Result Demonstration/Applied Research Report

2004 - 2005 Jones County
Field Bindweed Control Demonstration
Cooperator: Jesse Morton

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Summary

Twelve treatments were applied to Field Bindweed on October 18, 2004. A wide range of control was achieved with the herbicides applied. Arsenal and Tordon 22K were still providing the highest level of Field Bindweed control seven months after the test was established. The higher rates of Arsenal and Tordon 22K had enough soil activity that the broadleaf weeds were still being controlled when plots were evaluated on June 16, 2005. In a non-crop situation these herbicides would be useful.

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:	Jesse Morton
Location:	3 miles west of Farm Road 1661 on north side of Farm Road 2834

Application Information:

Date Applied:	October 18, 2004
Time:	2:30 p.m. to 4:30 p.m.
Wind Speed:	9 to 10 miles per hour
Wind Direction:	West
Air Temperature:	84 to 86^0 Fahrenheit
Relative Humidity:	21 to 23%
Pressure:	32 pounds per square inch
Boom Height:	19 inches
Water Applied:	17 gallons per acre
Nozzle:	Air Induction 11002 on 20 inch centers
Ground Speed:	3.0 miles per hour
Application Device:	Self propelled rig
Plot Size:	13.33 feet wide by 50 feet long
Plot Locations:	East side of plot 109 lines up with telephone pole across the road. The telephone pole is the second one west of the fence.
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 3 to 5 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 was eight plants per square foot.

Results and Discussion

These plots were evaluated on June 16, 2005 (seven months after plot establishment) and several of the herbicides controlled more than 90 percent 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 June 16 is summarized in Table 1.

Table 1. Data collected from Jesse Morton's Field Bindweed Control Test (Jones County, 2005)

Treatment	Cost of Herbicide Per Acre	Percent Field Bindweed Control (June 16, 2005)
Arsenal @ 9 ounces per acre + C.O.C. @ 1% v/v	$20.43	99.0 a
Tordon 22K @ 32 ounces per acre + C.O.C. @ 1% v/v	$20.48	98.0 a
Arsenal @ 6 ounces per acre + C.O.C. @ 1% v/v	$13.62	95.0 a
Arsenal @ 3 ounces per acre + C.O.C. @ 1% v/v	$6.81	87.7 a
Arsenal @ 12 ounces per acre + C.O.C. @ 1% v/v	$27.24	85.7 a
Tordon 22K @ 32 ounces per acre + 2,4-D @ 32 ounces per acre + C.O.C. @ 1% v/v	$25.38	84.3 a
Paramount @ 16 ounces per acre + C.O.C. @ 1% v/v	$45.00	64.3 ab
Roundup WeatherMAX @ 28 oz. per acre + Ammonium Sulphate @ 0.17 pound per gallon	$12.25	61.7 ab
Clarity @ 32 ounces per + C.O.C. @ 1% v/v	$22.00	31.7 bc
Roundup WeatherMAX @ 56 oz. per acre + Ammonium Sulphate @ 0.17 pound per gallon	$24.50	31.7 bc
Weedmaster @ 80 ounces per acre + C.O.C. @ 1% v/v	$16.88	26.7 bc
Remedy @ 1.0% v/v + Reclaim @ 1.0% v/v	$37.10	0.0 c
Check	$0.00	0.0 c

NOTE: In Table 1, the individual or combination of letter a, b or c 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 discussion each chemical and the level of weed control observed.

Arsenal controlled the Field Bindweed at all rates used. The three ounce rate was sufficient to control Field Bindweed but soil residual activity was minimal. This was evident at the June 16 rating where plots were 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 provided moderate control in this Field Bindweed test. It does have the potential to be used in the fall and then planted back to cotton the next spring. At 32 ounces per acre the soil residual should be at a minimum seven months after application. At 64 ounce per acre the impact to emerging cotton the next spring should be easily seen.

Paramount herbicide's strength is in the ability to use this herbicide to control Field Bindweed in a grain sorghum crop. In this test 64 percent of the targeted weeds were controlled using 16 ounces of Paramount per acre. It will need help from other herbicides to control most of the other weeds.

Remedy and Reclaim provided no control of the Field Bindweed in this test.

Roundup WeatherMAX at 28 ounces took out 62 percent of the Field Bindweed. Since this herbicide has no soil activity the plot was infested with weeds at the seven month rating.

Tordon 22K did an impressive job in controlling the Field Bindweed. The 32 ounce rate still had a lot of soil activity at the seven month rating. The addition of 2,4-D to the mix did not increase the level of Field Bindweed control in this test.

Weedmaster at 80 ounces per acre only controlled 27 percent of the Field Bindweed in this test. By June 16 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 herbicides in this test were: actively growing Field Bindweed, increased gallonage of water, and applying the material under favorable environmental conditions.

Acknowledgments

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BASF provided the Arsenal, Clarity, Paramount and Weedmaster,
Dow AgroSciences LLC provided the Remedy, Reclaim and Tordon 22K
UAP provided the 2,4-D and C.O.C.