NM STATE UNIVERSITY

Pest Control in Crops Grown in Northwestern New Mexico, 2013

Annual Data Report 100-2013

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Cooperative Extension Service • College of Agricultural, Consumer and Environmental Sciences

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INTRODUCTION

Weeds cause more total crop losses than any other agricultural pest (Lorenzi and Jeffery, 1987). Weeds reduce crop yields and quality, harbor insects and plant diseases, cause irrigation and harvesting problems, and reduce the total value of agricultural products in the United States by 10 to 15% (Anonymous, 1986; Chandler et al., 1984; Lorenzi and Jeffery, 1987). Estimated average losses during 1975–1979 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, second in alfalfa production, and fourth in corn production (USDA and New Mexico Agricultural Statistics Service, 1998). An estimated 90% of all tillage operations are for weed control (Anonymous, 1986). 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 agronomic crops grown on medium- and fine-textured, high-organic soils. Little information, however, is available 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 is critical that state agricultural science centers work closely with commercial companies developing new pesticides in order to obtain the research data required by 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.

As new land on the Navajo Indian Irrigation Project comes under cultivation, weed 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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Agricultural Products Industry, Pioneer Hi-Bred, and Southwest Seed.

PEST CONTROL GRANT FUND

Pest Control Management Objectives

Determine efficacy of registered and non-registered pesticides for control of weeds in agricultural crops grown in northwestern New Mexico.

Monsanto, Broadleaf Weed Control in Spring-Seeded Roundup Ready Alfalfa

Introduction

Seedling alfalfa requires effective broad-spectrum weed control for successful establishment. However, few herbicides are registered for postemergence broadleaf weed control. Pursuit, Raptor, and recently Roundup applied to Roundup Ready alfalfa have been registered for broadleaf weed control in seedling alfalfa. Field trials were conducted to evaluate broadleaf weed control with Roundup applied alone or in combination with other selected herbicides.

Objectives

- Determine efficacy of Roundup applied alone or in combination for control of broadleaf weeds in Roundup Ready spring-seeded alfalfa.
- Determine Roundup Ready spring-seeded alfalfa yield and tolerance to applied selected herbicides.

Materials and methods

A field experiment was conducted in 2013 at Farmington, NM, to evaluate the response of Roundup Ready alfalfa (DeKalb DKA43-22RR) and annual broadleaf weeds to postemergence applications of Roundup applied alone or in combination with other selected herbicides. Soils were a Doak silt loam with a pH of 7.4 and an organic matter content of less than 0.3%. 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 10 ft wide by 30 ft long. Treatments were applied with a compressed air backpack sprayer calibrated to deliver 30 gal/ac at 35 psi. Alfalfa was planted at 20 lb/ac with a Massey Ferguson grain drill on May 13. Preemergence treatment was applied on May 15 and immediately incorporated with 0.75 in. of sprinkler-applied water. Soils had a maximum and minimum temperature of 79 and 56°F. Postemergence treatments were applied on June 4 when seedling alfalfa was in the 2nd trifoliate leaf stage and weeds were small (less than 2 in.). Air temperature maximum and minimum during postemergence applications was 87 and 56°F. One late postemergence treatment of Roundup PowerMAX plus Prowl H_2O was applied on June 11 when seedling alfalfa was in the 4th trifoliate leaf stage and weeds were small (less than 3 in.). Air temperature maximum and minimum during this postemergence application was 96 and 59°F. Black nightshade, Palmer amaranth, and prostrate pigweed infestations were heavy and common lambsquarters and Russian thistle infestations were moderate throughout the experimental area. The preemergence treatment was rated visually for crop injury and weed control on June 4. Preemergence followed by a sequential postemergence treatment was rated visually for weed control on July 10. Postemergence treatments were rated for crop injury and weed control on July 10. Alfalfa was harvested with an Almaco self-propelled plot harvester on August 15. A grab sample was taken from each plot to determine protein content and relative feed value. Results obtained were subjected to analysis of variance at P = 0.05.

Results and discussion

Weed control and injury evaluations: Results of crop injury and weed control evaluations are given in Tables 1 and 2. On June 4, Warrant applied preemergence at 48 oz/ac caused a crop injury rating of 7 (Table 1); it gave good control of Palmer amaranth, prostrate pigweed, black nightshade, and common lambsquarters, but poor control of Russian thistle. On July 10, Warrant applied preemergence at 48 oz/ac followed by a postemergence treatment of Roundup PowerMAX caused an injury rating of 4. The postemergence treatment of Pursuit plus Roundup PowerMAX applied at 6 plus 22 oz/ac caused an injury rating of 3 (Table 2). On July 10, all treatments except the check gave good to excellent control of broadleaf weeds (Table 2).

Yield and protein content: Results of yield, protein content, and relative feed value are given in Table 3. The weedy check had the highest yield at 4.2 t/ac. Pursuit plus Roundup PowerMAX applied postemergence at 4 plus 22 oz/ac had the highest relative feed value of 191 and protein content of 20.1 (Table 3).

BASF, Headline SC Applications Applied to Various Cutting Schedules for Established Roundup Ready Alfalfa Production

Introduction

Headline SC (a fungicide) was introduced by BASF to help growers control diseases and improve overall plant health. Headline is fast-acting and delivers a high level of activity on more than 50 major diseases that can threaten yield and crop quality. Headline helps prevent diseases and provides protection for more than 90 crops. Field trials were conducted to evaluate Headline applied to established Roundup Ready alfalfa and yield potential at two different cutting schedules.

Objective

- Determine Headline SC's potential as a plant health fungicide applied in between cuttings at two different cutting schedules and its effect on alfalfa yield and quality.

Materials and methods

A field experiment was conducted in 2013 at Farmington, NM, to evaluate the response of established Roundup Ready alfalfa (DeKalb DKA41-18RR) to Headline SC applied in between cuttings and to evaluate Headline SC's potential to increase alfalfa yield and quality at two different cutting schedules. Soils were a Doak silt loam with a pH of 7.4 and an organic matter content of less than 0.5%. Soils were fertilized according to New Mexico State University recommendations based on soil tests. The experimental design was a split plot design with Headline as main plots and scheduled cuttings as sub-plots. Individual plots were 4 ft wide by 26 ft long. Treatments were applied with a compressed air backpack sprayer calibrated to deliver 30 gal/ac at 35 psi. Table 4 indicates Headline SC application dates and cutting schedules. Alfalfa was harvested with an Almaco self-propelled plot harvester. A grab sample from each cutting was taken from each plot to determine protein content and relative feed value. A split plot design was used to determine statistical differences among treatment means at P = 0.05.

Results and discussion

Yield and protein content: There were no significant interactions among treatments for Headline at 6 oz/ac by cutting schedule (Tables 5 and 6). No Headline application harvested on a 30-day schedule had the highest yield at 7.79 t/ac (Table 7). The application of Headline at 6 oz/ac to either scheduled cuttings did not increase yield. Pocket gopher damage to research plots was a serious problem across all treatments.

BASF, Headline SC Applications for Established Roundup Ready Alfalfa Production

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Results and discussion

Headline application and yield: There was a significant difference among treatments for yield of cut 2 for Headline applied at 6 oz/ac (Table 9). Applying Headline at 6 oz/ac before the 1st, 2nd, and 3rd or just before the 2nd and 3rd cuttings yielded 1.04 and 0.98 t/ac more alfalfa than the no Headline treatment, respectively (Table 9).

BASF, Broadleaf Weed Control in Field Corn With Preemergence Followed by Sequential Postemergence Herbicides With or Without Headline AMP and Priaxor Applied Alone or in Combination

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. Headline AMP or Priaxor were added to some postemergence herbicides applied alone or in combination to determine if there would be an increase in corn production.

Objectives

- Determine efficacy of selected herbicides for control of annual broadleaf weeds in field corn.
- Determine corn yield and tolerance to selected herbicides with or without Headline AMP or Priaxor applied alone or in combination.

Materials and methods

A field experiment was conducted in 2013 at Farmington, NM, to evaluate the response of field corn (Pioneer PO365YHR) and annual broadleaf weeds to preemergence followed by sequential late postemergence herbicides with or without Headline AMP or Priaxor applied alone or in combination. Soils were a Doak silt loam with a pH of 7.4 and an organic matter content of less than 0.3%. Soils were fertilized according to New Mexico State University recommendations based on soil tests. The experimental design was a randomized complete block with six replications. Individual plots were four 30-in. rows 30 ft long. Treatments were applied with a compressed air backpack sprayer calibrated to deliver 30 gal/ac at 35 psi. Field corn was planted with flexi-planters equipped with disk openers on May 8. Preemergence herbicides were applied on May 9 and immediately incorporated with 0.75 in. of sprinkler-applied water. Soils had a maximum and minimum temperature of 67 and 56°F. Postemergence treatments were applied on either June 4 or June 11 when field corn was in either V-3 to V-4 or V-5 to V-7 leaf stage and weeds were small (less than 2–4 in.). Air temperature maximum and minimum during postemergence applications was 87 and 52°F and 96 and 59°F. Headline AMP and Priaxor were added to postemergence herbicides alone or in combination on June 11 and July 9, and without herbicides on July 23. Black nightshade, Palmer amaranth, and prostrate pigweed infestations were heavy and common lambsquarters and Russian thistle infestations were moderate throughout the experimental area. Preemergence treatments were rated visually for crop injury and weed control on June 10. Preemergence followed by sequential postemergence treatments were rated visually for weed control on July 11. Stand counts were made on June 11 by counting individual plants per 10 ft of the third row of each plot. Field corn was harvested on October 28 by combining the center two rows of each plot using a John Deere 4420 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: Crop injury evaluations and stand counts are given in Table 10. Weed control evaluations are given in Tables 10 and 11. There was no crop injury and there were no significant differences among treatments for stand count (Table 10). On June 10, all preemergence treatments gave excellent control of Palmer amaranth, prostrate pigweed, black nightshade, and common lambsquarters (Table 10). On July 11, all treatments except the weedy check and Roundup PowerMAX plus NIS plus AMS applied alone postemergence at 22 plus 12 plus 80 oz/ac gave excellent control of Palmer amaranth, prostrate pigweed, common lambsquarters, black nightshade, and Russian thistle (Table 11).

Crop yields: Yields are given in Table 11. Yields were 189 to 260 bu/ac higher in the treated plots as compared to the weedy check. Verdict applied preemergence at 12 oz/ac, followed by a sequential postemergence treatment of Roundup PowerMAX plus Armezon plus atrazine at 22 plus 0.75 plus 16 oz/ac, followed by a postemergence treatment of Priaxor at the V-10 to V-12 leaf stage, followed by a postemergence treatment of Headline AMP at the R-1 silk stage, had the highest yield of 314 bu/ac (Table 11).

Bayer CropScience, Broadleaf Weed Control in Field Corn with 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 2013 at Farmington, NM, to evaluate the response of field corn (Pioneer PO365YHR) and annual broadleaf weeds to preemergence and preemergence followed by sequential postemergence herbicides. Soils were a Doak silt loam with a pH of 7.4 and an organic matter content of less than 0.3%. 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 four 30-in. rows 30 ft long. Treatments were applied with a compressed air backpack sprayer calibrated to deliver 30 gal/ac at 35 psi. Field corn was planted with flexi-planters equipped with disk openers on May 8. Preemergence herbicides were applied on May 9 and immediately incorporated with 0.75 in. of sprinkler-applied water. Soil had a maximum and minimum temperature of 67 and 56°F. Postemergence treatments were applied on June 11 when field corn was in the 3rd to 5th leaf stage and weeds were small (less than 2 in.). Air temperature maximum and minimum during postemergence applications was 96 and 59°F. Black nightshade, Palmer amaranth, and prostrate pigweed infestations were heavy and common lambsquarters and Russian thistle infestations were moderate throughout the experimental area. Preemergence treatments were rated visually for crop injury and weed control on June 11. Preemergence followed by sequential postemergence treatments were rated visually for weed control on July 11. Stand counts were made on June 12 by counting individual plants per 10 ft of the third row of each plot. Field corn was harvested on October 28 by combining the center two rows of each plot using a John Deere 4420 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: Crop injury evaluations and stand counts are given in Table 12. Weed control evaluations are given in Tables 12 and 13. There was no crop injury and there were no significant differences among treatments for stand count (Table 12). On June 11, all preemergence treatments except the weedy check gave excellent control of broadleaf weeds (Table 12). All preemergence followed by sequential postemergence treatments gave excellent control of Palmer amaranth, prostrate pigweed, black nightshade, Russian thistle, and common lambsquarters (Table 13).

Crop yields: Yields are given in Table 13. Yields were 236 to 263 bu/ac higher in the herbicide-treated plots as compared to the weedy check (Table 13).

Bayer CropScience, Jim Hill Mustard Control in Winter Wheat

Introduction

Jim Hill mustard (tumble mustard) is a troublesome weed in winter wheat. If not controlled, it can decrease wheat yields and interfere with harvest operations. Field trials were conducted to evaluate the control of Jim Hill mustard by selected herbicides in winter wheat.

Objectives

- Determine efficacy of selected herbicides for control of Jim Hill mustard in winter wheat.
- Determine tolerance of winter wheat to applied selected herbicides and yield.

Materials and methods

A field experiment was conducted in 2012–13 at Farmington, NM, on a Wall sandy loam with less than 0.5% organic matter to evaluate the response of winter wheat and Jim Hill mustard (tumble mustard) to postemergence herbicides. The experimental design was a randomized complete block with three replications. Individual plots were 10 ft wide by 30 ft long. Winter wheat (var. Billings) was planted in 9-in. rows at 100 lb/ac with a Massey Ferguson grain drill on September 10, 2012. Treatments were applied with a compressed air backpack sprayer calibrated to deliver 30 gal/ac at 35 psi. Treatments were applied on March 20 before winter wheat had reached Feekes 6 growth stage. Air temperature maximum and minimum during treatment application was 59 and 29°F. On March 20, Jim Hill mustard heights were less than 3 in. Jim Hill mustard infestation was heavy throughout the experimental area. Crop injury and weed control evaluations were made on April 24. Winter wheat was harvested with a John Deere 4020 combine equipped with a load cell on July 30. Results obtained were subjected to analysis of variance at P = 0.05.

Results and discussion

Weed control, injury evaluations, and yield: Results of crop injury and weed control evaluations are given in Table 14. On May 23, there were no crop injury symptoms from any of the treatments. Jim Hill mustard control ranged from 82 to 98% (Table 14).

Crop yields: Results of yield are given in Table 14. Yields were 40 to 53 bu/ac higher in the herbicide-treated plots as compared to the weedy check.

Table 1. Control of Annual Broadleaf Weeds With a Preemergence Herbicide in Spring-Seeded DeKalb DKA43-22RR Roundup Ready Alfalfa on June 4; NMSU Agricultural Science Center at Farmington, NM, 2013

Treatments	Rate (oz/ac)	Crop Injury[a] (%)	Weed Control[a,b]				
			Amapa	Amabl	Solni	Saskr	Cheal
			(%)				
Warrant	48	7	94	95	95	43	94
Weedy check	0	0	0	0	0	0	0
LSD = 0.05		3	4	4	2	6	4

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

[b]Amapa = Palmer amaranth, Amabl = prostrate pigweed, Solni = black nightshade, Saskr = Russian thistle, and Cheal = common lambsquarters.

Table 2. Control of Annual Broadleaf Weeds With Preemergence and Preemergence Followed by Sequential Postemergence Herbicides in Spring-Seeded DeKalb DKA43-22RR Roundup Ready Alfalfa on July 10; NMSU Agricultural Science Center at Farmington, NM, 2013

Treatments[a]	Rate (oz/ac)	Crop Injury[c] (%)	Weed Control[c,d]				
			Amapa	Amabl	Solni	Saskr	Cheal
			(%)				
Roundup PowerMAX + AMS	22 + 80	0	98	98	99	95	98
Roundup PowerMAX + AMS	44 + 80	0	98	99	100	96	98
Warrant/Roundup PowerMAX + AMS	48/22 + 80	4	97	99	100	94	99
Warrant + Roundup PowerMAX + AMS	28 + 22 + 80	0	99	99	99	96	97
Pursuit + Roundup PowerMAX + MSO + AMS	4 + 22 + 38 + 80	0	100	100	100	99	100
Raptor + Roundup PowerMAX + MSO + AMS	5 + 22 + 38 + 80	0	100	100	100	99	100
Prowl H_2O + Roundup PowerMAX + AMS[b]	32 + 22 + 80	0	99	99	100	97	98
2,4DB + Roundup PowerMAX + AMS	32 + 22 + 80	0	97	97	99	99	100
2,4DB + Buctril + Roundup PowerMAX + AMS	32 + 16 + 22 + 80	0	100	100	100	100	100
Pursuit + Roundup PowerMAX + MSO + AMS	6 + 22 + 38 + 80	3	100	100	100	100	100
Raptor + Roundup PowerMAX + MSO + AMS	6 + 22 + 38 + 80	0	100	100	100	100	100
Weedy check		0	0	0	0	0	0
LSD = 0.05		1	1	1	1	2	2

[a]First treatment applied preemergence then a slash followed by a sequential postemergence treatment. AMS = ammonium sulfate, MSO = methylated seed oil.

[b]Treatment applied postemergence on June 11.

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

[d]Amapa = Palmer amaranth, Amabl = prostrate pigweed, Solni = black nightshade, Saskr = Russian thistle, and Cheal = common lambsquarters.

Table 3. Yield, Protein, and Relative Feed Value of Spring-Seeded DeKalb DKA43-22RR Roundup Ready Alfalfa From Applications of Preemergence and Preemergence Followed by Sequential Postemergence Herbicides on August 15; NMSU Agricultural Science Center at Farmington, NM, 2013

Treatments[a]	Rate (oz/ac)	Yield[c] (t/ac)	RFV[d] (no.)	Protein Content (%)
Roundup PowerMAX + AMS	22 + 80	2.3	144	16.4
Roundup PowerMAX + AMS	44 + 80	2.5	136	16.2
Warrant/Roundup PowerMAX + AMS	48/22 + 80	2.6	156	17.0
Warrant + Roundup PowerMAX + AMS	28 + 22 + 80	2.3	173	18.4
Pursuit + Roundup PowerMAX + MSO + AMS	4 + 22 + 38 + 80	2.1	191	20.1
Raptor + Roundup PowerMAX + MSO + AMS	5 + 22 + 38 + 80	2.3	188	18.4
Prowl H_2O + Roundup PowerMAX + AMS[b]	32 + 22 + 80	2.4	173	18.2
2,4DB + Roundup PowerMAX + AMS	32 + 22 + 80	2.6	149	19.3
2,4DB + Buctril + Roundup PowerMAX + AMS	32 + 16 + 22 + 80	2.5	149	19.0
Pursuit + Roundup PowerMAX + MSO + AMS	6 + 22 + 38 + 80	2.4	163	18.4
Raptor + Roundup PowerMAX + MSO + AMS	6 + 22 + 38 + 80	2.5	190	19.4
Weedy check	22 + 80	4.2	140	15.5
LSD = 0.05		0.2	24	1.7

[a]First treatment applied preemergence then a slash followed by a sequential postemergence treatment. AMS = ammonium sulfate, MSO = methylated seed oil.

[b]Treatment applied postemergence on June 11.

[c]t/ac = ton/ac and is based on a 20% moisture content.

[d]RFV = relative feed value.

Table 4. Headline SC Application Dates and Cutting Schedule of DKA41-18RR Roundup Ready Alfalfa; NMSU Agricultural Science Center at Farmington, NM, 2013

Cutting	Headline SC application at 6 oz/ac when alfalfa was 6–8 in. in height[a]	Cutting schedule in days	Date Headline SC was applied at 6 oz/ac to 6–8 in. alfalfa, 2013	Cutting date, 2013
1	none	35		June 6
2	none	70		July 11
3	none	105		August 15
4	none	140		September 20
1	none	30		June 1
2	none	60		July 1
3	none	90		August 1
4	none	120		September 2
1	6	35	April 12	June 6
2	6	70	June 15	July 11
3	6	105	July 23	August 15
4	6	140	August 27	September 20
1	6	30	April 12	June 1
2	6	60	June 11	July 1
3	6	90	July 9	August 1
4	6	120	August 14	September 2

[a]Headline SC was applied with a non-ionic surfactant at 12 oz/ac

Table 5. Yield of DKA41-18RR Roundup Ready Alfalfa, With or Without Headline SC Application, at Different Cutting Schedules (Cut 1 and Cut 2); NMSU Agricultural Science Center at Farmington, NM, 2013

Headline SC[a] (oz/ac)	Cutting Schedule (days)	Yield Cut 1 (t/ac)[b]	Protein (%)	RFV[c] (no.)	Yield Cut 2 (t/ac)[b]	Protein (%)	RFV[c] (no.)
None	35	2.64	19.46	202	1.70	20.17	169
None	30	2.27	20.35	211	1.56	21.11	183
6	35	2.49	20.56	198	1.58	18.57	161
6	30	2.42	19.20	215	1.66	22.71	190
Headline SC		ns	0.96	8	ns	0.68	13
Headline by cutting schedule		ns	8	ns	ns	ns	ns

[a]Headline SC was applied with a non-ionic surfactant at 12 oz/ac.
[b]t/ac = tons/ac and is based on a 20% moisture content.
[c]RFV = relative feed value.

Table 6. Yield of DKA41-18RR Roundup Ready Alfalfa, With or Without Headline SC Application, at Different Cutting Schedules (Cut 3 and Cut 4); NMSU Agricultural Science Center at Farmington, NM, 2013

Headline SC[a] (oz/ac)	Cutting Schedule (days)	Yield Cut 3 (t/ac)[b]	Protein (%)	RFV[c] (no.)	Yield Cut 4 (t/ac)[b]	Protein (%)	RFV[c] (no.)
None	35	1.96	19.55	159	1.19	23.22	204
None	30	1.82	19.20	160	1.14	23.38	200
6	35	1.81	20.13	167	1.07	23.12	215
6	30	1.97	18.61	151	1.26	23.48	190
Headline SC		ns	ns	ns	0.10	ns	ns
Headline by cutting schedule		ns	ns	ns	ns	ns	ns

[a]Headline SC was applied with a non-ionic surfactant at 12 oz/ac.
[b]t/ac = tons/ac and is based on a 20% moisture content.
[c]RFV = relative feed value.

Table 7. Total Yield of DKA41-18RR Roundup Ready Alfalfa With or Without Headline SC Application; NMSU Agricultural Science Center at Farmington, NM, 2013

Headline SC[a] (oz/ac)	Cutting Schedule (days)	Total Yield (t/ac)[b]	Average Protein (%)	Average RVF[c] (no.)
None	35	7.49	20.60	184
None	30	7.79	21.00	189
6	35	6.95	20.59	185
6	30	7.31	21.00	187

[a]Headline SC was applied with a non-ionic surfactant at 12 oz/ac.
[b]t/ac = tons/ac and is based on a 20% moisture content.
[c]RFV = relative feed value.

Table 8. Application of Headline to Cuttings of DKA41-18RR Roundup Ready Alfalfa; NMSU Agricultural Science Center at Farmington, NM, 2013

Treatments[a]	Headline Application Date	Cutting Date 1	2	3	4
Headline cut 1	April 29	June 6	July 11	August 15	September 30
Headline cut 2	June 18	June 6	July 11	August 15	September 30
Headline cut 3	July 23	June 6	July 11	August 15	September 30
Headline cuts 1 and 2	April 28, June 18	June 6	July 11	August 15	September 30
Headline cuts 1 and 3	April 29, July 23	June 6	July 11	August 15	September 30
Headline cuts 2 and 3	April 18, July 23	June 6	July 11	August 15	September 30
Headline cuts 1, 2, and 3	April 29, June 18, July 23	June 6	July 11	August 15	September 30
No Headline		June 6	July 11	August 15	September 30

[a]Headline applied at 6 oz/ac with an non-ionic surfactant at 12 oz/ac.

Table 9. Yield of DKA41-18RR Roundup Ready Alfalfa from Headline Applied at Different Cuttings; NMSU Agricultural Science Center at Farmington, NM, 2013

Treatments[a]	Cuttings[b]				Total Yield (t/ac)[b]
	Cut 1	Cut 2	Cut 3	Cut 4	
Headline cut 1	3.36	3.31	2.47	1.35	10.49
Headline cut 2	3.47	3.42	2.38	1.33	10.60
Headline cut 3	3.46	3.23	2.36	1.43	10.48
Headline cuts 1 and 2	3.48	3.28	2.42	1.25	10.43
Headline cuts 1 and 3	3.52	3.30	2.37	1.37	10.56
Headline cuts 2 and 3	3.58	3.54	2.33	1.35	10.80
Headline cuts 1, 2, and 3	3.62	3.54	2.42	1.28	10.86
No Headline	3.35	3.12	2.16	1.19	9.82
LSD = 0.05	ns	0.17	ns	ns	

[a]Headline applied at 6 oz/ac with an non-ionic surfactant at 12 oz/ac.

[b]t/ac = tons/ac and is based on a 20% moisture content.

Table 10. Control of Annual Broadleaf Weeds With Preemergence Herbicides in Pioneer PO365YHR Field Corn on June 10; NMSU Agricultural Science Center at Farmington, NM, 2013

Treatments	Rate (oz/ac)	Stand Count (no.)	Crop Injury[a] (%)	Weed Control[a,b]				
				Amapa	Amabl	Solni	Saskr	Cheal
				(%)				
G-Max Lite	40	23	0	99	99	99	92	100
Verdict + atrazine	12 + 16	24	0	99	99	100	99	100
Verdict + atrazine	12 + 16	23	0	99	98	99	99	100
Verdict + atrazine	12 + 16	24	0	100	99	100	99	100
Verdict	12	24	0	99	99	100	99	99
Verdict	12	24	0	98	98	100	99	99
Weedy check		23	0	0	0	0	0	0
LSD = 0.05		ns		1	1	1	2	1

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

[b]Amapa = Palmer amaranth, Amabl = prostrate pigweed, Solni = black nightshade, Saskr = Russian thistle, and Cheal = common lambsquarters.

Table 11. Control of Annual Broadleaf Weeds With Preemergence Followed by Sequential Postemergence Herbicides With or Without Headline AMP and Priaxor Applied Alone or in Combination in Pioneer PO365YHR Field Corn on July 11; NMSU Agricultural Science Center at Farmington, NM, 2013

Treatments[a]	Rate (oz/ac)	Weed Control[e,f] Amapa (%)	Amabl	Solni	Saskr	Cheal	Yield (bu/ac)
Roundup PowerMAX + NIS + AMS	22 + 12 + 80	68	68	74	56	80	243
G-Max Lite/Roundup PowerMAX + NIS + AMS	40/22 + 12 + 80	99	99	100	97	99	290
Verdict + atrazine/ Roundup PowerMAX + NIS + AMS	12 + 16/22 + 12 + 80	99	100	100	99	99	300
Verdict + atrazine/ Roundup PowerMAX + NIS + AMS/Headline AMP + NIS[d]	12 + 16/22 + 12 + 80/10 + 12	100	99	99	99	99	311
Verdict + atrazine/ Roundup PowerMAX + NIS + AMS + Priaxor/ Headline AMP + NIS[b,d]	12 + 16/22 + 12 + 80 + 4/10 + 12	99	99	99	99	100	312
Verdict/Roundup PowerMAX + Armezon + atrazine + MSO + AMS/ HeadlineAMP + NIS[d]	12/22 + 0.75 + 16 + 38 + 80/10 + 12	98	99	99	97	99	312
Verdict/Roundup PowerMAX + Armezon + atrazine + MSO + AMS/ Priaxor/Headline AMP + NIS[c,d]	12/22 + 0.75 + 16 + 38 + 80/4/10 + 12	97	99	99	97	99	314
Weedy check		0	0	0	0	0	54
LSD = 0.05		2	3	2	3	2	11

[a]First treatment applied preemergence then a slash followed by a sequential postemergence treatment. NIS = non-ionic surfactant, AMS = ammonium sulfate, MSO = methylated seed oil.

[b]Priaxor added with herbicide treatment on June 11.

[c]Priaxor applied alone to corn at the V-10 to V-12 leaf stage on July 9.

[d]Headline AMP applied to corn at the R-1 silk stage on July 23.

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

[f]Amapa = Palmer amaranth, Amabl = prostrate pigweed, Solni = black nightshade, Saskr = Russian thistle, and Cheal = common lambsquarters.

Table 12. Control of Annual Broadleaf Weeds With Preemergence Herbicides in Pioneer PO365YHR Field Corn on June 11; NMSU Agricultural Science Center at Farmington, NM, 2013

Treatments	Rate (oz/ac)	Stand Count (no.)	Crop Injury[a] (%)	Weed Control[a,b]				
				Amapa	Amabl	Solni	Saskr	Cheal
				(%)				
Corvus + atrazine	5.6 + 32	24	0	100	100	100	100	100
Balance Flexx + atrazine	6 + 32	25	0	100	100	100	100	100
Corvus + atrazine	3 + 16	23	0	100	100	100	100	100
Balance Flexx + atrazine	3 + 16	25	0	100	100	100	100	100
Lumax	48	24	0	100	100	100	100	100
Harness Xtra	48	24	0	100	100	100	100	100
Verdict	15	23	0	100	100	100	100	100
Weedy check		24	0	0	0	0	0	0
LSD = 0.05		ns	0	1	1	1	1	1

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

[b]Amapa = Palmer amaranth, Amabl = prostrate pigweed, Solni = black nightshade, Saskr = Russian thistle, and Cheal = common lambsquarters.

Table 13. Control of Annual Broadleaf Weeds With Preemergence Followed by Sequential Postemergence Herbicides in Pioneer PO365YHR Field Corn on July 11; NMSU Agricultural Science Center at Farmington, NM, 2013

Treatments[a]	Rate (oz/ac)	Weed Control[b,c]					Yield (bu/ac)
		Amapa	Amabl	Solni	Saskr	Cheal	
		(%)					
Corvus + atrazine	5.6 + 32	100	100	100	100	100	289
Balance Flexx + atrazine	6 + 32	100	100	100	100	100	287
Corvus + atrazine/Roundup PowerMAX + AMS	3 + 16/22 + 48	100	100	100	100	100	289
Corvus + atrazine/Ignite + AMS	3 + 16/22 + 44	100	100	100	100	100	298
Corvus + atrazine/Laudis + MSO + AMS	3 + 16/3 + 38 + 44	100	100	100	100	100	296
Corvus + atrazine/Capreno + AMS	3 + 16/3 + 44	100	100	100	100	100	313
Balance Flexx + atrazine/Laudis + MSO + AMS	3 + 16/3 + 38 + 44	100	100	100	100	100	314
Balance Flexx + atrazine/Ignite + AMS	3 + 16/22 + 48	100	100	100	100	100	301
Balance Flexx + atrazine/Roundup PowerMAX + AMS	3 + 16/22 + 48	100	100	100	100	100	306
Balance Flexx + atrazine/Capreno + COC + AMS	3 + 16/3 + 38 + 44	100	100	100	100	100	309
Lumax/HalexGT + NIS + AMS	48/58 + 10 + 44	100	100	100	100	100	308
Harness Xtra/Roundup PowerMAX + AMS	48/22 + 44	100	100	100	100	100	300
Verdict/Status + AMS	15/2.5 + 44	100	100	100	100	100	311
Verdict/Status + AMS	15/5 + 44	100	100	100	100	100	310
Verdict/Status + AMS	15/7.5 + 44	100	100	100	100	100	306
Weedy check		0	0	0	0	0	51
LSD = 0.05							24

[a]First treatment applied preemergence then a slash followed by a sequential postemergence treatment. NIS = non-ionic surfactant, AMS = ammonium sulfate, MSO = methylated seed oil, COC = crop oil concentrate.

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

[c]Amapa = Palmer amaranth, Amabl = prostrate pigweed, Solni = black nightshade, Saskr = Russian thistle, and Cheal = common lambsquarters.

Table 14. Control of Jim Hill Mustard and Yield of Billings Winter Wheat on April 24 and July 30; NMSU Agricultural Science Center at Farmington, NM, 2013

Treatments[a]	Rate (oz/ac)	Crop Injury[c] (%)	Weed Control[b,c] SSYAL (%)	Yield (bu/ac)
Huskie + NIS + UAN	11 + 12 + 32	0	82	81
Huskie + NIS + UAN	13.5 + 12 + 32	0	85	79
Huskie + NIS + UAN	15 + 12 + 32	0	90	86
Huskie + Banvel + NIS + UAN	13.5 + 4 + 12 + 32	0	97	91
Huskie + 2,4D + NIS + UAN	13.5 + 4 + 12 + 32	0	99	78
Powerflex + NIS + UAN	3.5 + 12 + 32	0	94	85
Powerflex + NIS + UAN	5 + 12 + 32	0	98	85
Harmony extra + 2,4D + NIS + UAN	0.7 + 4 + 12 + 32	0	92	86
Weedy check		0	0	38
LSD = 0.05			2	16

[a]Treatments applied prior to Feekes 6. NIS = non-ionic surfactant, UAN = urea ammonium nitrate.
[b]Based on a visual scale from 0–100, where 0 = no control or crop injury and 100 = dead plants.
[c]SSYAL = Jim Hill mustard (tumble mustard).

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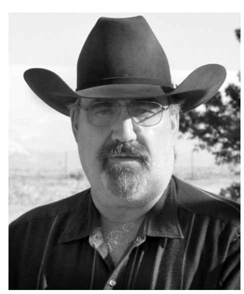

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