



Result Demonstration/Applied Research Report

2003 - 2004 Nolan County
Field Bindweed Control Demonstration
Cooperator: J. B. Cooper

Stephen Biles, Extension Agent - IPM for Jones, Mitchell, Nolan and Scurry Counties
Zach Wilcox, Nolan County Extension Agent--Agriculture
Dr. Billy Warrick, Extension Agronomist (San Angelo, Texas)

Summary

Twenty-one treatments were applied to Field Bindweed on October 31, 2003. A wide range of control was achieved with the herbicides applied. Arsenal, Tordon 22K, Plateau, and Clarity were still providing the highest level of Field Bindweed control six months after the test was established. The higher rates of Arsenal, Tordon 22K, Plateau, and Clarity had enough soil activity that the broadleaf weeds were still being controlled when plots were evaluated on May 19, 2004. In a non-crop situation these herbicides would be useful. In a rotation, back to cotton, the Clarity may be one of the better options. For the control of Field Bindweed in grain sorghum the herbicide Paramount would be a possibility.

Problem

In the Rolling Plains of Texas, Field Bindweed (*Convolvulus arvensis*) is a problem in crop production and non-crop areas. Field Bindweed can be recognized by its arrowhead-shaped leaves, white or pink funnel-shaped flowers, and the presence of 2 finger-like bracts below the flowers. The plant has smooth stems that twine and spread to form a mat on the ground surface. The arrowhead leaves are located alternately along the plant's vine. The leaves usually have a rounded tip and smooth margins. The 1-inch pink to white funnel-shaped flowers are the plant's most distinctive characteristic. Flowering occurs from mid-May until frost in the fall. The 2 small bracts located 1 inch below the flower distinguish this species from other vine weeds. The irregular-shaped seed pod usually contains four seeds. Seeds are dull brown, rough, 1/8 to 1/6 inch long and have an orange slice appearance. Seedlings emerge from the seeds with 2 leaves similar to alfalfa or radishes. In agricultural areas, Field Bindweed depletes soil moisture resulting in reduced yield. The seed of Field Bindweed are hard and can remain viable in the soil for more than 20 years. The presence of seed in grain crops reduces the value of production sold.

Objective

Through the use of a field test: 1) determine the effectiveness of herbicides at controlling the weed, 2) provide producers the opportunity of observing how effectively the herbicides control the weed, and 3) determine the economic feasibility of applying the herbicides for weed control.

Materials and Methods

Cooperating County Producer: J.B. Cooper
Location: One mile north of Roscoe, Texas

Application Information:

Date Applied:	October 31, 2003
Time:	10:00 a.m. to 3:10 p.m.
Wind Speed:	4 to 10 miles per hour
Wind Direction:	Southeast
Air Temperature:	65 to 80 ⁰ Fahrenheit
Relative Humidity:	45 to 78%
Pressure:	36 pounds per square inch
Boom Height:	16 inches
Water Applied:	13 gallons per acre
Nozzle:	Air Induction 11002 on 20 inch centers
Ground Speed:	4.0 miles per hour
Application Device:	Self propelled rig
Plot Size:	13.33 feet wide by 50 feet long
Plot Locations:	The 100 series plots begins at post on Southwest corner of field (runs south to north). The 400 series of plots begins at the post on Southeast corner of field (runs south to north). The 300 series of plots begins 26 feet east of the post in the Southwest corner of field (runs west to east).
Test Design:	Randomized complete block design with three replications

Plant Information

The Field Bindweed plants were actively growing at the time of application made and the runners were 7 to 12 inches long. The plants were young and in a growth stage that should allow for a high level of control. The average number of Field Bindweed in the 100 and 400 series was four per square foot. The average number of Field Bindweed in the 300 series was six per square foot.

Results and Discussion

These plots were evaluated on May 19, 2004 (over seven months after plot establishment) and several of the herbicides controlled more than 90 percent control of the field bindweed. Some of the products applied still had soil activity that was controlling any weeds that were trying to emerge. The information collected on May 19 is summarized in the table on the next page.

Data collected from J.B. Cooper's Field Bindweed Control Test (Nolan County, 2004)

Treatment	Cost of Herbicide Per Acre	Percent Field Bindweed Control (May 19, 2004)	Percent Annual Broadleaf Weed Control (May 19, 2004)	Percent Grass Control (May 19, 2004)
Tordon 22K @ 64 ounces per acre + C.O.C. @ 1% v/v	\$40.96	100.0 a	100.0 a	99.67 a
Arsenal @ 4 ounces per acre + C.O.C. @ 1% v/v	\$9.08	100.0 a	73.33 bc	85.00 a
Arsenal @ 16 ounces per acre + C.O.C. @ 1% v/v	\$36.32	100.0 a	95.00 ab	98.00 a
Tordon 22K @ 32 ounces per acre + 2,4-D @ 32 ounces per acre + C.O.C. @ 1% v/v	\$25.38	100.0 a	98.00 a	95.67 a
Plateau @ 12 ounces per acre + C.O.C. @ 1% v/v	\$85.89	99.67 a	100.0 a	100.0 a
Arsenal @ 8 ounces per acre + C.O.C. @ 1% v/v	\$18.16	99.33 a	75.67 a	93.33 a
Plateau @ 8 ounces per acre + C.O.C. @ 1% v/v	\$57.26	98.33 a	100.0 a	100.0 a
Clarity @ 64 ounces per + C.O.C. @ 1% v/v	\$44.00	90.00 ab	60.00 c	10.00 b
Clarity @ 32 ounces per + C.O.C. @ 1% v/v	\$22.00	88.33 ab	16.67 d	3.33 b
Arsenal @ 2 ounces per acre + C.O.C. @ 1% v/v	\$4.54	82.67 abc	6.67 d	0.00 b
Weedmaster @ 80 ounces per acre + C.O.C. @ 1% v/v	\$16.88	81.67 abc	3.33 d	13.33 b
Marksman @ 96 ounces per acre + C.O.C. @ 1% v/v	\$21.60	80.00 abc	91.67 ab	100.0 a
Roundup WeatherMAX @ 56 oz. per acre + Ammonium Sulphate @ 0.17 pound per gallon	\$24.50	68.33 abc	13.33 d	20.00 b
Tordon 22K @ 32 ounces per acre + C.O.C. @ 1% v/v	\$20.48	66.33 abc	98.33 a	64.67 a
2,4-D @ 32 ounces per acre + C.O.C. @ 1% v/v	\$4.90	61.67 abc	0.00 d	30.00 b
Paramount @ 16 ounces per acre + C.O.C. @ 1% v/v	\$45.00	61.67 abc	20.00 d	23.33 b
Paramount @ 8 ounces per acre + C.O.C. @ 1% v/v	\$22.50	56.67 abcd	13.33 d	16.67 b
Distinct @ 10 ounces per acre + C.O.C. @ 1% v/v	\$52.20	45.00 bcde	10.00 d	10.00 b
Sequence @ 40 ounces per acre + C.O.C. @ 1% v/v	\$??.??	36.67 cde	6.67 d	6.67 b
Distinct @ 6 ounces per acre + C.O.C. @ 1% v/v	\$31.32	10.00 de	0.00 d	3.33 b
Check	\$0.00	0.00 e	0.00 d	0.00 b
Surmount @ 32 ounces per acre + C.O.C. @ 1% v/v	\$??.??	0.00 e	0.00 d	0.00 b

NOTE: In the table on page 3 the individual or combination of letter a, b, c, d, or e beside the number are to indicate statistical significance. There is no statistical difference between numbers that have the same letter to the side (even when there appears to be a large difference in results between the materials applied).

Results and Discussion

To simplify the explanations in this section I will discuss each chemical and the level of weed control observed.

Arsenal controlled the Field Bindweed at all rates used. The two ounce rate was enough to control the Field Bindweed but soil residual activity was minimal and by the May 19 rating was heavily infested with broadleaf weeds and grasses but no Field Bindweed. Higher rates of Arsenal increased the soil residual level and weed control. At the 16 ounce rate the plot had over 95 percent of all weeds controlled. For non-crop purposes this herbicide has strong potential in controlling Field Bindweed.

Clarity controlled the Field Bindweed and had a good potential use in a rotation back to cotton. At 32 ounces per acre the soil residual was almost gone at seven months. Broadleaf weeds and grasses were coming up in the plots. The 64 ounce rate was still suppressing weeds and would probably impact cotton emergence.

Distinct did not perform as well as expected. The 10 ounce rate was better than the 6 ounce rate but the level of control was not acceptable.

Marksman (dicamba + atrazine) performed well and a higher rate could have been used in a fallow production system. The cost factor of \$21.60 for 96 ounces was the deciding point on rate. The level of Field Bindweed control was good and the soil residual activity was high at seven months with 91 percent of the broadleaf weeds still being controlled.

Paramount herbicide's strength is in the ability to use this herbicide to control Field Bindweed in a grain sorghum crop. It will need help from other herbicides to control most of the other weeds.

Plateau at the rates used did an impressive job of controlling the broadleaf weeds and grasses. The cost per acre and the limited rotation options will keep this chemical on the shelf.

Roundup WeatherMAX took out a 68 percent of the Field Bindweed. Since this herbicide has no soil activity the plot was infested with weeds at the seven month rating.

Sequence did not perform as well as expected. The 40 ounce rate should have impacted the Field Bindweed but the control at seven months was poor.

Surmount should have been much more effective at controlling Field Bindweed than this test indicated. One of the active ingredients in the mix is the same as that in Tordon 22K and it performed very well in this test.

Tordon 22K did an impressive job in controlling the Field Bindweed. The 32 ounce rate still had a lot of soil activity at seven months with over 98 percent of the broadleaf weeds being controlled. At the 64 ounce rate, the plots basically didn't have any weeds in them. The control of ground cherry was certainly worth

Results and Discussion (continued)

mentioning. The addition of 2,4-D to the mix helped increase the level of Field Bindweed control. When 2,4 D was used alone it provided a higher level of Field Bindweed control than expected.

Weedmaster did a good job in controlling Field Bindweed for the money (80 ounces for \$16.88). By May 19 it had basically broken down and most of the broadleaf and annual weeds were actively growing in the plots.

Several factors that improved the performance of the herbicides in this test. They included actively growing Field Bindweed, increased gallonage of water, and applying the material under favorable environmental conditions.

Acknowledgments

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I would also like to thank the following companies for providing herbicide for this test.

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Dow AgroSciences LLC who provided the Surmount and Tordon 22K

Syngenta Crop Protection, Inc. Who provided the Sequence

UAP who provided the 2,4-D and C.O.C.

Trade names of commercial products used in this report are included only for better understanding and clarity. Reference to commercial products or trade names is made with the understanding that no discrimination is intended and no endorsement by the Texas A&M University System is implied. Readers should realize that results from one experiment do not represent conclusive evidence that the same response would occur where conditions vary.