Pest Control in Crops Grown in Northwestern New Mexico, 2004

Annual Data Report 100-2004

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INTRODUCTION

Weeds cause more total crop losses than any other agricultural pest (Arnold, 1981–2008; Hall et al., 1995; Currie, 2004; Lorenzi and Jeffery, 1987). Weeds reduce crop yields and quality, harbor insects and plant diseases, and cause irrigation and harvesting problems (Chandler et al., 1984; Lorenzi and Jeffery, 1987; Currie, 2005; Massinga et al., 1999, 2003). As a result, weeds reduce the total value of agricultural products in the United States by 10 to 15% (Lorenzi and Jeffery, 1987). Estimated average losses during 1975 to 1979 in the potential production of field corn, potatoes, and onion ranged from 7 to 16% in the Mountain States Region, which includes New Mexico (Chandler et al., 1984). San Juan County ranks first in potato production, fourth in alfalfa production, and second in corn production among all New Mexico counties (New Mexico Agricultural Statistics, 2007).

An estimated 90% of all tillage operations are for weed control (J.G. Foster, personal communications, 2005–2007). Herbicides can reduce the number of required tillage operations and can be used where cultivation is not possible, such as within crop rows or in solid-seeded crops. With increasing fuel and labor costs, herbicides are often more economical than other methods of weed control.

Many herbicides are approved for use on crops grown on medium- and fine-textured, high-organic soils. Little information is available, however, regarding their effectiveness and safety on low-organic, coarse-textured soils that are common to northwestern New Mexico.

The Environmental Protection Agency (EPA) has become more stringent with regard to research data required for pesticide approval. Thus, it has become critical that state Agricultural Science Centers work closely with commercial companies developing new pesticides in order to obtain the research data required by the EPA. This cooperation will benefit the agricultural industry of the state and assist EPA pesticide registration.

Before 1980, the use of herbicides in northwestern New Mexico was limited. Most growers were still using 2,4-D in corn for broadleaf weed control, while annual grasses were left in check. In alfalfa, burning winter annual mustard and downy brome with propane was not uncommon. An herbicide field-screening program has provided essential information on the activity of new and old herbicides on crops grown in northwestern New Mexico (Arnold, 1981–2008).

As new land on the Navajo Indian Irrigation Project comes under cultivation, weed and insect problems are varied and may change with each successive crop. It is only through continued research that the demand for reliable information on the use of pesticides in northwestern New Mexico can be met.

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Broadleaf weed control in field corn with preemergence and preemergence followed by sequential postemergence herbicides

Introduction
Many herbicides can be used in sequential treatments. These trials are preemergence herbicides followed by sequential postemergence treatments. If weeds escape the preemergence treatment, a postemergence treatment may then be used to assist in weed control.

Objectives
- Determine efficacy of selected herbicides for control of annual broadleaf weeds in field corn.
- Determine corn tolerance to applied selected herbicides and yield.

Materials and methods
A field experiment was conducted in 2004 at Farmington, NM, to evaluate the response of field corn (var. Pioneer 34N42) and annual broadleaf weeds to preemergence and preemergence followed by sequential postemergence herbicides. Soils were fertilized according to New Mexico State University recommendations based on soil tests. The experimental design was a randomized complete block with four replications. Individual plots were four 34-in. rows 30 ft long. Treatments were applied with a compressed air backpack sprayer calibrated to deliver 30 gal/ac at 30 psi. Field corn was planted with flexi-planters equipped with disk openers on May 17. The preemergence treatments were applied on May 18 and immediately incorporated with 0.75 in. of sprinkler-applied water. Sequential postemergence treatments were applied on June 10 when field corn was in the 4th leaf stage and weeds were small (<2 in.). Black nightshade and redroot and prostrate pigweed infestations were heavy and Russian thistle and common lambsquarters infestations were light throughout the experimental area. Preemergence and preemergence/sequential postemergence treatments were evaluated visually on June 8 and July 12. Crop injury was evaluated on June 8. Stand counts were made on June 8 by counting individual plants per 10 ft of the third row of each plot. Five feet of the two center rows from each plot were harvested by hand on January 19, 2005. The corn was then shelled and weighed. Results obtained were subjected to analysis of variance at P = 0.05.

Results and discussion
Weed control and injury evaluations: Crop injury evaluations and stand counts are given in Table 1. Weed control evaluations are given in Tables 1 and 2. All treatments except the check gave excellent control of redroot and prostrate pigweed, black nightshade, and common lambsquarters. Outlook and Dual II Mag applied preemergence at 0.75 plus 1.25 lb ai/ac gave 55% or less control of Russian thistle. The addition of Distinct at 0.25 or 0.17 lb ai/ac to either Outlook or Dual II Mag increased Russian thistle control by approximately 48% (Table 2).

Crop yields: Yields are given in Table 2. Yields were 136 to 184 bu/ac higher in herbicide-treated plots as compared to the check.

Broadleaf weed control in Roundup Ready field corn with preemergence and preemergence followed by sequential postemergence herbicides

Introduction
Many herbicides can be used in sequential treatments. Theses trials are preemergence herbicides followed by sequential postemergence treatments. If weeds escape the preemergence treatment, a postemergence treatment may then be used to assist in weed control.

Objectives
- Determine seedling emergence and efficacy of selected herbicides for control of annual broadleaf weeds in field corn.
- Determine corn tolerance to applied selected herbicides and yield.

Materials and methods
A field experiment was conducted in 2004 at Farmington, NM, to evaluate the response of field corn (var. Dekalb 60-19RR) and annual broadleaf weeds to preemergence, and preemergence followed by sequential postemergence herbicides. Soils were fertilized according to New Mexico State University recommendations based on soil tests. The experimental design was a randomized complete block with four replications. Individual plots were four 34-in. rows 30 ft long. Treatments were applied with a compressed air backpack sprayer calibrated to deliver 30 gal/ac at 30 psi. Field corn was planted with flexi-planters equipped with disk openers on May 17. The preemergence treatments were applied on May 18 and immediately incorporated with 0.75 in.

of sprinkler-applied water. Sequential postemergence treatments were applied on June 10, when field corn was in the 4th leaf stage and weeds were small (<2 in.). Black nightshade and redroot and prostrate pigweed infestations were heavy and Russian thistle and common lambsquarters infestations were light throughout the experimental area. Preemergence and preemergence/ sequential postemergence treatments were evaluated visually on June 8 and July 12. Crop injury was evaluated on June 8. Seedling emergence evaluations were made on May 25, 27, and 29 by counting individual plants per 10 ft of the center two rows of each plot. Five feet of the two center rows from each plot were harvested by hand on January 20, 2005. The corn was then shelled and weighed. Results obtained were subjected to analysis of variance at P = 0.05.

Results and discussion

Weed control and injury evaluations: Seedling emergence evaluations are given in Table 3. Weed control evaluations are given in Tables 3 and 4. There was no significant difference in seedling emergence for May 25 and May 27 evaluations. On May 25 and 27, Guardsman Max and Harness Xtra applied at 1.9 and 2.7 lb ai/ac had the highest number of seedlings emerged at 16.5 and 41.5, respectively. By May 29, Bicep Lite II Mag applied at 1.65 lb ai/ac had the highest number of emerged seedlings of 43.8. Broadleaf weed control was excellent with all treatments except the check. Even though Roundup WeatherMAX was applied as a sequential postemergence treatment at 1.12 lb ai/ac, preemergence broadleaf weed control with Harness Xtra, Guardsman Max, and Bicep Lite II Mag applied at 1.35 and 2.7, 1.9, and 1.65 lb ai/ac, respectively, was still 95% or greater by July 12.

Crop yields: Yields are given in Table 4. Yields were 141 to 185 bu/ac higher in herbicide-treated plots as compared to the check.

Broadleaf weed control in Roundup Ready field corn with postemergence herbicides

Introduction

Postemergence herbicides are most effective if applied when the weeds and field corn are small. If weeds are not controlled, they become difficult to control and corn growth is restricted. This trial examined the efficacy of postemergence herbicides applied when field corn and weeds were small, and evaluated their effect on crop injury and field corn yields.

Objectives

- Determine efficacy of selected herbicides for control of annual broadleaf weeds in field corn.
- Determine corn tolerance to applied selected herbicides and yield.

Materials and methods

A field experiment was conducted in 2004 at Farmington, NM, to evaluate the response of field corn (Dekalb 60-19RR) and annual broadleaf weeds to postemergence herbicides. Soils were fertilized according to New Mexico State University recommendations based on soil tests. The experimental design was a randomized complete block with four replications. Individual plots were four 34-in. rows 30 ft long. Treatments were applied with a compressed air backpack sprayer calibrated to deliver 30 gal/ac at 30 psi. Field corn was planted with flexi-planters equipped with disk openers on May 17. Postemergence treatments were applied on June 10 when field corn was in the 4th leaf stage and weeds were small (<2 in.). Black nightshade and redroot and prostrate pigweed infestations were heavy, common lambsquarters infestations were moderate, and Russian thistle infestations were light throughout the experimental area. Visual evaluations of crop injury and weed control were made on July 17. Five feet of the two center rows from each plot were harvested by hand on January 19, 2005. The corn was then shelled and weighed. Results obtained were subjected to analysis of variance at P = 0.05.

Results and discussion

Weed control and injury evaluations: Weed control and crop injury evaluations are given in Table 5. DPX 79406 plus Clarity at 0.023 plus 0.125 lb ai/ac had the highest injury rating of 2. Roundup WeatherMAX at 0.85 lb ai/ac gave poor control of broadleaf weeds, except for common lambsquarters. However, when Roundup WeatherMAX was combined with Dual II Mag at 0.85 plus 0.95 lb ai/ac, common lambsquarters control decreased to 57%. Those treatments in combination with Clarity at 0.125 lb ai/ac, Steadfast plus Callisto plus atrazine at 0.035 plus 0.6 plus 0.75 lb ai/ac, and Roundup WeatherMAX plus Bicep Lite II Mag at 0.85 plus 1.7 lb ai/ac gave excellent control of Russian thistle.

Crop yields: Yields are given in Table 6. Yields were 128 to 174 bu/ac higher in herbicide-treated plots as compared to the check.

Broadleaf weed control in dry beans

Introduction

Approximately 97% of New Mexico's dry bean production occurs in northwestern New Mexico. Most of this production occurs under sprinkler irrigation on coarse-textured soils. Pinto bean growers usually preplant incorporate one or two herbicides in combination and then follow with one mechanical cultivation for annual weed control. Weeds compete vigorously with dry beans, and yield reductions exceeding 70% have been recorded. Many growers are not achieving effective full-season weed control, which has led to the development of Pursuit, Raptor, and recently Valor for weed control in dry edible beans.

Objectives

- Determine broadleaf weed control under applied selected herbicides.
- Determine dry bean tolerance to applied selected herbicides and yield.

Materials and methods

A field experiment was conducted in 2004 at Farmington, NM, to evaluate the response of dry edible beans (var. Bill Z) and annual broadleaf weeds to preemergence and preemergence followed by sequential postemergence herbicides. Soils were fertilized according to New Mexico State University recommendations based on soil tests. The experimental design was a randomized complete block with four replications. Individual plots were four 34-in. rows 30 ft long. Treatments were applied with a compressed air backpack sprayer calibrated to deliver 30 gal/ac at 30 psi. Dry beans were planted with flexi-planters on May 26. Preemergence treatments were applied on May 27 and immediately incorporated with 0.75 in. of sprinkler-applied water. Sequential postemergence treatments were applied on June 30 after cultivation and when dry beans were in the fourth trifoliolate leaf stage and weeds were small (<4 in.). Black nightshade and redroot and prostrate pigweed infestations were heavy, common lambsquarters infestations were moderate, and Russian thistle infestations were light throughout the experimental area. Crop injury evaluations were made on June 29. Preemergence treatments were evaluated on June 29 and July 29. Preemergence followed by sequential postemergence treatments were evaluated on July 29. Dry beans were hand harvested on August 26 and left in the field until September 16 when they were thrashed and weighed. Results obtained were subjected to analysis of variance at P = 0.05.

Results and discussion

Weed control evaluations: Weed control evaluations are given in Tables 7 and 8. Only Valor and Outlook in combination with Prowl H_2O at 0.05, 0.56, and 0.8 lb ai/ac showed injury symptoms of <2% (data not shown). All treatments gave excellent control of redroot and prostrate pigweed, common lambsquarters, and black nightshade. Russian thistle control was poor with those preemergence treatments containing Outlook, Prowl, and Prowl H_2O, regardless of rate and combination. Valor applied preemergence at 0.05 lb ai/ac gave excellent control of Russian thistle (Table 7). All treatments gave 89% control of redroot and prostrate pigweed, common lambsquarters, and black nightshade. Russian thistle control increased significantly when Raptor plus Basagran at 0.032 plus 0.25 lb ai/ac was included as a sequential postemergence treatment to preemergence treatments of Outlook, Prowl, and Prowl H_2O.

Crop yields: Yields are given in Table 8. Yields were 2,231 to 3,770 lb/ac higher in the herbicide-treated plots as compared to the check.

Broadleaf weed control in sunflowers

Introduction

Sunflower is a crop that is usually planted in dryland situations under limited rainfall. Sunflower seed is mainly harvested for its oil content. The sunflower is adapted for oil seed production where corn is successful in the northern two-thirds of the U.S. Little information is available for the use of herbicides for control of broadleaf weeds in sunflower on coarse-textured soils.

Objectives

- Determine efficacy of selected herbicides for control of annual broadleaf weeds in sunflowers.
- Determine sunflower tolerance to applied selected herbicides and yield.

Materials and methods

A field experiment was conducted in 2004 at Farmington, NM, to evaluate the response of sunflowers (8N429CL) and annual broadleaf weeds to preemergence followed by sequential postemergence herbicides. Soils were fertilized according to New Mexico State University recommendations based on soil tests. The experimental design was a randomized complete block with four replications. Individual plots were four 34-in. rows 30 ft long. Treatments were applied with a compressed air backpack sprayer calibrated to deliver

30 gal/ac at 30 psi. Sunflowers were planted on June 1 with flexi-planters equipped with disk openers. Preemergence applications were applied on June 2 and immediately incorporated with 0.75 in. of sprinkler-applied water. Sequential postemergence treatments were applied on June 30 when sunflowers were 5 to 6 in. in height and weeds were 6 in. or less in height. Black nightshade and prostrate and redroot pigweed infestations were heavy and common lambsquarters and Russian thistle infestations were light throughout the experimental area. Crop injury evaluations were made on June 29. Preemergence treatments were evaluated on June 29 and July 29. Sequential postemergence treatments were evaluated on July 29. Sunflowers were not harvested due to excessive bird damage.

Results and discussion

Weed control and injury evaluations: Crop injury evaluations are given in Table 9. Weed control evaluations are given in Tables 9 and 10. Those treatments containing Outlook and Spartan resulted in crop injury of 62% or greater (Table 9). All treatments except the check gave 88% or greater control of redroot and prostrate pigweed, black nightshade, and common lambsquarters by June 29. Russian thistle control was excellent with only Outlook and Dual Mag at 0.75 and 1.25 lb ai/ac in combination with Spartan at 0.125 lb ai/ac. In July, Prowl H_2O at 1.0 and Beyond at 0.032 lb ai/ac gave poor control of redroot pigweed. Prostrate pigweed control was good to excellent with all treatments except Beyond at 0.032 lb ai/ac and the check. Black nightshade control was poor with Prowl H_2O at 1.0 lb ai/ac. Common lambsquarters control was good to excellent with all treatments except the check. When Beyond at 0.032 lb ai/ac was applied as a sequential postemergence treatment to Outlook, Dual Mag, and Prowl H_2O, Russian thistle control increased significantly (Table 10).

Crop yields: Yields were not taken do to heavy bird damage to seed heads.

Table 1. Control of Annual Broadleaf Weeds with Preemergence and Preemergence Followed by Sequential Postemergence Herbicides in Field Corn on June 8; NMSU Agricultural Science Center at Farmington, NM, 2004

		Crop	Stand	Weed Control[d,e]				
	Rate	Injury[d]	Count	Amare	Amabl	Solni	Cheal	Saskr
Treatments[a]	(lb ai/ac)	(%)	(no.)	(%)				
Guardsman Max (pm)	0.85	0	21	100	100	98	100	99
Guardsman Max (pm)	1.9	0	21	100	100	100	100	100
Bicep Lite II Mag (pm)	0.83	0	22	100	100	97	100	97
Bicep Lite II Mag (pm)	1.65	0	22	100	100	100	100	100
Outlook	0.75	0	22	100	100	97	100	53
Dual II Mag	1.25	0	22	100	100	97	100	55
Outlook/Distinct[b,c]	0.75/0.25		21	100	100	96	100	51
Outlook + Prowl H_2O/Distinct[b,c]	0.75 + 1.0/0.17	0	21	100	100	96	100	77
Guardsman Max (pm) + Prowl H_2O	1.9 + 1.0	0	22	100	100	97	100	99
Guardsman Max (pm) + Prowl H_2O/Distinct[b,c]	1.9 + 1.0/0.17	0	21	100	100	99	100	98
Dual II Mag/Distinct[b,c]	1.25/0.25	0	22	100	100	96	100	51
Weedy check		0	21	0	0	0	0	0
LSD 0.05		ns	ns	1	1	3	1	4

[a]pm = packaged mix.
[b]First treatment applied preemergence followed by a sequential postemergence treatment.
[c]Sequential postemergence treatment applied with NIS and 32-0-0 at 0.25 and 1% v/v, respectively.
[d]Based on a visual scale from 0-100, where 0 = no control and 100 = dead plants.
[e]Amare = redroot pigweed, Amabl = prostrate pigweed, Solni = black nightshade, Cheal = common lambsquarters, and Saskr = Russian thistle.

Table 2. Control of Annual Broadleaf Weeds with Preemergence and Preemergence Followed by Sequential Postemergence Herbicides in Field Corn on July 12; NMSU Agricultural Science Center at Farmington, NM, 2004

Treatments[a]	Rate (lb ai/ac)	Weed Control[d,e] Amare (%)	Amabl (%)	Solni (%)	Cheal (%)	Saskr (%)	Yield (bu/ac)
Guardsman Max (pm)	0.85	93	94	93	100	93	304
Guardsman Max (pm)	1.9	99	99	99	100	99	286
Bicep Lite II Mag (pm)	0.83	96	97	94	100	90	299
Bicep Lite II Mag (pm)	1.65	99	100	99	100	99	277
Outlook	0.75	94	92	94	100	52	285
Dual II Mag	1.25	94	92	95	100	52	281
Outlook/Distinct[b,c]	0.75/0.25	100	100	99	100	100	285
Outlook + Prowl H_2O/Distinct[b,c]	0.75 + 1.0/0.17	100	100	100	100	100	256
Guardsman Max (pm) + Prowl H_2O	1.9 + 1.0	99	100	100	100	100	287
Guardsman Max (pm) + Prowl H_2O/Distinct[b,c]	1.9 + 1.0/0.17	100	100	100	100	100	271
Dual II Mag/Distinct[b,c]	1.25/0.25	99	100	100	100	100	272
Weedy check		0	0	0	0	0	120
LSD 0.05		2	2	3	1	3	49

[a]pm = packaged mix.
[b]First treatment applied preemergence followed by a sequential postemergence treatment.
[c]Sequential postemergence treatment applied with NIS and 32-0-0 at 0.25 and 1% v/v, respectively.
[d]Based on a visual scale from 0-100, where 0 = no control and 100 = dead plants.
[e]Amare = redroot pigweed, Amabl = prostrate pigweed, Solni = black nightshade, Cheal = common lambsquarters, and Saskr = Russian thistle.

Table 3. Seedling Emergence and Control of Annual Broadleaf Weeds with Preemergence and Preemergence Followed by Sequential Postemergence Herbicides in Roundup Ready Field Corn on June 8; NMSU Agricultural Science Center at Farmington, NM, 2004

Treatments[a]	Rate (lb ai/ac)	Seedling Emergence 5-25 (no.)	5-27 (no.)	5-29 (no.)	Weed Control[e,f] Amare (%)	Amabl (%)	Solni (%)	Cheal (%)	Saskr (%)
Lumax (pm)	2.47	6.8	35.5	38.0	100	100	100	100	100
Bicep Lite II Mag (pm)	1.65	8.8	38.5	40.8	100	100	100	100	100
Harness Xtra (pm)	2.7	5.3	36.5	41.3	100	100	100	100	100
Guardsman Max (pm)	1.9	16.5	38.8	41.0	100	100	100	100	100
Harness Xtra (pm)/Roundup WeatherMAX[b]	1.35/1.12	3.3	38.8	41.3	100	100	100	100	100
Harness Xtra (pm)/Roundup WeatherMAX[b]	2.7/1.12	11.5	41.5	43.5	100	100	100	100	100
Bicep Lite II Mag (pm)/Callisto[b,c]	1.65/0.094	10.5	41.3	43.8	100	100	100	100	100
Guardsman Max (pm)/Roundup WeatherMAX[b]	1.9/1.12	7.0	36.3	39.3	100	100	100	100	100
Guardsman Max (pm)/Callisto[b,c]	1.9/0.094	8.3	38.0	42.0	100	100	100	100	100
Bicep Lite II Mag (pm)/Roundup WeatherMAX[b]	1.65/1.12	9.3	38.0	41.5	100	100	100	100	100
Steadfast ATZ (pm) + Clarity[d]	0.78 + 0.125	11.3	37.0	42.3	0	0	0	0	0
Weedy check		10.3	38.0	40.5	0	0	0	0	0
LSD 0.05		ns	ns	2.5	1	1	1	1	1

[a]pm = packaged mix.
[b]First treatment applied preemergence followed by a sequential postemergence treatment.
[c]Sequential postemergence treatment applied with COC and 32-0-0 at 1 and 2.5% v/v, respectively.
[d]Treatment applied postemergence with a COC and AMS at 1 and 2% v/v, respectively.
[e]Based on a visual scale from 0-100, where 0 = no control and 100 = dead plants.
[f]Amare = redroot pigweed, Amabl = prostrate pigweed, Solni = black nightshade, Cheal = common lambsquarters, and Saskr = Russian thistle.

Table 4. Control of Annual Broadleaf Weeds with Preemergence and Preemergence Followed by Sequential Postemergence Herbicides in Roundup Ready Field Corn on July 12; NMSU Agricultural Science Center at Farmington, NM, 2004

		Weed Control[d,e]					
	Rate	Amare	Amabl	Solni	Cheal	Saskr	Yield
Treatments[a]	(lb ai/ac)	(%)					(bu/ac)
Lumax (pm)	2.47	99	100	98	100	100	290
Bicep Lite II Mag (pm)	1.65	97	100	95	100	96	291
Harness Xtra (pm)	2.7	99	100	98	100	99	279
Guardsman Max (pm)	1.9	99	100	100	100	99	292
Harness Xtra (pm)/Roundup WeatherMAX[b]	1.35/1.12	99	100	98	100	97	298
Harness Xtra (pm)/Roundup WeatherMAX[b]	2.7/1.12	100	100	99	100	99	292
Bicep Lite II Mag (pm)/Callisto[b,c]	1.65/0.094	100	100	100	100	100	292
Guardsman Max (pm)/Roundup WeatherMAX[b]	1.9/1.12	98	100	98	100	99	254
Guardsman Max (pm)/Callisto[b,c]	1.9/0.094	100	100	100	100	100	283
Bicep Lite II Mag (pm)/Roundup WeatherMAX[b]	1.65/1.12	99	100	99	100	98	279
Steadfast ATZ (pm) + Clarity[d]	0.78 + 0.125	100	99	99	100	100	285
Weedy check		0	0	0	0	0	113
LSD 0.05		2	1	2	1	2	33

[a]pm = packaged mix.
[b]First treatment applied preemergence followed by a sequential postemergence treatment.
[c]Sequential postemergence treatment applied with COC and 32-0-0 at 1 and 2.5% v/v, respectively.
[d]Treatment applied postemergence with a COC and AMS at 1 and 2% v/v, respectively.
[e]Based on a visual scale from 0-100, where 0 = no control and 100 = dead plants.
[f]Amare = redroot pigweed, Amabl = prostrate pigweed, Solni = black nightshade, Cheal = common lambsquarters, and Saskr = Russian thistle.

Table 5. Control of Annual Broadleaf Weeds with Postemergence Herbicides in Roundup Ready Field Corn on July 17; NMSU Agricultural Science Center at Farmington, NM, 2004

		Crop	Weed Control[a,d]				
	Rate	Injury[a]	Amare	Amabl	Solni	Saskr	Cheal
Treatments	(lb ai/ac)	(%)	(%)				
Roundup WeatherMAX	0.85	0	25	46	45	28	98
Roundup WeatherMAX + DPX E9636	0.85 + 0.015	0	99	100	99	37	99
Roundup WeatherMAX + DPX E9636 + NMSU 100	0.85 + 0.02 + 0.015	0	99	99	99	42	98
Roundup WeatherMAX + DPX E9636 + DPX 6316 + NMSU 100	0.85 + 0.02 + 0.003 + 0.015	0	98	99	96	47	100
Roundup WeatherMAX + DPX E9636 + NMSU 100 + Clarity	0.85 + 0.02 + 0.015 + 0.125	1	100	100	93	100	100
Roundup WeatherMAX + DPX E9636 + NMSU 100 + atrazine	0.85 + 0.02 + 0.015 + 0.5	0	98	99	100	71	98
Roundup WeatherMAX + Dual II Mag	0.85 + 0.95	0	91	96	98	38	57
Roundup WeatherMAX + Bicep Lite II Mag	0.85 + 1.7	0	100	99	100	8	100
Steadfast + Callisto + atrazine[b]	0.035 + 0.06 + 0.75	1	100	100	100	100	100
Steadfast + Clarity[c]	0.035 + 0.125	1	100	100	100	100	100
DPX 79406 + Clarity[c]	0.023 + 0.125	2	100	100	99	100	100
Weedy check		0	0	0	0	0	0
LSD 0.05		1	3	2	3	5	3

[a]Based on a visual scale from 0-100, where 0 = no control or crop injury and 100 = dead plants.
[b]Treatment applied with a COC and ammonium sulfate at 1% v/v and 4 lb/ac, respectively.
[c]Treatments applied with 32-0-0 and Dyne-amic at 1 gal/ac and 1 qt/ac, respectively. Rest of treatments were applied with ammonium sulfate at 2 lb/ac.
[d]Amare = redroot pigweed, Amabl = prostrate pigweed, Solni = black nightshade, Cheal = common lambsquarters, and Saskr = Russian thistle.

Table 6. Yield of Dakalb 60-19RR Field Corn Following Postemergence Herbicides on January 19; NMSU Agricultural Science Center at Farmington, NM, 2005

Treatments	Rate (lb ai/ac)	Yield (bu/ac)
Roundup WeatherMAX	0.85	262
Roundup WeatherMAX + DPX E9636	0.85 + 0.015	261
Roundup WeatherMAX + DPX E9636 + NMSU 100	0.85 + 0.02 + 0.015	277
Roundup WeatherMAX + DPX E9636 + DPX 6316 + NMSU 100	0.85 + 0.02 + 0.003 + 0.015	261
Roundup WeatherMAX + DPX E9636 + NMSU 100 + Clarity	0.85 + 0.02 + 0.015 + 0.125	282
Roundup WeatherMAX + DPX E9636 + NMSU 100 + atrazine	0.85 + 0.02 + 0.015 + 0.5	255
Roundup WeatherMAX + Dual II Mag	0.85 + 0.95	268
Roundup WeatherMAX + Bicep Lite II Mag	0.85 + 1.7	236
Steadfast + Callisto + atrazine[a]	0.035 + 0.06 + 0.75	259
Steadfast + Clarity[b]	0.035 + 0.125	268
DPX 79406 + Clarity[b]	0.023 + 0.125	257
Weedy check		108
LSD 0.05		41

[a]Treatment applied with a COC and ammonium sulfate at 1% v/v and 4 lb/ac, respectively.
[b]Treatments applied with 32-0-0 and Dyne-amic at 1 gal/ac and 1 qt/ac, respectively. The rest of treatments were applied with ammonium sulfate at 2 lb/ac.

Table 7. Control of Annual Broadleaf Weeds in Dry Beans with Preemergence and Preemergence Followed by Sequential Postemergence Treatments on June 29; NMSU Agricultural Science Center at Farmington, NM, 2004

		Weed Control[b,c]				
	Rate	Cheal	Amare	Amabl	Solni	Saskr
Treatments	(lb ai/ac)	(%)				
Valor	0.05	100	100	100	100	100
Outlook	0.56	100	100	100	100	38
Valor + Prowl	0.05 + 0.8	100	100	100	100	100
Valor + Prowl H_2O	0.05 + 0.8	100	100	100	100	100
Outlook + Prowl	0.56 + 0.8	100	100	100	99	43
Outlook + Prowl H_2O	0.56 + 0.8	100	100	100	100	61
Valor/Raptor + Basagran[a]	0.05/0.032 + 0.25	100	100	100	100	99
Outlook/Raptor + Basagran[a]	0.56/0.032 + 0.25	100	100	100	100	50
Outlook + Prowl/Raptor + Basagran[a]	0.56 + 0.8/0.032 + 0.25	100	100	100	100	64
Outlook + Prowl H_2O/Raptor + Basagran[a]	0.56 + 0.8/0.032 + 0.25	100	100	100	100	63
Valor + Prowl H_2O/Raptor + Basagran[a]	0.05 + 0.8/0.032 + 0.25	100	100	100	100	100
Weedy check		0	0	0	0	0
LSD 0.05		1	1	1	0.5	10

[a]First treatment applied preemergence followed by a sequential postemergence treatment. Postemergence treatments were applied with a COC and 32-0-0 at 0.5 and 2% v/v, respectively.
[b]Based on a visual scale from 0-100, where 0 = no control and 100 = dead plants.
[c]Cheal = common lambsquarters, Amare = redroot pigweed, Amabl = prostrate pigweed, Solni = black nightshade, and Saskr = Russian thistle.

Table 8. Control of Annual Broadleaf Weeds in Dry Beans with Preemergence and Preemergence Followed by Sequential Postemergence Treatments on July 29; NMSU Agricultural Science Center at Farmington, NM, 2004

		Weed Control[b,c]					Bill Z
	Rate	Cheal	Amare	Amabl	Solni	Saskr	Yield
Treatments	(lb ai /ac)	(%)					(lb/ac)
Valor	0.05	99	94	98	98	98	4,001
Outlook	0.56	96	90	97	89	30	2,924
Valor + Prowl	0.05 + 0.8	99	95	99	97	99	3,846
Valor + Prowl H_2O	0.05 + 0.8	99	97	98	98	99	3,693
Outlook + Prowl	0.56 + 0.8	97	92	96	92	38	3,078
Outlook + Prowl H_2O	0.56 + 0.8	99	93	98	92	57	3,232
Valor/Raptor + Basagran[a]	0.05/0.032 + 0.25	99	99	100	99	99	4,463
Outlook/Raptor + Basagran[a]	0.56/0.032 + 0.25	99	99	99	99	91	4,001
Outlook + Prowl/Raptor + Basagran[a]	0.56 + 0.8/0.032 + 0.25	99	100	99	99	92	4,463
Outlook + Prowl H_2O/Raptor + Basagran[a]	0.56 + 0.8/0.032 + 0.25	99	98	99	99	93	4,463
Valor + Prowl H_2O/Raptor + Basagran[a]	0.05 + 0.8/0.032 + 0.25	99	97	99	99	98	4,155
Weedy check		0	0	0	0	0	693
LSD 0.05		2	3	2	2	5	1,092

[a]First treatment applied preemergence followed by a sequential postemergence treatment. Postemergence treatments were applied with a COC and 32-0-0 at 0.5 and 2% v/v, respectively.
[b]Based on a visual scale from 0-100, where 0 = no control and 100 = dead plants.
[c]Cheal = common lambsquarters, Amare = redroot pigweed, Amabl = prostrate pigweed, Solni = black nightshade, and Saskr = Russian thistle.

Table 9. Control of Annual Broadleaf Weeds in Sunflowers with Preemergence Followed by Sequential Postemergence Treatments on June 29; NMSU Agricultural Science Center at Farmington, NM, 2004

		Crop	Weed control[b,c]				
	Rate	Injury	Amare	Amabl	Solni	Cheal	Saskr
Treatments	(lb ai/ac)	(%)	(%)				
Outlook	0.75	72	100	100	100	100	70
Dual Mag	1.25	6	100	100	100	100	53
Outlook + Prowl H_2O	0.75 + 1.0	77	100	100	100	100	62
Dual Mag + Prowl H_2O	1.25 + 1.0	4	100	100	100	100	67
Outlook + Spartan	0.75 + 0.125	72	100	100	100	100	100
Dual Mag + Spartan	1.25 + 0.125	62	100	100	100	100	97
Prowl H_2O	1.0	0	88	98	88	100	67
Outlook/Beyond[a]	0.75/0.032	68	100	100	100	100	71
Dual Mag/Beyond[a]	1.25/0.032	4	100	100	100	100	45
Prowl H_2O/Beyond[a]	1.0/0.032	0	94	99	91	100	76
Weedy check		0	0	0	0	0	0
LSD 0.05		5	3	1	4	1	8

[a]First treatment applied preemergence followed by a postemergence treatment containing a non-ionic surfactant and 32-0-0 applied at 0.25 and 2% v/v, respectively.
[b]Based on a scale from 0-100, where 0 = no control and 100 = dead plants.
[c]Amare = redroot pigweed, Amabl = prostrate pigweed, Solni = black nightshade, Cheal = common lambsquarters, and Saskr = Russian thistle.

Table 10. Control of Annual Broadleaf Weeds in Sunflowers with Preemergence Followed by Sequential Postemergence Treatments on July 29; NMSU Agricultural Science Center at Farmington, NM, 2004

		Weed control[c,d]				
	Rate	Amare	Amabl	Solni	Cheal	Saskr
Treatments	(lb ai/ac)	(%)				
Outlook	0.75	98	97	97	97	47
Dual Mag	1.25	97	96	97	98	52
Outlook + Prowl H_2O	0.75 + 1.0	99	99	98	99	51
Dual Mag + Prowl H_2O	1.25 + 1.0	99	99	98	97	60
Outlook + Spartan	0.75 + 0.125	98	100	97	100	98
Dual Mag + Spartan	1.25 + 0.125	99	100	99	98	93
Prowl H_2O	1.0	72	94	65	96	46
Outlook/Beyond[a]	0.75/0.032	99	98	94	100	96
Dual Mag/Beyond[a]	1.25/0.032	99	99	95	99	92
Prowl H_2O/Beyond[a]	1.0/0.032	99	99	97	98	94
Beyond[b]	0.032	30	81	91	96	38
Weedy check		0	0	0	0	0
LSD 0.05		5	3	5	3	9

[a]First treatment applied preemergence followed by a postemergence treatment containing a non-ionic surfactant and 32-0-0 applied at 0.25 and 2% v/v, respectively.
[b]Treatment applied postemergence with a non-ionic surfactant and 32-0-0 applied at 0.25 and 2% v/v, respectively.
[c]Based on a scale from 0-100, where 0 = no control and 100 = dead plants.
[d]Amare = redroot pigweed, Amabl = prostrate pigweed, Solni = black nightshade, Cheal = common lambsquarters, and Saskr = Russian thistle.

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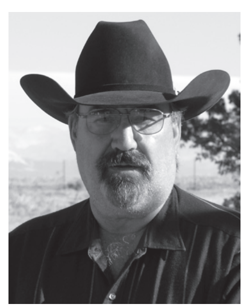

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