant incorporated
PEI = Preemergence incorporated
PRE, PE = Preemergence
EPOST = Early postemergence
MPOST = Mid postemergence
LPOST = Late postemergence
LLPOST = Late-late postemergence
P, PO, POST - Postemergence
POSTDIR = Postemergence directed

FORMULATION

DF = Dry Flowable
E, EC = Emulsifiable concentrate
FL = F = Flowable
L = Liquid flowable
ME = Micro-encapsulated
WP = Wettable powder
WG,WDG = Water dispersible granules
WSP, SP = Soluble powder
G = Granules or gallon/A
S = Solution
SG = Soluble granules

MISCELLANEOUS

F = Fall
S = Spring
Inc. = I = Incorporation
%ir = inju = Percent injury rating
%sr = %std, strd = Percent stand reduction
HT = Plant height
SPK = Spike stage
Tswt = TW = Test weight
Yld = Yield
alk = alkanolamine salt
AMN = ammonium nitrate
AMS = ammonium sulfate
bee = butoxyethyl ester
dea = diethanolamine salt
dga = diglycolamine
dma = dimethylamine salt
ioe = isoctyl ester
MSO, MVO = methylated vegetable oil
NIS = nonionic surfactant
PO, OC = Petroleum oil concentrate (17% emulsifier)
SURF = S = Surfactant
tms = trimethylsulfonium salt
28N, UAN = 28% liquid nitrogen fertilizer

Herbicide Spray Adjuvants

Surfactants

Activator 90	Loveland	$22.00 gal	2 to 4 pt/100 gal
Activate-It	AGSCO	$17.00 gal	2 to 4 pt/100 gal
Crnblt Premier 90	West Central	$16.50 gal	2 to 4 pt/100 gal
Induce	Helena	$20.00 gal	2 to 4 pt/100 gal
LI-700	Loveland	$25.00 gal	2 to 4 pt/100 gal
Liberate	Loveland	$28.00 gal	2 to 4 pt/100 gal
Preference	Agriliance	$18.00 gal	2 to 4 pt/100 gal
Purity 100	Rosens	$17.00 gal	2 to 4 pt/100 gal
R-11	Wilbur-Ellis	$21.00 gal	2 to 4 pt/100 gal
Spray Booster S	Agriliance	$17.00 gal	2 to 4 pt/100 gal
Tradition 93	Rosens	$19.00 gal	2 to 4 pt/100 gal
Unifilm 707	Custom Chem	$16.00 gal	2 to 4 pt/100 gal
X-77 Spreader	Loveland	$22.50 gal	2 to 4 pt/100 gal

Surfactants with Silicone

Celexone	Agriliance	$80.00 gal	0.75 to 4 pt/100 gal
Galactic	Custom Chem	$95.00 gal	0.75 to 4 pt/100 gal
Kinetic	Helena	$93.00 gal	0.75 to 4 pt/100 gal
Silwet L-77	Loveland	$40.00 qt	0.38 to 1 pt/100 gal
Sylgard 309	Wilbur-Ellis	$80.00 gal	0.75 to 4 pt/100 gal

Surfactants + Fertilizer

Cayuse Plus	Wilbur-Ellis	$11.00 gal	1 to 2 qt/A
ClassAct NG	Agriliance	$7.00 gal	2.5% v/v
Cornbelt Combo	West Central	$5.00 gal	2.25 to 2.5 pt/A
Cornbelt Combo II	West Central	$4.50 gal	4 to 6 pt/A
Dispatch 2N	Loveland	$5.50 gal	2.5 qt/A
Impressive DB	Rosens	$0.70 lb	2.5 to 3 lb/A
Patrol	Helena	$6.00 gal	2.25 to 2.5 pt/A
Recon	Rosens	$5.50 gal	2.25 to 2.5 pt/A
Surfate	AGSCO	$14.50 gal	1% v/v

Water Conditioning Agents

AMS Plus	Agriliance	$14.00 gal	4 to 6 pt/A
Choice	Loveland	$16.50 gal	2 to 6 pt/A
Infactant	Custom Chem	$13.00 gal	2 to 6 pt/A
Quest	Helena	$20.00 gal	2 to 6 pt/A

Basic Blend

Dispatch 111	Loveland	$15.75 gal	1% v/v
Linkage	West Central	$14.25 gal	1% v/v
Newtone	Agriliance	$15.25 gal	1% v/v
Quad 7	AGSCO	$15.25 gal	1% v/v
Transactive	Helena	$15.25 gal	1% v/v

Petroleum Oil Concentrates

Agri-Dex	Helena	$7.00 gal	2 to 4 pt/A
DSV (Score)	Syngenta	–	Copak w/ Discover
Herbimax	Loveland	$7.00 gal	2 to 4 pt/A
Hi-Per-Oil	Agriliance	$11.00 gal	1 to 2 pt/A
Ortech	Rosens	$7.00 gal	2 to 4 pt/A
Premium COC	West Central	$6.00 gal	2 to 4 pt/A
Prime Oil	Agrilance	$7.00 gal	2 to 4 pt/A
Paraspread	Custom Chem	$6.50 gal	2 to 4 pt/A
ROC Crop Oil	Wilbur-Ellis	$7.00 gal	2 to 4 pt/A
R-Way	Rosens	$6.00 gal	2 to 4 pt/A

Vegetable Oil Concentrates

Amigo	Loveland	$7.50 gal	2 to 4 pt/A
Prime Oil EV	Agriliance	$6.50 gal	2 to 4 pt/A

Methylated Seed Oils (MSO)

Destiny	Agriliance	$15.00 gal	1.5 to 2 pt/A
MSO	Helena	$16.00 gal	1.5 to 2 pt/A
MSO	Loveland	$15.00 gal	1.5 to 2 pt/A
Perform	United Supp.	$16.00 gal	1.5 to 2 pt/A
Scoil	AGSCO	$15.00 gal	1.5 to 2 pt/A
Soy-Stik	West Central	$15.00 gal	1.5 to 2 pt/A
Sundance II	Rosens	$15.00 gal	1.5 to 2 pt/A
Unifilm MSO	Custom Chem	$16.00 gal	1.5 to 2 pt/A

MSO Basic Blend

Base	West Central	$15.25 gal	1 to 2% v/v
Renegade	Wilbur-Ellis	$15.25 gal	1 to 2% v/v

MSO + Water Conditioning Agent

SuperCharge	Syngenta	w/Achieve	0.5% v/v
Vortex	Loveland	$17.00 gal	1.5 to 2 pt/A

MSO + Organosilicone Surfactant

Dyne-Amic	Helena	$43.00 gal	4 pt/100 gal
Pearless	Custom Chem	$40.00 gal	3 to 5 pt/100 gal
Phase	Loveland	$40.00 gal	2 pt/100 gal
Rivet	Agriliance	$42.00 gal	4 pt/100 gal

Fertilizer

AMS (Dry)	Various	$0.32 lb	2 to 4 lb/A
AMS (liquid)	Various	$3.00 gal	2 to 4 qt/A
28% UAN	Various	$4.00 gal	2 to 4 qt/A
28% UAN (bulk)	Various	$3.50 gal	2 to 4 qt/A

AMS Fertilizer + Drift Retardant

Array	Rosens	$1.60 lb	9 to14 lb/100 gal
Corral AMS Liquid	Agriliance	$5.40 gal	2.5 to 5 gal/100 gal
Corral AMS Dry	Agriliance	$0.85 lb	10 to 17 lb/100 gal
Thrust	Loveland	$1.50 lb	7 to 17 lb/100 gal
Placement ProPak	Agriliance	$15.75 gal	1 to 2 gal/100 gal
Surf Plus	AGSCO	$3.50 gal	2.5 to 5 gal/100 gal

AMS Fertilizer + Defoamer

Herb-Stik	West Central	$4.00 gal	2 to 4 qt/A

AMS Fertilizer + Deposition + Defoamer

Dri-Gard	West Central	$1.30 lb	9 lb/100 gal
Gardian Plus	West Central	$5.50 gal	2.5 gal/100 gal

Surfactant + AMS Fertilizer + Deposition + Defoamer

One-Ap XL	West Central	$1.60 lb	10 to 20 lbs/100 gal

Drift Retardants

Chem-trol	Loveland	$16.25 gal	2 qt /100 gal
Corral Poly	Agriliance	$13.00 gal	4 to 12 fl oz/100 gal
Drift Retardant	AGSCO	$13.25 qt	2 to 4 fl oz/100 gal
Liberate	Loveland	$28.00 gal	1 to 2 qt/100 gal
Placement	Agriliance	$26.00 gal	4 fl oz/pt of L herbicd 2 fl oz/lb DF herbicid 2 oz/qt F herbicide
Sta-Put	Wilbur-Ellis	$12.00 gal	1 qt/100 gal
Target LC	Loveland	$14.95 pt	2 to 4 fl oz/100 gal

Drift Retardant+Defoamer+Water Conditoning Agent

Gardian	West Central	$25.00 gal	1 to 3 qt/100 gal
Ultra-Gard	Loveland	$44.00 gal	1 qt/100 gal

Compatibility Agents

CompatibilityAgent	West Central	$30.00 gal	1 to 3 pt/100 gal
Complete	Agriliance	$29.00 gal	1 to 3 pt/100 gal
EZ-Mix	Loveland	$28.00 gal	1 to 2 pt/100 gal
Unite	Loveland	$37.00 gal	1 to 3 pt/100 gal

Spray Tank Cleaners

Tank Cleaner	Various	$22.00 gal	1 to 2 qt/100 gal
Tank Cleaner	Various	$6.00 lb	1 to 2 lb/100 gal

LIST OF HERBICIDES TESTED IN 2001				
Common Name	**Abbreviation**	**Company**	**Formulation**	**Trade Name**
Acetochlor + EPTC	Acet + EPTC	Syngenta	1.4 + 5.6 E	Doubleplay
Acetochlor + Atrazine	Acet + Atra	Dow	2.4 + 1.6 L	FulTime
Acetochlor + Dichlormid	Acet + Dcmd	Dow	6.4 EC 3.2 ME	Surpass, TopNotch
Acetochlor + Mesotrione		Syngenta	3.5 SC	
Acetochlor + MON 4660	Acet + 4660	Monsanto	7 EC	Harness
Acifluorfen	Acif	BASF	2 E, S	Ultra blazer
Acifluorfen + Bentazon	Acif + Bent	BASF	0.67 + 3 EC 1.33 + 2.67 EC	Galaxy, Storm
Ambicarbazone		Bayer	70 DF	
Alachlor	Alac	Monsanto	4 MT	Lasso, Several
Atrazine + 2, 4-D + Fluroxypyr	PCC-196	UAP	3.25L	
Atrazine	Atra	Various	90 DF	Several
Atrazine + 2, 4-D		UAP	3.25 F	Shotgun
Atrazine + Flufenacet + Metribuzin		Bayer	50.5 + 19.6 + 4.9 DF	Axiom AT
Azafenidin	Azaf	DuPont	80 DF	Milestone
BAS 635	BAS 635	BASF	71.4 DF	BS 635
Bentazon	Bent, Bsgn	BASF	4 S	Basagran
Bentazon + sethoxydim	Bent + Seth	BASF	5 SL + 1 EC	Rezult
Bromoxynil	Brox	Aventis	2 EC	Buctril, Several
Bromoxynil + MCPA	Brox + MCPA (5lb)	Aventis	5 EC	Bronate Advanced
Bromacil		DuPont	2L	Hyvar XL
Carfentrazone	Carf	FMC	40 WG	Aim
Chlorsulfuron		DuPont	75 WG	Telar
Clethodim	Clet, Slct	Valent	2 , 0.94 EC	Select, Prisim
Clodinafop	Clfp	Syngenta	2 EC	Discover
Clopyralid	Clpy	Dow	3 S	Stinger
Clopyralid + 2,4D	Clpy + 2,4-D	Dow	0.38 + 2 S	Curtail
Cloransulam	Clor, FrstRt	Dow	84 DF	Amplify, FirstRate
Cyanazine	Cyan	DuPont	90 DF	Bladex
Cycloate	Cycl	Syngenta	6 EC	Ro-Neet
Desmedipham + Phenmedipham + Ethofumesate	Desm + Phen + Etho	Aventis	0.6 + 0.6 + 0.6 E	Progress
Desmedipham	Desm	Aventis	1.3 EC	Betanex
Desmedipham + Phenmedipham	Desm + Phen	Aventis	0.65 + 0.65 E	Betamix
Dicamba + Primisulfuron		Syngenta	43.9 + 7.5 WDG	Northstar
Dicamba + Atrazine		BASF	1.1 + 2.1 L	Marksman
Dicamba	Dica	NuFarm	4 S	Banvel, Several

Dicamba + Nicosulfuron + Diflufenzopyr	Dica + Nico+ Difl	BASF	42.7 + 17 + 10.6 WDG	Celebrity Plus
Diclofop	Difp	Aventis	3 EC	Hoelon
Diflufenzopyr + Dicamba	BAS 662	BASF	50 + 20 WDG	Distinct
Difenzoquat	Dife	BASF	2 S	Avenge
Diflufenzoypyr	BAS 664	BASF	70 WG	None
Dimethenamid + Atrazine		BASF	2.33 + 2.67 F	Lead-off, Guardsman
Dimethenamid	Dime, Frtr	BASF	6 EC	Frontier
Dimethenamid-P, s-Dimethenamid	s-Dime	BASF	6 EC	Outlook
Diquat	Diqu	Syngenta	2 S	Diquat
Diuron		DuPont	80 DF	Karmex
Endothall	Endo	Elf Atochem	3 S	Desicate II
EPTC + Dichlormid	EPTC, Dcmd	Syngenta	6.7 EC, 25 G	Eradicane
EPTC	EPTC	Syngenta	7 EC, 25 G	Eptam
EPTC + Dichlormid + Acetochlor	EPTC + Dcmd + Acet	Syngenta	6.8 EC	DoublePlay
Ethalfluralin	Etha	Dow	3 EC, 10 G	Sonalan
Ethametsulfuron		DuPont	75 DF	Muster
Ethofumesate	Etho	Aventis	4 F	Nortron
Fenoxaprop-P	Fenx-P	Aventis	1 EC	Puma
Fenx-P + MCPA + Thifensulfuron + Tribenuron		Aventis	1.6:7.6:0.187:0.092	Cheyenne
Fenx-P + 2,4-D & MCPA		Aventis	0.44 + 0.58 + 1.75 EC	Tiller
Fenx-P + MCPA		Aventis	0.67 + 4 EC	Dakota
Fluazifop-P + Fenoxaprop-P	Flfp + Fenx	Syngenta	2 + 0.66 EC	Fusion
Fluazifop-P	Flfp-P	Syngenta	2 EC	Fusilade DX
Flucarbazone-Na	Flcz	Bayer	70 WDG	Everest
Flufenacet + Isoxaflutole	Fluf + Isox	Bayer	48 + 10 DF	Epic
Flufenacet		Bayer	60 WDG	Define
Flufenacet + Metribuzin		Bayer	54.4 + 13.6 DF	Axiom, Domain
Flumetsulam + Clopyralid	Flms + Clpy	Dow	23.1 + 62.3 DF	Hornet
Flumetsulam + Metolachlor	Flms + Meto	Dow	0.2 + 7.47 EC	Broadstrike + Dual
Flumetsulam + Trifluralin	Flms + Trif	Dow	0.25 + 3.4 EC	Broadstrike +Treflan
Flumetsulam	Flms	Dow	80 WG	Python
Flumioxazin	V-53482	Valent	50 WP	Valor
Flurochloridone		Syngenta	2 EC	Racer
Fluroxypyr	Flox	Dow	1.5 EC	Starane
Fluroxypyr + 2, 4-Dioe		Dow	0.75 + 3 EC	Starane + Salvo
Fluroxypyr + MCPAioe		Dow	0.71 + 2.84 EC	Starane + Sword
Fluroxypyr + 2, 4-Ddma		Dow	0.5 + 2 EC	Starane + Saber

Fluroxypyr + 2,4-De		Dow	3.75 EC	Starane + Esteron
Fluroxypyr + MCPAe		Dow	3.55 EC	Starane + MCPA
Flurtamone + Aclonifen		Syngenta	3 EC	Nikyl
Fomesafen		Zeneca	2 EC	Reflex
Fomesafen + Adjuvant		Zeneca	1.88 EC	Flexstar
Foramsulfuron + Safener	AEF130360 01	Aventis	70 WDG	
Foramsulfuron + Safener + iodosulfuron	AEF130360 02	Aventis	62 WDG	
Fosamine		DuPont	4 S	Krenite
Glufosinate + Atrazine	Gluf + Atra	Aventis	1 + 3.3 L	Liberty ATZ
Glufosinate	Gluf, Lbrty	Aventis	1 EC	Liberty/Rely
Glyphosate + AMADs	Glyt + AMADS	UAP Platte Chem. Co.	1.23 SL + 9.1 AMADS	Engame
Glyphosate + 2, 4-D		Monsanto	0.9 + 1.5 S	LandmasterBW
Glyphosate-ipa	Glyt	Monsanto	3 lb ae/gal S	Roundup, Several
Glyphosate-tms	Glyt	Syngenta	3.45 ae/gal S	Touchdown
Halosulfuron	Halo, Prmt	Monsanto	75 DF	Permit
Hexazinone	Hexa	DuPont	75 DF + 90 SP	Velpar
Imazamethabenz	Immb	BASF	2.5 EC	Assert
Imazamox	Imam	BASF	1 S	Raptor
Imazamox + Imazethapyr		BASF	35 + 35 WDG	Odyssey
Imazapic		BASF	2 EC	Plateau
Imazapyr		BASF	2.5 L	Arsenal
Imazethapyr + Glyphosate		BASF	0.17 + 2SL	Extreme
Imazethapyr + Pendimethalin	Imep + Pend	BASF	2.9 EC	Pursuit Plus
Imazethapyr + Imazapyr	Imep + Impr	BASF	70 WDG	Lightning
Imazethapyr	Imep, Prst	BASF	2 S	Pursuit
Isoxaflutole	RP 201772	Aventis	4 SC	BalancePro
Lactofen	Lact	Valent	2 S	Cobra
MCPA	MCPA	Aventis	4 EC, S	Several
Mesotrione	ZA1296	Syngenta	4 SC	Callisto
Metolachlor + Metribuzin		Syngenta	6.3 + 1.5 L	Boundary
(s)-Metolachlor + Benoxacor (active isomer)		Syngenta	7.6 E	Dual/II/ Magnum
Metolachlor + Atrazine		Syngenta	2.4 + 3.1 L	Bicep II Magnum
Metribuzin	Metr	Bayer	4 F, 75 DF	Sencor
Metsulfuron	Mets	DuPont	60 DF	Ally/Escort
Meturon		Griffin	4L, 80DF	Meturon
Nicosulfuron	Nico	DuPont	75 DF	Accent

Nicosulfuron + Rimsulfuron		DuPont	50 + 25 DF, 37.5 + 37.5 DF	Steadfast, DPX-79406
Nicosulfuron + Rimsulfuron + Atrazine		DuPont	89.46 DF	Basis Gold
Nicosulfuron+Rimsulfuron +Clopyralid+Flumetsulam		Dupont	6.2 + 6.2 + 51.7 + 19.3 DF	Accent Gold
Oxadiargyl		Aventis	80 WG	Raft
Oxadiazon		Aventis	2 G	Ronstar
Oxyfluorfen	Oxyf	Rohm & Haas	1.6 EC	Goal
Paraquat	Para	Syngenta	2.5 S	Several
Pendimethalin	Pend	BASF	3.3 EC	Prowl
Picloram		Dow	2 S	Tordon 22K
Primisulfuron		Syngenta	75 DF	Beacon
Promatryne		Various		Caparol
Propanil	Prnl	Rohm&Haas	80 DF	Stampede 80 EDF
Prosulfuron	Pros	Syngenta	75 DF	Peak
Pyraflufen	ET-751		0.02 EC	Ecopart
Pyrazon	Pyzn	BASF	4.2 F	Pyramin
Quinclorac		BASF	75 WP	Paramount
Quizalofop-P	Qufp-P	DuPont	0.88 EC	Assure II
Rimsulfuron + Thifensulfuron	Rims + Thif, Bsis	DuPont	75 DF	Basis
Rimsulfuron		DuPont	25 DF	Matrix
Sethoxydim	Seth	BASF	1.5 EC	Poast
Sulfentrazone	Suen	DuPont/FMC	75 DF	Authority, Spartan
Sulfometuron	Sume	DuPont	75 DF	Oust
Tebuthiuron		Dow	20 WG	Spike
Thifensulfuron + Tribenuron	Thif + Trib	DuPont	50 + 25 DF	Harmony Extra
Thifensulfuron	Thif, Pinn ,Pncl	DuPont	75 DF	Harmony GT
Tralkoxydim	Tral	Zeneca	40 DF	Achieve
Tribenuron	Trib	DuPont	75 DF	Express
Triclopyr	Trcp	Dow	4 EC	Garlon, Remedy
Trifluralin	Trif	Dow	4 EC, 10 G	Several
Triflusulfuron	Tfsu	DuPont	50 DF	UpBeet
2, 4-D	2, 4-D	Various	Various EC, S, WSP	Several
2, 4-DB	2, 4-DB	Various	2	Several

[a]Abbreviations in the tables may consist of only the first one, two, or three listed letters when space was limited. Abbreviations of numbered compounds vary with available space, but usually use the first letters and numbers.