Pest Control in Crops Grown in Northwestern New Mexico, 1999

Annual Data Report 100-1999

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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.

I wish to express my sincere appreciation to the following companies for providing technical assistance,

[1]Respectively, College Professor, Department of Entomology, Plant Pathology and Weed Science; Associate Professor, Department of Plant and Environmental Sciences, Superintendent, Agricultural Science Center at Farmington; and College Professor, Department of Plant and Environmental Sciences, all of New Mexico State University.

products, and/or financial assistance: Bayer CropSciences, BASF, E.I. DuPont, Gowan, BLM/FFO, FMC, Monsanto, Dow AgroSciences, Navajo Agricultural Products Industry, Pioneer Hi-Bred, Syngenta Crop Protection, and Southwest Seed.

Broadleaf weed control in field corn with preemergence herbicides

Introduction
Weeds affect corn by competing for nitrogen and moisture. Season-long interference from weeds can reduce corn yields dramatically. Many preemergence herbicides are approved for use on field corn grown on medium- or fine-textured, high-organic soils. However, little information is available regarding the effectiveness and safety of herbicides for field corn grown under sprinkler irrigation on low-organic, coarse-textured soils. This preemergence test will indicate those herbicides that, when applied at normal use rates, are effective for season-long weed control in field corn without decreasing yields.

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

Materials and methods
A field experiment was conducted in 1999 at Farmington, to evaluate the response of field corn (var. Pioneer 34K77) and annual broadleaf weeds to preemergence herbicides. Soils were fertilized according to New Mexico State University recommendations based on soil tests. The experimental design was a randomized complete block with three replications. Individual plots were 4 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 10. Treatments were applied on May 11 and immediately incorporated with 0.75 in. of sprinkler-applied water. Black nightshade, common lambsquarters, and prostrate pigweed infestations were heavy; redroot pigweed infestations were moderate; and Russian thistle infestations were light throughout the experimental area. Visual evaluations of crop injury and weed control were made June 14 and July 14. Stand counts were made on June 14 by counting individual plants per 10 ft of the third row of each plot. Field corn was harvested on November 10 by combining the center two rows of each plot using a John Deere 3300 combine equipped with a load cell. 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 Tables 1 and 2. Stand counts are given in Table 1. Epic (pm) applied at 0.25 lb/ac caused the highest injury rating of 4. All treatments gave good to excellent control of common lambsquarters, redroot and prostrate pigweed, and Russian thistle except the check. Axiom (pm) applied at 0.34 lb/ac gave poor control of black nightshade. Russian thistle control with Epic (pm) applied at 0.18 lb/ac decreased by 12% (Table 2).

Crop yields: Yields are given in Table 2. Yields were 75 to 107 bu/ac higher in herbicide treated plots as compared to the check.

Broadleaf weed control in field corn with preemergence herbicides

Introduction
Preemergence weed control in field corn in past trials has resulted in crop injury. In this trial, rates were lowered and combinations were added to effectively control weeds without decreasing yields.

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

Materials and methods
A field experiment was conducted in 1999 at Farmington, to evaluate the response of field corn (Pioneer 34K77) and annual broadleaf weeds to preemergence herbicides. Soils were fertilized according to New Mexico State University recommendations based on soil tests. The experimental design was a randomized complete block with three replications. Individual plots were 4 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 10. Treatments were applied on May 11 and immediately incorporated with 0.75 in. of sprinkler-applied water. Black nightshade, redroot pigweed, and prostrate pigweed infestations were heavy, and Russian thistle and common lambsquarters infestations were light throughout the experimental area. Evaluations of crop injury and weed control were made June 14 and July 14. Stand counts were made on June 14 by counting individual plants per 10 ft of the third row of each plot. Field corn was harvested on November 11 by combining the center two rows of each plot using a John Deere 3300 combine

Table 1. Control of Annual Broadleaf Weeds with Preemergence Herbicides in Field Corn on June 14; at Farmington, NM, 1999

		Crop	Stand	Weed Control[b,c]				
	Rate	Injury[b]	Count	Cheal	Amare	Amabl	Solni	Saskr
Treatments[a]	(lb/ac)	(%)	(no)	(%)				
Axiom (pm)	0.34	3	20	100	87	83	33	100
Axiom (pm) + atrazine	0.17 + 0.78	0	20	100	100	100	100	100
Axiom (pm) + Balance	0.17 + 0.023	3	19	100	100	100	100	100
Epic (pm)	0.18	0	19	100	100	100	100	85
Epic (pm) + atrazine	0.18 + 0.78	0	19	100	100	100	100	100
Epic (pm)	0.22	0	20	100	100	100	100	100
Epic (pm) + atrazine	0.22 + 0.78	2	19	100	100	100	100	100
Epic (pm)	0.25	4	20	100	100	100	100	100
Epic (pm) + atrazine	0.25 + 0.78	3	19	100	100	100	100	100
Axiom (pm) + Balance	0.17 + 0.03	3	19	100	100	100	100	100
Axiom (pm) + Epic	0.17 + 0.15	0	19	100	100	100	100	100
Balance + atrazine	0.05 + 0.78	3	20	100	100	100	100	100
Guardsman (pm)	2.2	0	20	100	100	100	100	100
Bicep II Mag (pm)	1.9	0	19	100	100	100	100	100
Atrazine	1.5	0	19	100	100	100	100	100
Weedy check		0	19	0	0	0	0	0
LSD 0.05		1	ns	1	2	2	7	2

[a]pm = packaged mix.

[b]Based on a visual scale from 0-100, where 0 = no control or crop injury and 100 = dead plants.

[c]Cheal = common lambsquarters, Amare = redroot pigweed, Amabl = prostrate pigweed, Solni = black nightshade, and Saskr = Russian thistle.

Table 2. Control of Annual Broadleaf Weeds with Preemergence Herbicides in Field Corn on July 14; at Farmington, NM, 1999

		Weed Control[b,c]					
	Rate	Cheal	Amare	Amabl	Solni	Saskr	Yield
Treatments[a]	(lb/ac)	(%)					(bu/ac)
Axiom (pm)	0.034	100	90	82	20	100	185
Axiom (pm) + atrazine	0.17 + 0.78	100	100	100	100	100	211
Axiom (pm) + Balance	0.17 + 0.023	100	100	93	87	100	203
Epic (pm)	0.18	100	100	100	91	73	201
Epic (pm)	0.18 + 0.78	100	100	97	96	100	208
Epic (pm)	0.22	100	100	98	97	100	210
Epic (pm) + atrazine	0.22 + 0.78	100	100	100	96	100	206
Epic (pm)	0.25	100	100	92	86	100	206
Epic (pm) + atrazine	0.25 + 0.78	100	100	100	100	100	210
Axiom (pm) + Balance	0.17 + 0.03	100	100	100	100	100	217
Axiom (pm) + Epic (pm)	0.17 + 0.15	100	100	100	100	100	204
Balance + atrazine	0.05 + 0.78	100	100	85	100	100	193
Guardsman	2.2	100	100	100	100	100	206
Bicep II Mag (pm)	1.9	100	100	100	100	100	212
Atrazine	1.5	100	100	100	100	100	208
Weedy check		0	0	0	0	0	110
LSD 0.05		1	1	2	2	2	32

[a]pm = packaged mix.

[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, Saskr = Russian thistle.

Table 3. Control of Annual Broadleaf Weeds with Preemergence Herbicides in Field Corn on June 14; at Farmington, NM, 1999

Treatments[a]	Rate (lb/ac)	Crop Injury[b] (%)	Stand Count (no)	Weed Control[b,c] (%)				
				Amare	Amabl	Solni	Saskr	Cheal
Fultime (pm)	2.5	0	20	100	100	100	100	100
Fultime (pm)	2.25	0	20	100	100	100	100	100
Surpass	1.2	0	19	100	98	100	93	100
Surpass	1.6	0	19	100	99	100	70	98
Dual II Mag	0.94	0	20	100	100	95	65	98
Guardsman (pm)	2.4	0	20	100	100	100	100	100
Guardsman (pm)	2.2	0	19	100	100	100	100	100
Frontier	0.9	5	20	100	100	100	100	100
Frontier	1.2	5	19	100	100	100	99	100
Frontier X2	0.5	0	19	100	100	100	47	100
Frontier X2	0.66	0	19	100	100	100	100	100
Bicep II Mag (pm)	2.4	0	9	100	100	100	100	100
Bicep II Mag (pm)	2.7	0	20	100	100	100	100	100
Dual II Mag	1.25	0	19	100	99	97	65	99
Atrazine	1.5	0	20	100	100	100	100	100
Weedy check		0	20	0	0	0	0	0
LSD 0.05		1	ns	1	1	1	12	1

[a]pm = packaged mix.

[b]Based on a visual scale from 0-100, where 0 = no control or crop injury and 100 = dead plants.

[c]Amare = redroot pigweed, Amabl = prostrate pigweed, Solni = black nightshade, Saskr = Russian thistle, and Cheal = common lambsquarters.

equipped with a load cell. 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 Tables 3 and 4. Stand counts are given in Table 3. Frontier applied at 1.2 lb/ac caused the highest injury rating of 5. All treatments except the check gave good to excellent control of black nightshade, redroot and prostrate pigweed, and common lambsquarters. Russian thistle control was good to excellent with all treatments except Dual II Mag, Surpass, and Frontier X2 applied at 1.25, 1.6, and 0.5 lb/ac, respectively, and the check. In July, all treatments containing no atrazine, except for Surpass applied at 1.6 lb/ac, gave poor control of Russian thistle.

Crop yields: Yields are given in Table 4. Yields were 81 to 113 bu/ac higher in herbicide treated plots as compared to the check.

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

Introduction

Many herbicides can be used a sequential treatments. This trial was 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

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

Table 4. Control of Annual Broadleaf Weeds with Preemergence Herbicides in Field Corn on July 14; at Farmington, NM, 1999

		Weed Control[b,c]					
Treatments[a]	Rate (lb/ac)	Amare	Amabl	Solni	Saskr	Cheal	Yield (bu/ac)
		(%)					
Fultime (pm)	2.5	100	100	100	100	100	223
Fultime (pm)	2.25	100	100	100	100	100	214
Surpass	1.2	100	96	90	73	100	205
Surpass	1.6	100	100	100	86	97	211
Dual II Mag	0.94	100	100	80	45	100	209
Guardsman (pm)	2.4	100	100	100	100	100	211
Guardsman (pm)	2.2	100	100	100	100	100	208
Frontier	0.9	100	100	100	46	100	210
Frontier	1.2	100	100	100	40	100	207
Frontier X2	0.5	100	100	100	50	96	192
Frontier X2	0.66	100	100	100	56	100	191
Bicep II Mag (pm)	2.4	100	100	100	100	100	211
Bicep II Mag (pm)	2.7	100	100	100	100	100	219
Dual II Mag	1.25	100	89	87	46	97	191
Atrazine	1.5	100	100	100	100	100	208
Weedy check		0	0	0	0	0	110
LSD 0.05		1	2	1	12	1	18

[a]pm = packaged mix.
[b]Based on a visual scale from 0-100, where 0 = no control and 100 = dead plants.
[c]Amare = redroot pigweed, Amabl = prostrate pigweed, Solni = black nightshade, Saskr = Russian thistle, Cheal = common lambsquarters.

Table 5. Control of Annual Broadleaf Weeds with Preemergence Followed by Postemergence Herbicides in Field Corn on July 1; at Farmington, NM, 1999

			Stand	Weed Control[b,c]				
Treatments[a]	Rate (lb/ac)	Injury[b] (%)	Count (no)	Amare	Amabl	Solni	Cheal	Saskr
				(%)				
Bicep II Mag (pm)/Hornet (pm)[d]	2.3/0.086	3	19	100	100	100	100	100
Bicep II Mag (pm)/Hornet (pm) + atrazine[d]	2.3/0.086 + 1.25	0	20	100	100	100	100	100
Dual II Mag/Hornet (pm) + atrazine[d]	1.0/0.086 + 1.25	0	19	100	100	100	100	83
Frontier X2/Hornet (pm) + atrazine[d]	0.53/0.086 + 1.25	2	19	100	100	100	100	82
Guardsman (pm)/Hornet (pm) + atrazine[d]	2.1/0.086 + 1.25	4	22	100	100	100	100	100
Guardsman (pm)/Hornet (pm)[d]	2.1/0.086	5	19	100	100	100	100	100
Frontier X2/Distinct (pm)[e]	0.53/0.26	5	19	100	100	100	100	100
Guardsman (pm)/Distinct (pm)[e]	2.1/0.26	2	19	100	100	100	100	100
Frontier X2/Marksman (pm)[e]	0.53/0.8	4	19	100	100	100	100	100
Frontier X2/Distinct (pm) + atrazine[e]	0.53/0.26 + 0.5	9	19	100	100	100	100	100
Bicep II Mag (pm)/Python	2.3/0.05	0	19	100	100	100	100	100
Dual II Mag (pm)/Python	1.0/0.05	0	19	100	100	100	100	47
Guardsman (pm)/Python	2.1/0.05	4	19	100	100	100	100	100
Frontier X2/Python	0.53/0.05	5	19	100	100	100	100	47
Atrazine	1.5	0	20	100	100	100	100	100
Weedy check		0	20	0	0	0	0	0
LSD 0.05		1	ns	1	1	1	1	16

[a]pm = packaged mix.
[b]Based on a visual scale from 0-100, where 0 = no control or crop injury and 100 = dead plants.
[c]Amare = redroot pigweed, Amabl = prostrate pigweed, Solni = black nightshade, Cheal = common lambsquarters, and Saskr = Russian thistle.
[d]COC was added at 1% v/v.
[e]NIS plus 32-0-0 were added at 0.25 and 1.25% v/v, respectively.

Table 6. Control of Annual Broadleaf Weeds with Preemergence Followed by Postemergence Herbicides in Field Corn on August 2; at Farmington, NM, 1999

		Weed Control[b,c]					
Treatments[a]	Rate (lb/ac)	Amare	Amabl	Solni	Cheal	Saskr	Yield (bu/ac)
		(%)					
Bicep II Mag (pm)/Hornet (pm)[d]	2.3/0.86	100	100	99	100	100	199
Bicep II Mag (pm)/Hornet (pm) + atrazine[d]	2.3/0.086 + 1.25	100	100	99	100	100	205
Dual II Mag/Hornet (pm) + atrazine[d]	1.0/0.086 + 1.25	100	100	100	100	57	188
Frontier X2/Hornet (pm) + atrazine[d]	0.53/0.086 + 1.25	100	100	99	100	73	195
Guardsman (pm)/Hornet (pm) + atrazine[d]	2.1/0.086 + 1.25	100	98	100	100	100	205
Guardsman (pm)/Hornet (pm)[d]	2.1/0.086	100	100	99	100	100	202
Frontier X2/Distinct (pm)[e]	0.53/0.26	99	100	98	100	100	211
Guardsman (pm)/Distinct (pm)	2.1/0.26	100	100	97	100	100	208
Frontier X2/Marksman (pm)[e]	0.53/0.8	100	100	99	100	100	205
Frontier X2/Distinct (pm) + atrazine[e]	0.53/0.26 + 1.25	100	100	8	100	100	206
Bicep II Mag (pm)/Python	2.3/0.05	100	100	99	100	100	210
Dual II Mag/Python	1.0/0.05	100	100	98	100	43	201
Guardsman (pm)/Python	2.1/0.05	100	100	99	100	100	208
Frontier X2/Python	0.53/0.05	97	100	92	100	43	203
Atrazine	1.5	100	100	100	100	100	212
Weedy check		0	0	0	0	0	110
LSD 0.05		1	1	2	1	14	25

[a]pm = packaged mix.

[b]Based on a visual 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.

[d]COC was added at 1% v/v.

[e]NIS plus 32-0-0 were added at 0.25 and 1.25% v/v, respectively.

Materials and methods

A field experiment was conducted in 1999 at Farmington, to evaluate the response of field corn (Pioneer 34K77) 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 three replications. Individual plots were 4 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 10. The preemergence treatments were applied on May 11 and immediately incorporated with 0.75 in. of sprinkler-applied water. Postemergence treatments were applied on June 1 when field corn was in the 4th leaf stage and weeds were small. Black nightshade and common lambsquarters infestations were heavy, redroot and prostrate pigweed infestations were moderate, and Russian thistle infestations were light throughout the experimental area. Visual evaluations of crop injury and weed control were made July 1 and August 1. Stand counts were made on July 1 by counting individual plants per 10 ft of the third row of each plot. Field corn was harvested on November 9 by combining the center two rows of each plot using a John Deere 3300 combine equipped with a load cell. 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 Tables 5 and 6. Stand counts are given in Table 5. Dual II Mag applied preemergence at 0.53 lb/ac followed by a postemergence treatment of Distinct (pm) plus atrazine at 0.26 plus 0.5 lb/ac had the highest injury rating of 9. Black nightshade, redroot and prostrate pigweed, and common lambsquarters control were excellent with all treatments except the check (Tables 5 and 6). Russian thistle control was good to excellent with all treatments except Dual II Mag and Frontier X2 applied preemergence at 1.0 and 0.53 lb/ac, respectively, followed by a

Table 7. Control of Annual Broadleaf Weeds with Postemergence Herbicides in Field Corn on July 1; at Farmington, NM, 1999

Treatments[a]	Rate (lb/ac)	Crop Injury[b] (%)	Stand Count (no)	Weed Control[b,c] (%)				
				Amare	Amabl	Solni	Saskr	Cheal
Accent Gold (pm)[d]	0.152	0	19	100	100	100	100	100
Basis Gold (pm)[d]	0.78	0	19	100	100	100	100	100
Celebrity (co-pack)	0.26 + 0.03	0	19	100	100	100	100	100
Celebrity (co-pack)	0.18 + 0.03	0	20	100	100	100	100	100
Distinct (pm) + Accent	0.26 + 0.016	2	19	100	100	100	100	100
Basis Gold (pm) + Distinct (pm)	0.78 + 0.18	0	0	100	100	100	100	100
Basis Gold (pm) + Distinct (pm)	+0.78 + 0.26	3	19	100	100	100	100	100
Basis Gold (pm) + Clarity	0.78 + 0.13	0	19	100	100	100	100	100
Basis Gold (pm) + Clarity	0.78 + 0.25	0	19	100	100	100	100	100
Basis Gold + Tough[d]	0.78 + 0.47	2	20	100	100	100	100	100
Basis Gold + Marksman (pm)	0.78 + 0.4	0	20	100	100	100	100	100
Basis Gold (pm) + Marksman (pm)	0.78 + 0.8	2	19	100	100	100	100	100
Distinct (pm) + atrazine	0.18 + 0.7	0	19	100	100	100	100	100
Distinct (pm) + atrazine	0.26 + 0.7	0	19	100	100	100	100	100
Atrazine[e]	1.5	0	100	100	100	100	100	100
Weedy check		0	0	0	0	0	0	0
LSD 0.05		1	ns	1	1	1	1	1

[a]pm = packaged mix.

[b]Based on a visual scale from 0-100, where 0 = no control or crop injury and 100 = dead plants.

[c]Amare = redroot pigweed, Amabl = prostrate pigweed, Solni = black nightshade, Saskr = Russian thistle, and Cheal = common lambsquarters.

[d]Treatments applied with a COC and 32-0-0 at 1% v/v. All other treatments had an NIS and 32-0-0 at 0.25 and 1% v/v, respectively.

[e]Treatment was applied preemergence.

postemergence treatment of Python at 0.05 lb/ac and the check (Tables 5 and 6).

Crop yields: Yields are given in Table 6. Yields were 102 to 78 bu/ac higher in herbicide treated plots as compared to the check.

Broadleaf weed control in 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 will become difficult to control and corn growth will be 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

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

Materials and methods

A field experiment was conducted in 1999 at Farmington, to evaluate the response of field corn (Pioneer 34k77) 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 three replications. Individual plots were 4 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 10. The preemergence treatment was applied on May 11 and immediately incorporated with 0.75 in. of sprinkler-applied water. Postemergence treatments were applied

Table 8. Control of Annual Broadleaf Weeds with Postemergence Herbicides in Field Corn on August 2; at Farmington, NM, 1999

		Weed Control[b,c]					
Treatments[a]	Rate (lb/ac)	Amare	Amabl	Solni	Saskr	Cheal	Yield (bu/ac)
		(%)					
Accent Gold (pm)[d]	0.152	100	100	100	100	100	198
Basis Gold (pm)[d]	0.78	100	100	100	100	100	207
Celebrity (co-pack)	0.03 + 0.26	100	100	100	100	100	193
Celebrity (co-pack)	0.03 + 0.18	100	100	100	100	100	206
Distinct (pm) + Accent	0.26 + 0.016	100	100	100	100	100	198
Basis Gold (pm) + Distinct (pm)	0.78 + 0.18	100	100	100	100	100	210
Basis Gold (pm) + Distinct (pm)	0.78 + 0.26	100	100	100	100	100	197
Basis Gold (pm) + Clarity	0.78 + 0.13	100	100	100	100	100	197
Basis Gold (pm) + Clarity	0.78 + 0.25	100	100	100	100	100	193
Basis Gold (pm) + Tough[d]	0.78 + 0.47	100	100	100	100	100	206
Basis Gold (pm) + Marksman (pm)	0.78 + 0.4	100	100	100	100	100	194
Basis Gold (pm) + Marksman (pm)	0.78 + 0.8	100	100	100	100	100	199
Distinct (pm) + atrazine	0.18 + 0.7	100	100	100	100	100	211
Distinct (pm) + atrazine	0.26 + 0.7	100	100	100	100	100	208
Atrazine	1.5	100	100	100	100	100	205
Weedy check		0	0	0	0	0	127
LSD 0.05		1	1	1	1	1	25

[a]pm = packaged mix.

[b]Based on a visual scale from 0-100, where 0 = no control and 100 = dead plants.

[c]Amare = redroot pigweed, Amabl = prostrate pigweed, Solni = black nightshade, Saskr = Russian thistle, and Cheal = common lambsquarters.

[d]Treatments applied with a COC and 32-0-0 at 1% v/v. All other treatments had an NIS and 32-0-0 at 0.25 and 1% v/v, respectively.

[e]Treatment was applied preemergence.

on June 1 when field corn was in the 4th leaf stage and weeds were small. Black nightshade infestations were heavy; redroot, pigweed, prostrate pigweed, and 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 July 1 and August 2. Stand counts were made on July 1 by counting individual plants per 10 ft of the third row of each plot. The preemergence treatment was evaluated on June 14 and July 14. Field corn was harvested on November 10 by combining the center two rows of each plot using a John Deere 3300 combine equipped with a load cell. 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 Tables 7 and 8. Stand counts are given in Table 7. Basis Gold (pm) plus Distinct (pm) applied at 0.78 plus 0.26 lb/ac, respectively, caused the highest injury of 3. All treatments except the check gave excellent control of broadleaf weeds.

Crop yields: Yields are given in Table 8. Yields were 66 to 84 bu/ac higher in herbicide treated plots as compared to the check.

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

Introduction

Field corn is now being genetically altered so Roundup, Liberty, and Touchdown type herbicides may be applied postemergence without causing death to the field corn plant. These herbicides have no soil residual characteristics and sometimes may need the early application of a preemergence herbicide for effective weed control.

Objectives

- To determine efficacy of selected herbicides for control of annual broadleaf weeds in Roundup Ready field corn.
- To determine corn yield and tolerance to applied selected herbicides.

Table 9. Control of Annual Broadleaf Weeds in Roundup Ready Field Corn with Preemergence Followed by Postemergence Herbicides on July 6, 19, and August 2; at Farmington, NM, 1999

		Crop	Stand	Weed Control[b,c]				
	Rate	Injury[b]	Count	Cheal	Amare	Amabl	Solni	Saskr
Treatments[a]	(lb/ac)	(%)	(no)	(%)				
Roundup[d]	1.0	0	19	100	81	97	81	88
Roundup[d]/Roundup[f]	1.0/0.75	0	19	100	100	100	100	100
Harness Xtra (pm)/ Roundup[e]	1.2/1.0	0	19	100	100	100	89	100
Harness/Roundup[e]	0.7/1.0	0	20	100	100	100	86	100
Atrazine/Roundup[e]	1.5/1.0	0	19	100	100	100	100	100
Harness Xtra (pm)/ Roundup[d]	1.2/1.0	0	19	100	100	100	100	100
Bicep II Mag (pm)[h]	2.3	0	20	100	100	100	100	100
Bicep II Mag (pm)/Accent[d,g]	2.3/0.03	0	20	100	100	100	100	100
Guardsman (pm)/ Roundup[e]	1.1/1.0	0	19	100	100	100	100	100
Frontier X2/Roundup[e]	0.3/1.0	0	19	100	100	100	100	100
Touchdown[d]	1.0	0	19	100	100	100	96	91
Touchdown[d]/Touchdown[f]	1.0/0.75	0	20	100	100	100	100	100
Frontier X2/Touchdown[e]	0.3/1.0	0	19	100	100	100	100	100
Guardsman (pm)/ Touchdown[e]	1.1/1.0	0	19	100	99	100	100	100
Atrazine[h]	1.5	0	20	100	100	100	100	100
Weedy check		0	19	0	0	0	0	0
LSD 0.05		ns	ns	1	2	1	2	1

[a]pm = packaged mix.

[b]Based on a visual scale from 0-100, where 0 = no control or crop injury and 100 = dead plants.

[c]Cheal = common lambsquarters, Amare = redroot pigweed, Amabl = prostrate pigweed, Solni = black nightshade, and Saskr = Russian thistle.

[d]Postemergence treatments applied on June 3 and evaluated on July 6.

[e]Postemergence treatments applied on June 17 and evaluated on July 19.

[f]Postemergence treatments applied on July 1 and evaluated on August 2.

[g]A COC was added at 1% v/v. All other postemergence treatments had AMS added at 1.5% v/v.

[h]Treatments applied preemergence.

Materials and methods

A field experiment was conducted in 1999 at Farmington, to evaluate the response of Roundup Ready field corn (var. Dekalb 512RR) and annual broadleaf weeds to herbicides. Soils were fertilized according to New Mexico State University, recommendations based on soil tests. The experimental design was a randomized complete block with three replications. Individual plots were 4 32-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 10. Preemergence treatments were applied May 12 and immediately incorporated with 0.75 in. of sprinkler-applied water. Early postemergence treatments were applied on June 3 when corn was in the 4th leaf stage and weeds were small. Postemergence treatments were applied on June 17 when corn was in the 6th stage leaf and weeds averaged 2 to 4 in. in height. Late postemergence treatments were applied July 1 when corn was in the 8th leaf stage and weeds averaged 4 to 6 in. in height. Common lambsquarters, redroot and prostrate pigweed, and black nightshade infestations were heavy and Russian thistle infestations were light throughout the experimental area. Visual evaluations of crop injury and weed control were made July 6 and August 6, July 19 and August 17, and August 2 and August 27. Stand counts were made on July 6 and 19 and August 2 by counting individual plants per 10 ft of the third row of each plot. The preemergence treatments were evaluated on June 14 and July 14. Field corn was harvested on November 9 by combining the center two rows of each plot using a John Deere 3300 combine equipped with a load cell. Results obtained were subjected to analysis of variance at P = 0.05.

Table 10. Control of Annual Broadleaf Weeds in Roundup Ready Field Corn with Preemergence Followed by Postemergence Herbicides on August 6, 17, and 27; at Farmington, NM, 1999

		Weed Control[b,c]					
Treatments[a]	Rate (lb/ac)	Cheal	Amare	Amabl	Solni	Saskr	Yield (bu/ac)
		(%)					
Roundup[d]	1.0	76	78	83	77	82	171
Roundup[d]/Roundup[f]	1.0/0.75	100	100	100	100	100	195
Harness Xtra (pm)/Roundup[e]	1.2/1.0	100	100	100	87	97	193
Harness/Roundup[e]	0.7/1.0	100	100	100	82	98	193
Atrazine/Roundup[e]	1.5/1.0	100	100	100	100	100	197
Harness Xtra (pm)/Roundup[d]	1.2/1.0	100	100	100	100	100	195
Bicep II Mag (pm)[h]	2.3	100	100	100	100	100	193
Bicep II Mag (pm)/Accent[d,g]	2.3/0.03	100	100	100	100	100	193
Guardsman (pm)/Roundup[e]	1.1/1.0	100	100	100	100	100	195
Frontier X2/Roundup[e]	0.3/1.0	100	100	100	100	100	190
Touchdown[d]	1.0	95	92	89	85	89	175
Touchdown[d]/Touchdown[f]	1.0/0.75	100	100	100	100	100	192
Frontier X2/Touchdown[e]	0.3/1.0	100	100	100	100	100	192
Guardsman (pm)/Touchdown[e]	1.1/1.0	100	100	100	97	97	191
Atrazine[h]	1.5	100	100	10	100	100	191
Weedy check		0	0	0	0	0	107
LSD 0.05		2	4	2	3	2	18

[a]pm = packaged mix.

[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.

[d]Postemergence treatments applied on June 3 and evaluated on August 6.

[e]Postemergence treatments applied on June 17 and evaluated on August 17.

[f]Postemergence treatments applied on July 1 and evaluated on August 27.

[g]A COC was added at 1% v/v. All other postemergence treatments had AMS added at 1.5% v/v.

[h]Treatments applied preemergence.

Results and discussion

Weed control and injury evaluations: Weed control and crop injury evaluations are given in Tables 9 and 10. Stand counts are given in Table 9. No crop injury was observed in any of the treatments. Common lambsquarters, prostrate pigweed, and Russian thistle control were good to excellent with all treatments except the check. Redroot pigweed and black nightshade control were good to excellent with all treatments except Roundup applied early postemergence on June 3 at 1.0 lb/ac and the check (Table 9). In August Roundup applied early postemergence at 1.0 lb/ac gave poor control of annual broadleaf weeds. When either Roundup or Touchdown was applied early postemergence (June 3) followed by a late postemergence application (July 1) of 1.0/0.75 lb/ac weed control evaluations were excellent (Table 10).

Crop yields: Yields are given in Table 10. Yields were 90 to 64 bu/ac higher in the herbicide treated plots as compared to the check.

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

Introduction

Genetically altered plants like soybeans, cotton, and corn can now have Roundup, Liberty, and Touchdown applied postemergence for effective weed control. This trial examined selected preemergence herbicides followed by Roundup applied postemergence for broadleaf weed control in Roundup Ready field corn.

Objectives

- To determine efficacy of selected herbicides for control of annual broadleaf weeds in Roundup Ready field corn.
- To determine corn yield and tolerance to applied selected herbicides.

Table 11. Control of Annual Broadleaf Weeds in Roundup Ready Field Corn with Preemergence Followed by Postemergence Herbicides on July 6, 19, and August 2; at Farmington, NM, 1999

Treatments[a]	Rate (lb/ac)	Injury[b] (%)	Stand Count (no)	Weed Control[b,c] (%)				
				Cheal	Amare	Amabl	Solni	Saskr
Bicep Lite II Mag (pm)[d]	1.9	0	20	100	100	100	100	100
Bicep Lite II Mag (pm)/ Roundup[e]	1.9/0.75	0	20	100	100	100	100	100
Bicep Lite II Mag (pm)/ Roundup[f]	1.9/0.75	0	19	100	100	100	100	100
Bicep Lite II Mag (pm)/ Roundup[g]	1.9/0.75	0	19	100	100	100	100	100
Bicep Lite II Mag (pm)/ Beacon + Clarity[f,h]	1.9/0.18 + 0.13	5	19	100	100	100	100	100
Roundup[e]	0.75	0	19	100	97	96	100	83
Roundup[f]	0.75	0	20	100	100	100	100	80
Roundup[g]	0.75	0	19	100	100	100	96	70
Dual II Mag/Roundup[e]	1.3/0.75	0	19	100	100	100	100	82
Dual II Mag/Roundup[f]	1.3/0.75	0	19	100	100	100	100	99
Dual II Mag/Roundup[g]	1.3/0.75	0	19	100	100	100	100	70
Dual II Mag/ Beacon + Clarity[f,h]	1.3/0.18 + 0.13	9	20	100	100	100	100	100
Dual II Mag/ Northstar (pm)[f,h]	1.3/0.15	2	20	100	100	100	100	100
Bicep Lite II Mag (pm)/ Northstar (pm)[f,h]	1.9/0.15	2	19	100	100	100	100	100
Atrazine[d]	1.5	0	20	100	100	100	100	100
Weedy check		0	20	0	0	0	0	0
LSD 0.05		1	ns	1	1	1	1	3

[a]pm = packaged mix.

[b]Based on a visual scale from 0-100, where 0 = no control or crop injury and 100 = dead plants.

[c]Cheal = common lambsquarters, Amare = redroot pigweed, Amabl = prostrate pigweed, Solni = black nightshade, and Saskr = Russian thistle.

[d]Treatments applied preemergence.

[e]Postemergence treatments applied on June 3 and evaluated on July 6.

[f]Postemergence treatments applied on June 17 and evaluated on July 19.

[g]Postemergence treatments applied on July 1 and evaluated on August 2.

Materials and methods

A field experiment was conducted in 1999 at Farmington, to evaluate the response of Roundup Ready field corn (Dekalb 512RR) and annual broadleaf weeds to herbicides. Soils were fertilized according to New Mexico State University recommendations based on soil tests. The experimental design was a randomized complete block with three replications. Individual plots were 4 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 10. Preemergence treatments were applied on May 11 and immediately incorporated with 0.75 in. of sprinkler-applied water. Early postemergence treatments were applied on June 3 when corn was in the 4th leaf stage and weeds were small. Postemergence treatments were applied on June 17 when corn was in the 6th leaf stage and weeds averaged approximately 2 to 4 in. in height. Late postemergence treatments were applied on July 1 when corn was in the 8th leaf stage and weeds averaged 4 to 6 in. in height. Black nightshade, redroot and prostrate pigweed, and common lambsquarters infestations were heavy and Russian thistle infestations were light throughout the experimental area. Visual evaluations of crop injury and weed control were made July 6 and August 6, July 19 and August 17, and August 2 and August 27. Stand counts were made on July 6 and 19 and August 2 by counting individual plants per 10 ft of the third row of each plot. The preemergence treatments were evaluated on June 14 and July 14. Field corn was harvested on November 9 by combining the center two rows of each plot using a John Deere 3300 combine equipped with a load cell. Results obtained were subjected to analysis of variance at P = 0.05.

Table 12. Control of Annual Broadleaf Weeds in Roundup Ready Field Corn with Preemergence Followed by Postemergence Herbicides on August 6, 17, and 27; at Farmington, NM, 1999

		Weed Control[b,c]					
Treatments[a]	Rate (lb/ac)	Cheal	Amare	Amabl	Solni	Saskr	Yield (bu/ac)
		(%)					
Bicep Lite II Mag (pm)[d]	1.9	100	100	100	100	100	192
Bicep Lite II Mag (pm)/Roundup[e]	1.9/0.75	100	100	100	100	100	192
Bicep Lite II Mag (pm)/Roundup[f]	1.9/0.75	100	100	100	100	100	192
Bicep Lite II Mag (pm)/Roundup[g]	1.9/0.75	100	100	100	100	100	193
Bicep Lite II Mag (pm)/ Beacon + Clarity[f,h]	1.9/0.18 + 0.13	100	100	100	100	100	193
Roundup[e]	0.75	90	93	90	77	83	182
Roundup[f]	0.75	97	97	97	91	75	183
Roundup[g]	0.75	99	199	99	199	63	194
Dual II Mag/Roundup[e]	1.3/0.75	100	100	100	100	78	191
Dual II Mag/Roundup[f]	1.3/0.75	100	100	100	100	96	190
Dual II Mag/Roundup[g]	1.3/0.75	100	100	100	100	68	190
Dual II Mag/Beacon + Clarity[f,h]	1.3/0.18 + 0.13	100	100	100	100	100	194
Dual II Mag/Northstar (pm)[f,h]	1.3/0.15	100	100	100	100	100	192
Bicep Lite II Mag (pm)/Northstar (pm)[f,h]	1.9/0.15	100	100	100	100	100	189
Atrazine[d]	1.5	100	100	100	100	100	193
Weedy check		0	0	0	0	0	106
LSD 0.05		2	2	1	4	5	17

[a]pm = packaged mix.

[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.

[d]Treatments applied preemergence.

[e]Postemergence treatments applied on June 3 and evaluated on August 6.

[f]Postemergence treatments applied on June 17 and evaluated on August 17.

[g]Postemergence treatments applied on July 1 and evaluated on August 27.

[h]NIS added to postemergence treatments at 0.25% v/v. All other postemergence treatments had AMS added at 1.5% v/v.

Results and discussion

Weed control and injury evaluations: Weed control and crop injury evaluations are given in Tables 11 and 12. Stand counts are given in Table 11. Dual II Mag applied preemergence at 1.3 lb/ac followed by a postemergence treatment of Beacon plus Clarity at 0.18 plus 0.13 lb/ac had the highest injury rating of 9. Common lambsquarters and redroot and prostrate pigweed control were good to excellent with all treatments except the check (Tables 11 and 12). Control of black nightshade with Roundup applied on June 3 at 0.75 lb/ac and evaluated on July 6 decreased 23% when evaluated on August 6 (Table 12). Roundup alone did not control Russian thistle satisfactorily during any application.

Crop yields: Yields are given in Table 12. Yields were 76 to 88 bu/ac higher in the herbicide treated plots as compared to the check.

Broadleaf weed control in spring-seeded alfalfa

Introduction

Seedling alfalfa requires effective broad spectrum weed control for successful establishment; however, few herbicides are registered for postemergence broadleaf weed control. Since Pursuit was recently registered for broadleaf weed control in seedling alfalfa, field trials were conducted to evaluate broadleaf weed control and alfalfa tolerance to AC 299-263 alone or in combination and to Pursuit.

Objectives

- To determine efficacy of AC 299-263 alone or in combination and to Pursuit for control of broadleaf weeds in spring-seeded alfalfa.
- To determine alfalfa yield and tolerance to applied selected herbicides.

Table 13. Control of Annual Broadleaf Weeds with Postemergence Applications of AC 299-263 Alone or in Combination and Pursuit in Spring-Seeded Alfalfa, July 15; at Farmington, NM, 1999

		Crop	Crop	Weed Control[b,c]				
	Rate	Injury[b]	Height	Solni	Amare	Amabl	Saskr	Cheal
Treatments[a]	(lb/ac)	(%)	(no)	(%)				
AC 299-263	0.024	0	8	94	100	100	98	99
AC 299-263	0.032	0	9	100	100	100	98	100
AC 299-263	0.040	1	8	100	100	100	100	100
AC 299-263	0.047	4	6	00	100	100	100	100
AC 299-263 + Buctril	0.024 + 0.25	5	9	100	100	100	100	100
AC 299-263 + Butyrac	0.024 + 0.5	0	9	100	100	100	100	100
AC 299-263 + Buctril	0.032 + 0.25	0	8	100	100	100	100	100
AC 299-263 + Butyrac	0.032 + 0.5	0	8	100	100	100	100	100
AC 299-263 + Buctril	0.04 + 0.25	0	8	100	100	100	100	100
AC 299-263 + Butyrac	0.04 + 0.5	4	8	100	100	100	100	100
Pursuit	0.063	2	8	100	100	100	100	100
Pursuit	0.047	0	8	97	100	100	100	100
Poast + Buctril	0.19 + 0.25	0	9	97	93	92	100	100
Poast + Butyrac	0.19 + 0.5	0	8	100	98	100	100	100
Poast + AC 299-263	0.19 + 0.024	0	8	97	98	100	100	100
Weedy check		0	9	0	0	0	0	0
LSD 0.05		2	3	1	1	1	1	1

[a]All treatments were applied with NIS and 32-0-0 at 0.25 and 1% v/v, respectively. Poast combinations were applied with a COC and 32-0-0, both applied at 1% v/v.

[b]Based on a visual scale from 0-100, where 0 = no control or crop injury and 100 = dead plants.

[c]Solni = black nightshade, Amare = redroot pigweed, Amabl = prostrate pigweed, Saskr = Russian thistle, and Cheal = common lambsquarters.

Materials and methods

A field experiment was conducted in 1999 on a Wall sandy loam (less than 1% organic matter) at Farmington, to evaluate the response of spring-seeded alfalfa and annual broadleaf weeds to postemergence applications of AC 299-263 applied alone or in a combination and to Pursuit. The experimental design was a randomized complete block with three replications. Individual plots were 10 ft wide by 30 ft long. Treatments were applied with a compressed air backpack sprayer calibrated to deliver 30 gal/ac at 30 psi. Alfalfa (var. Legend) was planted at 20 lb/ac with a Massey Ferguson grain drill on May 18. Postemergence treatments were applied on June 16 when alfalfa was in the second trifoliolate leaf stage and weeds were small. Black nightshade, redroot and prostrate pigweed, and common lambsquarters infestations were heavy and Russian thistle infestations were light throughout the experimental area. Crop injury and height were evaluated on July 15. Weed control evaluations were made on July 15 and August 16. Alfalfa was harvested with an Almaco self-propelled plot harvester on August 24. After harvest, a grab sample was taken from each treatment in one replication to determine protein content. Results obtained were subjected to analysis of variance at P = 0.05.

Results and discussion

Crop injury and weed control ratings: Results of crop injury are given in Table 13, and weed control evaluations are given in Tables 13 and 14. AC 299-263 plus Buctril applied at 0.024 plus 0.25 lb/ac, respectively, had the highest injury rating of 5. AC 299-263 applied at 0.047 lb/ac had the shortest height of 6 in. In July, all treatments gave good to excellent control of broadleaf weeds (Table 13). In August, all treatments gave good to excellent control of black nightshade, prostrate pigweed, and common lambsquarters. Redroot pigweed and Russian thistle control were good to excellent with all treatments except Poast applied at 0.19 lb/ac in combination with either Buctril or Butyrac applied at 0.25 and 0.5 lb/ac, respectively (Table 14).

Yield and protein content: Results of yield and protein content are given in Table 14. The weedy check had the highest yield of 2.2 t/ac. This is possibly attributed to the heavy weed pressure during harvest. Protein content ranged from 7.4 to 0.7 percent higher in the herbicide treated plots as compared to the check.

Table 14. Control of Annual Broadleaf Weeds with Postemergence Applications of AC 299-263 Alone or in Combination and Pursuit in Spring-Seeded Alfalfa, August 16; at Farmington, NM, 1999

		Weed Control[b,c]						Protein
	Rate	Solni	Amare	Amabl	Saskr	Cheal	Yield	Content
Treatments[a]	(lb/ac)	(%)					t/ac	(%)
AC 299-263	0.024	90	100	100	93	94	1.4	23.0
AC 299-263	0.032	100	100	100	93	90	1.6	20.9
AC 299-263	0.040	100	100	100	100	100	1.3	21.6
AC 299-263	0.047	100	100	100	100	100	1.4	19.8
AC 299-263 + Buctril	0.024 + 0.25	100	100	100	100	100	1.5	22.3
AC 299-263 + Butyrac	0.024 + 0.5	100	100	100	98	100	1.4	22.6
AC 299-263 + Buctril	0.032 + 0.25	100	100	100	100	100	1.6	20.5
AC 299-263 + Butyrac	0.032 + 0.5	100	100	100	100	100	1.5	22.7
AC 299-263 + Buctril	0.04 + 0.25	100	100	100	100	100	1.6	24.8
AC 299-263 + Butyrac	0.04 + 0.5	100	100	100	100	100	1.5	22.7
Pursuit	0.063	100	100	100	100	100	1.5	19.4
Pursuit	0.047	97	100	100	88	100	1.5	21.2
Poast + Buctril	0.19 + 0.25	97	68	100	68	97	1.6	21.4
Poast + Butyrac	0.19 + 0.5	100	62	100	65	96	1.6	24.0
Poast + AC 299-263	0.19 + 0.024	92	100	100	98	100	1.8	18.1
Weedy check		0	0	0	0	0	2.2	17.4
LSD 0.05		2	3	1	4	3	0.5	

[a]All treatments were applied with NIS and 32-0-0 at 0.25 and 1% v/v, respectively. Poast combinations were applied with a COC and 32-0-0, both applied at 1% v/v.

[b]Based on a visual scale from 0-100, where 0 = no control and 100 = dead plants.

[c]Solni = black nightshade, Amare = redroot pigweed, Amabl = prostrate pigweed, Saskr = Russian thistle, and Cheal = common lambsquarters.

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