Canada thistle control by aminopyralid in North Dakota. Luke W. Samuel and Rodney G. Lym. (Department of Plant Sciences, North Dakota State University, Fargo, ND 58105).
Aminopyralid is a member of the pyridinecarboxylic acid family of herbicides and controls several noxious weed species at lower use rates than other auxin-type herbicides. This research was to evaluate aminopyralid alone or with 2,4-D applied in the spring or fall for Canada thistle control.

Aminopyralid at rates ranging from 0.75 oz ae/A to the labeled use rate of 1.75 oz/A was spring- or fall-applied in all experiments. Herbicides were applied using a hand-held boom sprayer delivering 17 gpa at 35 psi. Experimental plots were 10 by 30 feet with four replicates in a randomized complete block design at three locations in North Dakota. Control was visually evaluated using percent stand reduction compared to the untreated control.

Canada thistle control with aminopyralid applied alone in spring or fall was evaluated in Theodore Roosevelt National Park (TRNP) near Medora, ND. Treatments were applied June 20, 2005 or September 29, 2004. Spring-applied treatments were to Canada thistle 15 to 24 inches tall in the early-bolt growth stage. Fall-applied treatments were to Canada thistle rosettes, mature plants, and fall regrowth 18 to 24 inches tall. The location consisted of a solid stand of Canada thistle with few desirable perennial grass species. Canada thistle stem density averaged 5 stems/ft$^2$ across all treatments.

Canada thistle control 3 mo after treatment (MAT) when spring-applied tended to increase as herbicide rate increased (Table 1). Aminopyralid at 0.75 and 1.75 oz/A, and picloram at 6 oz/A averaged 77, 86, and 91% control, respectively, while aminopyralid at 1.25 oz/A averaged 70% control. This uneven control was not observed when aminopyralid was fall-applied as Canada thistle control 12 MAT was similar regardless of rate. Spring-applied aminopyralid 12 MAT, provided an average of 42% Canada thistle control 12 MAT compared to spring- and fall-applied picloram at 73% and 48%, respectively. The high initial Canada thistle stem density and few desirable grass species likely influenced aminopyralid efficacy 12 MAT due to limited soil residual of aminopyralid and little or no competition for emerging seedlings. Canada thistle density in the experiment borders remained high following treatment and was a potential source for reinfestation by both seed and vegetative regrowth.

A second study to evaluate aminopyralid applied alone or with 2,4-D for Canada thistle control was established at three locations in North Dakota, near Fargo, Jamestown, and TRNP. The locations at Fargo was untilled cropland, at Jamestown was a conservation area, and at TRNP was rangeland. Treatments were applied at Fargo on June 9 or October 3, 2005, at Jamestown June 27 or September 26, 2005, and at TRNP September 27, 2005 or June 6, 2006. Spring-applied treatments at Fargo were to Canada thistle rosettes and bolted plants 9 to 18 inches tall, at Jamestown to rosette to pre-bud plants 12 to 30 inches tall, and at TRNP to bolted Canada thistle 12 to 24 inch tall. Fall-applied treatments in Fargo were to Canada thistle rosettes and fall regrowth 6 to 24 inches tall, which had been mowed in July 2005, and in Jamestown and TRNP to post-bloom plants with fall regrowth 12 to 18 and 48 to 60 inches tall. Canada thistle stem density prior to treatment averaged 3, 1, and 4 stems/ft$^2$ for the Fargo, Jamestown, and TRNP

sites, respectively.
Canada thistle control 12 MAT within treatments was similar across locations and was generally better when fall-applied compared to spring-applied. For example, control 12 MAT with fall-applied aminopyralid at 1.75 oz/A, aminopyralid plus 2,4-D, and picloram averaged 96, 93, and 89% across locations compared to 85, 79, and 78% control when spring-applied, respectively (Table 2). Long-term Canada thistle control 15 MAT was better spring-applied with aminopyralid than picloram. Control tended to be higher at Jamestown compared to Fargo, possibly due to increased competition from perennial grasses at Jamestown rather than annual grasses at Fargo. Canada thistle control with aminopyralid plus 2,4-D was similar to aminopyralid alone.

In summary, aminopyralid and aminopyralid plus 2,4-D controlled Canada thistle at much lower use rates than picloram. Control 12 MAT was generally better when aminopyralid was fall-applied compared to spring-applied regardless of treatment. Aminopyralid control of Canada thistle may be influenced by Canada thistle density and cover, and with the presence of competition from perennial or annual grass species. In general, aminopyralid provided better long-term Canada thistle control when other plant species were present regardless of Canada thistle density.

*Table 1*. Canada thistle control with aminopyralid and picloram applied in the spring (June 2005) or fall (September 2004) at Theodore Roosevelt National Park near Medora, ND.

| | | Months after treatment | | | |
|---|---|---|---|---|---|
| Treatment[1] | Rate | 3 | 9 | 12 | 21 |
| | oz/A | % control | | | |
| June 2005 | | | | | |
| Aminopyralid | 0.75 | 77 | | 41 | |
| Aminopyralid | 1.25 | 70 | | 30 | |
| Aminopyralid | 1.75 | 86 | | 55 | |
| Picloram | 6 | 91 | | 73 | |
| | | | | | |
| September 2004 | | | | | |
| Aminopyralid | 0.75 | | 97 | 39 | 6 |
| Aminopyralid | 1.25 | | 100 | 36 | 20 |
| Aminopyralid | 1.75 | | 100 | 48 | 21 |
| Picloram | 6 | | 99 | 48 | 24 |
| LSD (0.05) | | 15 | 1 | 36 | NS |

[1]Surfactant Activator 90 at 0.25% v/v was applied with all treatments, Loveland Products Inc., Greeley, CO 80632.

*Table 2.* Canada thistle control with aminopyralid and picloram applied in June or September 2005 at Fargo and Jamestown, and applied in September 2005 or June 2006 in Theodore Roosevelt National Park near Medora, ND.

| | | 3 mo after treatment | | | | 12 mo after treatment | | | | 15 mo after treatment | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Treatment[1] | Rate | Fargo | James-town | TRNP[2] | Mean | Fargo | James-town | TRNP | Mean | Fargo | James-town | TRNP | Mean |
| | — oz/A — | % control | | | | | | | | | | | |
| Spring-applied | | | | | | | | | | | | | |
| Aminopyralid | 1.25 | 99 | 95 | 98 | 97 | 90 | 92 | - | 91 | 54 | 92 | - | 73 |
| Aminopyralid | 1.75 | 100 | 96 | 98 | 98 | 86 | 85 | - | 85 | 65 | 81 | - | 73 |
| Aminopyralid + 2,4-D[3] | 1.25 + 10 | 99 | 95 | 97 | 97 | 80 | 78 | - | 79 | 66 | 70 | - | 68 |
| Picloram | 6 | 96 | 97 | 97 | 97 | 66 | 91 | - | 78 | 16 | 86 | - | 51 |
| Fall-applied | | | | | | | | | | | | | |
| Aminopyralid | 1.25 | | | | | 83 | 85 | 92 | 87 | | | | |
| Aminopyralid | 1.75 | | | | | 95 | 94 | 100 | 96 | | | | |
| Aminopyralid + 2,4-D[3] | 1.25 + 10 | | | | | 95 | 86 | 98 | 93 | | | | |
| Picloram | 6 | | | | | 86 | 86 | 96 | 89 | | | | |
| LSD (0.05) | | 2 | NS | NS | NS | 14 | NS | 7 | 9 | 25 | 19 | - | 15 |

[1]Surfactant Activator 90 at 0.25% v/v was applied with all treatments, Loveland Products Inc., Greeley, CO 80632.
[2]Abbreviation: TRNP = Theodore Roosevelt National Park.
[3]Commercial formulation – ForeFront by Dow AgroSciences, Indianapolis, IN 46268.

Spotted knapweed, Canada thistle, and western snowberry control with metsulfuron and chlorsulfuron applied alone or with other herbicides. Rodney G. Lym (Department of Plant Sciences, North Dakota State University, Fargo, ND 58105). Previous research has found that metsulfuron controls some troublesome weeds, such as houndstongue (*Cynoglossum officinale* L.), that are difficult to control with commonly used auxin-type herbicides in pasture and rangeland. Chlorsulfuron tends to have a wider weed control spectrum and longer residual than metsulfuron. The purpose of this research was to evaluate metsulfuron applied alone or with chlorsulfuron or various auxin herbicides for control of spotted knapweed, Canada thistle, and western snowberry (buckbrush) (*Symphoricarpos occidentalis* Hook.).

The first study evaluated spotted knapweed control with metsulfuron alone or with chlorsulfuron. The experiment was established on June 6, 2005, on a dense infestation near Hawley, MN. Treatments were applied using a hand-held boom sprayer delivering 17 gpa at 35 psi. The plots were 10 by 25 feet and replicated four times in a randomized complete block design. Spotted knapweed was in the rosette to early-bolt growth stage and 4 to 14 inches tall. Control was based on a visual estimate of percent stand reduction as compared to the untreated check.

Metsulfuron alone or with chlorsulfuron did not provide satisfactory control of spotted knapweed (Table 1). Picloram at 4 oz/A provided an average of 90% control 2 and 3 MAT (months after treatment), which declined to 78% 12 MAT. Picloram caused approximately 30% grass injury 1 MAT (data not shown).

The second study evaluated Canada thistle control with metsulfuron and chlorsulfuron and was established near Eckleson, ND, on June 15, 2005. The experiment was designed as previously described except the plots were 10 by 30 feet. Canada thistle was beginning to bolt, was 8 to 18 inches tall, and there was a dense grass under-story.

Metsulfuron alone or with chlorsulfuron averaged 76% 1 and 2 MAT and generally did not provide season-long Canada thistle control (Table 2). Control declined to 26% 3 MAT with all treatments, except metsulfuron plus chlorsulfuron at 0.15 + 0.76 oz/A which averaged 80%. Grass injury was minimal and grass recovered within 2 MAT (data not shown). Canada thistle control with clopyralid averaged 99, 90, and 61% 2, 3, and 12 MAT, respectively.

The third experiment evaluated western snowberry control with metsulfuron plus 2,4-D and was established on June 6, 2005, near Walcott, ND. The plots were 15 by 30 feet with three replications, and the western snowberry was 12 to 36 inches tall and beginning to flower. Metsulfuron at 0.15 or 0.3 oz/A with 2,4-D at 4 oz/A provided 99% western snowberry control 15 MAT with no observed grass injury (Table 3).

In summary, metsulfuron applied alone or with chlorsulfuron did not provide satisfactory control of spotted knapweed and generally less than season-long control of Canada thistle. Metsulfuron plus 2,4-D provided excellent western snowberry control for at least two seasons after application and would be cost-effective for use in pasture and rangeland.

*Table 1.* Spotted knapweed control with metsulfuron applied alone or with chlorsulfuron on June 6, 2005, near Hawley, MN.

| | | Months after treatment | | | |
|---|---|---|---|---|---|
| Treatment[1] | Rate | 1 | 2 | 3 | 12 |
| | —— oz/A —— | —— % control —— | | | |
| Metsulfuron | 0.15 | 0 | 3 | 10 | 1 |
| Metsulfuron | 0.3 | 0 | 15 | 9 | 1 |
| Metsulfuron | 0.6 | 4 | 40 | 21 | 0 |
| Metsulfuron + chlorsulfuron | 0.15 + 0.045 | 2 | 3 | 3 | 0 |
| Metsulfuron + chlorsulfuron | 0.3 + 0.09 | 5 | 15 | 5 | 0 |
| Metsulfuron + chlorsulfuron | 0.6 + 0.20 | 0 | 33 | 3 | 0 |
| Picloram | 4 | 31 | 92 | 89 | 78 |
| LSD (0.05) | | 15 | 15 | 14 | 9 |

[1]Methylated seed oil at 1 qt/A, Scoil by AGSCO, Grand Forks, ND, was applied with all treatments except picloram included X-77 surfactant at 0.25%, by Ortho, Marysville, OH.

*Table 2.* Canada thistle control with metsulfuron applied alone or with chlorsulfuron on June 15, 2005, near Eckelson, ND.

| Treatment[1] | Rate | Months after treatment 1 | 2 | 3 | 12 |
|---|---|---|---|---|---|
| | oz/A | % control | | | |
| Metsulfuron | 0.15 | 66 | 73 | 19 | 4 |
| Metsulfuron | 0.3 | 78 | 71 | 16 | 6 |
| Metsulfuron | 0.6 | 85 | 90 | 52 | 18 |
| Metsulfuron + chlorsulfuron | 0.0375 + 0.19 | 73 | 49 | 17 | 4 |
| Metsulfuron + chlorsulfuron | 0.075 + 0.38 | 76 | 82 | 28 | 11 |
| Metsulfuron + chlorsulfuron | 0.15 + 0.76 | 72 | 96 | 80 | 33 |
| Clopyralid | 8 | 99 | 99 | 90 | 61 |
| LSD (0.05) | | 16 | 22 | 16 | 13 |

[1]Methylated seed oil at 1 qt/A, Scoil by AGSCO, Grand Forks, ND, was applied with all treatments except clopyralid included X-77 surfactant at 0.25%, by Ortho, Marysville, OH.

*Table 3.* Western snowberry control with metsulfuron applied with 2,4-D on June 6, 2005, near Walcott, ND.

| Treatment1 | Rate | Months after treatment 1 | 2 | 12 | 15 |
|---|---|---|---|---|---|
| | oz/A | % control | | | |
| Metsulfuron + 2,4-D ester | 0.15 + 4 | 99.5 | 100 | 97 | 99 |
| Metsulfuron + 2,4-D ester | 0.3 + 4 | 100 | 100 | 99 | 99 |
| Untreated | | 0 | 0 | 0 | 0 |
| LSD (0.05) | | 1 | 0.1 | 2 | 1 |

1Methylated seed oil at 1% v/v, Scoil by AGSCO, Grand Forks, ND, was applied with both treatments.

Control of yellow toadflax with various herbicides and application timings in North Dakota. Rodney G. Lym. (Department of Plant Sciences, North Dakota State University, Fargo, ND 58105). Yellow toadflax has increased in North Dakota from an estimated infestation of 69 acres in 1997 to more than 850 acres in 2005 and may begin to spread rapidly in the future. Unfortunately, current herbicide treatments do not consistently control yellow toadflax. The purpose of this research was to evaluate various timings and use rates of several herbicides applied alone and in combination for yellow toadflax control.

Two experiments were established on a dense stand of yellow toadflax on a U.S. Fish and Wildlife Service Waterfowl Production Area in Barnes County, North Dakota, in 2005. Herbicides were applied using a hand-held boom sprayer delivering 17 gpa at 35 psi. Experimental plots were 10 by 30 feet and replicated four times in a randomized complete block design. Yellow toadflax control was evaluated visually using percent stand reduction compared to the untreated check.

Treatments in the first experiment included picloram plus 2,4-D and/or imazapic, imazapic alone, or metsulfuron plus dicamba and were applied to yellow toadflax in the vegetative (June 6), flowering (July 26), or fall regrowth (Sept. 26) stages. No treatment regardless of application timing provided satisfactory yellow toadflax control (Table 1). Picloram at 16 oz/A applied during the flowering stage provided the best control, which averaged 76% 1 yr following treatment. However, control declined rapidly and only averaged 24% in August 2006.

The second experiment evaluated aminopyralid or picloram alone or with 2,4-D applied when yellow toadflax was in the flowering growth stage on July 26, 2005. No treatment provided satisfactory yellow toadflax control (Table 2). Control was similar whether aminopyralid or picloram were applied alone or with 2,4-D.

Treatments evaluated in this study did not satisfactorily control yellow toadflax. Currently, the most widely used herbicide to control yellow toadflax is picloram, often applied at 16 oz/A, which will reduce yellow toadflax topgrowth for approximately 1 yr.

*Table 1.* Yellow toadflax control with various herbicides and application timings at a waterfowl production area in Barnes County, ND.

| | | Evaluation date | | | |
|---|---|---|---|---|---|
| | | 2005 | | 2006 | |
| Application timing/treatment | Rate | Aug. 4 | Sept. 6 | July 5 | Aug. 31 |
| | oz/A | % control | | | |
| Vegetative (June 6, 2005) | | | | | |
| Picloram + 2,4-D | 8 + 16 | 25 | 3 | 8 | 3 |
| Imazapic + MSO1 + 28% N | 2 + 1 qt + 1 qt | 23 | 4 | 7 | 0 |
| Picloram + imazapic + 2,4-D + MSO | 8 + 1 + 16 + 1 qt | 10 | 6 | 3 | 0 |
| Metsulfuron + dicamba + 2,4-D2 + MSO | 0.3 + 4 + 11.6 + 1% | 4 | 3 | 0 | 0 |
| Flowering (July 26, 2005) | | | | | |
| Picloram + 2,4-D | 8 + 16 | | 20 | 3 | 6 |
| Imazapic + MSO + 28% N | 2 + 1 qt + 1 qt | | 20 | 4 | 4 |
| Picloram + imazapic + 2,4-D + MSO | 8 + 1 + 16 + 1 qt | | 22 | 4 | 8 |
| Metsulfuron + dicamba + 2,4-D + MSO | 0.3 + 4 + 11.6 + 1% | | 19 | 0 | 0 |
| Picloram | 16 | | 24 | 76 | 24 |
| Fall regrowth (Sept. 26, 2005) | | | | | |
| Picloram + 2,4-D | 8 + 16 | | | 25 | 5 |
| Imazapic + MSO + 28% N | 2 + 1 qt + 1 qt | | | 0 | 0 |
| Picloram + imazapic + 2,4-D + MSO | 8 + 1 + 16 + 1 qt | | | 22 | 8 |
| Metsulfuron + dicamba + 2,4-D + MSO | 0.3 + 4 +11.6 + 1% | | | 0.5 | 0 |
| Untreated | | | | 0 | 0 |
| LSD (0.05) | | 19 | 8 | 19 | 11 |

1Methylated seed oil at 1 qt/A, Scoil by AGSCO, Grand Forks, ND, was applied with all treatments except picloram.
2Dicamba plus 2,4-D was the commercial formulation Weedmaster by BASF, Research Triangle Park, NC.

*Table 2.* Yellow toadflax control with aminopyralid or picloram either alone or with 2,4-D applied during the flowering growth stage on July 26, 2005, at a waterfowl production area in Barnes County, North Dakota.

| | | Evaluation date | | |
|---|---|---|---|---|
| | | 2005 | 2006 | |
| Treatment | Rate | Sept. 6 | July 25 | Aug. 31 |
| | oz/A | | % control | |
| Aminopyralid + X-771 | 1.25 + 0.25% | 4 | 0 | 0 |
| Aminopyralid + X-77 | 1.75 + 0.25% | 6 | 2 | 0 |
| Aminopyralid + MSO | 1.25 + 1 qt | 5 | 0 | 0 |
| Aminopyralid + Kinetic | 1.25 + 0.25% | 6 | 0 | 0 |
| Aminopyralid + 2,4-D2 + X-77 | 10.7 + 1.32 + 0.25% | 9 | 0 | 0 |
| Aminopyralid + 2,4-D2 + X-77 | 13.9 + 1.72 + 0.25% | 16 | 8 | 0 |
| Picloram | 16 | 10 | 18 | 3 |
| Picloram + 2,4-D | 8 + 16 | 16 | 0 | 0 |
| LSD (0.05) | | 8 | 4 | NS |

1X-77 surfactant, by Ortho, Marysville, OH; methylated seed oil, Scoil by AGSCO, Grand Forks, ND; Kinetic by Helena Chemical, Collierville, TN.
2Aminopyralid plus 2,4-D was a a premix formulation coded GF-1004, by Dow Chemical, Indianapolis, IN.

Leafy spurge control with picloram applied with imazapic or dicamba plus diflufenzopyr. Rodney G. Lym. (Department of Plant Sciences, North Dakota State University, Fargo, ND 58105). Research at North Dakota State University has shown that picloram applied with 2,4-D plus imazapic or with diflufenzopyr provided better long-term leafy spurge control than picloram applied alone or with 2,4-D. The purpose of this research was to compare picloram applied with imazapic or diflufenzopyr at various rates and two timings for leafy spurge control.

The study was established at the Albert Ekre Research Center near Walcott, ND. The spring treatments were applied on June 6, 2005 and in a separate experiment the fall treatments were applied on September 14, 2005. Leafy spurge in spring was treated in the true-flower growth stage or in fall was treated when regrowth was 1 to 2 inches. Diflufenzopyr alone is not commercially available, so the commercial mixture of dicamba plus diflufenzopyr (Overdrive) was used. All treatments were applied with a hand-held sprayer delivering 8.5 gpa at 35 psi. Both experiments were a randomized complete block design with four replicates, and plots were 10 by 30 feet. Control was based on a visual estimate of percent stand reduction as compared to the untreated check.

Picloram applied with imazapic or with dicamba plus diflufenzopyr provided better leafy spurge control than picloram or picloram plus 2,4-D for both application dates (Table). Picloram applied with dicamba plus diflufenzopyr in the spring provided the best long-term control which averaged 88% in May and 77% in Sept. 2006 [(12 and 15 mo after treatment (MAT)] compared to 42 and 31%, respectively, for the standard picloram plus 2,4-D. In general, leafy spurge control with picloram plus imazapic spring-applied was similar regardless of rate and averaged 63% 1 yr after treatment.

Long-term leafy spurge control for fall-applied treatments was improved when picloram was applied with imazapic or dicamba plus diflufenzopyr compared to picloram or picloram plus 2,4-D. However, unlike the spring-applied treatments control increased similarly whether imazapic or dicamba plus 2,4-D was applied with picloram. Control with these combination treatments averaged 89% in May (9 MAT) and 62% in Aug. 2006 (12 MAT) compared to an average of 53 and 26% with picloram and picloram plus 2,4-D, respectively. Leafy spurge control declined when imazapic was reduced from 1 to 0.75 oz/A in combination with picloram.

In summary, long-term leafy spurge control was improved when picloram was applied with imazapic or with dicamba plus diflufenzopyr compared to the standard treatments of picloram or picloram plus 2,4-D. The combination of picloram plus dicamba plus diflufenzopyr provided better long-term control than picloram plus imazapic when spring- but not fall-applied. These combinations cost approximately twice as much as picloram plus 2,4-D at 4 + 16 oz/A, but land managers may only need to retreat every other year rather than annually. The savings from reduced treatment costs and reduction in labor force likely will be equal to or greater than the increased herbicide costs.

*Table.* Picloram applied alone or with various other herbicides for leafy spurge control in the spring or fall near Walcott, ND.

| Treatment | Rate | Evaluation date | | |
|---|---|---|---|---|
| | | 1 Sept 05 | 30 May 06 | 15 Aug 06 |
| Spring applied (6 June 05) | oz/A | % control | | |
| Imazapic + picloram + MSO1 | 1 + 4 + 1 qt | 97 | 57 | 48 |
| Imazapic + picloram + MSO | 1 + 6 + 1 qt | 99 | 77 | 56 |
| Imazapic + picloram + MSO | 0.75 + 4.5 + 1 qt | 87 | 66 | 46 |
| Imazapic + picloram + MSO | 0.75 + 6 + 1 qt | 97 | 62 | 48 |
| Imazapic + picloram + MSO | 1 + 8 + 1 qt | 100 | 64 | 51 |
| Imazapic + picloram + 2,4-D + MSO | 1 + 4 + 16 + 1 qt | 89 | 51 | 32 |
| Dicamba + diflufenzopyr2 + picloram + MSO | 2 + 0.8 + 4 + 1 qt | 98 | 85 | 74 |
| Dicamba + diflufenzopyr2 + picloram + MSO | 2 + 1.1 + 6 + 1 qt | 98 | 92 | 79 |
| Picloram + 2,4-D | 4 + 16 | 31 | 42 | 31 |
| Picloram | 6 | 16 | 8 | 4 |
| LSD (0.05) | | 14 | 18 | 20 |
| Fall applied (14 Sept. 05) | | | | |
| Imazapic + picloram + MSO1 | 1 + 4 + 1 qt | | 92 | 67 |
| Imazapic + picloram + MSO | 1 + 6 + 1 qt | | 90 | 69 |
| Imazapic + picloram + MSO | 0.75 + 4.5 + 1 qt | | 83 | 49 |
| Imazapic + picloram + MSO | 0.75 + 6 + 1 qt | | 84 | 54 |
| Imazapic + picloram + MSO | 1 + 8 + 1 qt | | 95 | 67 |
| Imazapic + picloram + 2,4-D + MSO | 1 + 4 + 16 + 1 qt | | 89 | 56 |
| Dicamba + diflufenzopyr2 + picloram + MSO | 2 + 0.8 + 4 + 1 qt | | 85 | 66 |
| Dicamba + diflufenzopyr2 + picloram + MSO | 2 + 1.1 + 6 + 1 qt | | 90 | 68 |
| Picloram + 2,4-D | 4 + 16 | | 56 | 28 |
| Picloram | 6 | | 50 | 24 |
| LSD (0.05) | | | 25 | 22 |

1Methylated seed oil at 1 qt/A, Scoil by AGSCO, Grand Forks, ND.
2Dicamba plus diflufenzopyr was the commercial formulation Overdrive by BASF, Research Triangle Park, NC.