



## Result Demonstration/Applied Research Report

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2004 Nolan County  
Morningglory Control Demonstration  
Cooperator: Bill Hunter

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### Summary

Eight treatments were applied to control morningglory in cotton on June 21, 2004 with follow up treatments applied July 9 and August 12. Morningglory population on this test plot was high, averaging eight plants per square foot. The number of morningglory that established a plant was reduced in plots where the pre-emergent Caparol 4L was applied. At the time of plot establishment, the morningglory was in a two leaf stage to runners 10 inches long. All herbicides applied significantly reduced the number of morningglory when compared to the check. There was a significant difference between the treatment that had one application of Ignite when compared to the treatments that had two or more applications of Ignite.

### Problem

In the Southern Rolling Plains Area of Texas, several species of morningglory impact cotton production. Morningglory is a problem in crop production and non-crop areas. The most challenging species is Sharppod Morningglory (*Ipomoea trichocarpa* var. *trichocarpa*), and it exists in this plot. Also, in the plot is Entireleaf (*Ipomoea hederacea* (L.) Jacq.) and Ivyleaf (*Ipomoea hederacea* var. *integriscula*) Morningglory.

Sharppod morningglory has sepals, leaves and stems that may be pubescent. It is characterized by its heart-shaped and/or deeply lobed leaves, and a rosy lavender flower that has a dark lavender center. Sharppod originates from seed and quickly develops a branched rootstock, becoming a perennial plant in a few weeks. Pre-emergence herbicides such as prometryn or fluometuron provide good seedling control and suppression of perennial plants. However, the perennial plants will require treatment with postemergence herbicides to keep them under control. Delaying the sequential application longer than 20 days results in reduced control. Late-season flushes of Sharppod can continue to cause problems that can only be managed by hooded or lay-by applications of herbicides.

Most burndown post-directed herbicides such as Aim or EToffer vine defoliation and can help to keep the field harvestable. Post-harvest treatments with hormone herbicides (2,4-D, dicamba) to actively growing morningglory vines will also aid in killing the perennial rootstock and help to keep sharpod morningglory infestations to a manageable level the following season.

**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: Bill Hunter  
 Location: 3 miles west of Trent

Application Information:

|                      |                                  |                                  |  |
|----------------------|----------------------------------|----------------------------------|--|
| Date Applied:        | June 21, 2004                    | July 9, 2004                     | August 12, 2004  |
| Time of Application: | 8:30 a.m. - 10:00 a.m.           | 9:30 a.m. - 10:30 a.m.           | 10:30 a.m. - 11:50 a.m.  |
| Wind Speed:          | 7 to 9 miles per hour            | 3 to 4 miles per hour            | 3 to 4 miles per hour  |
| Wind Direction:      | South                            | South                            | South  |
| Air Temperature:     | 74 to 76 <sup>0</sup> Fahrenheit | 74 to 76 <sup>0</sup> Fahrenheit | 75 to 80 <sup>0</sup> Fahrenheit   |
| Relative Humidity:   | 75 to 80%                        | 50 to 70%                        | 35 to 46%  |
| Spray Volume         | 17.5 gallons per acre            | 17.5 gallons per acre            | 15.0 gallons per acre  |
| Nozzle:              | 11002 on 20 inch center          | 11002 on 20 inch center          | Flat Fan 8003 Even Flow combined with 28 inch Hooded Sprayer (Redball 410) |
| Morningglory:        | 10 to 12 inch runners            | 6 to 8 inch runners              | 6 to 8 inch runners  |

All plots:

Pressure: 36 pounds per square inch  
 Boom Height: 16 inches  
 Ground Speed: 4.0 miles per hour  
 Application Device: Self propelled rig  
 Plot Size: 13.33 feet wide by 40 feet long  
 Test Design: randomized complete block design with three replications

## Results and Discussion

These plots were evaluated eight times during the growing season (June 28, July 9, July 16, July 20, August 12, August 20, September 23, and October 18). Each application of Ignite extended the period of control. No cotton plant injury was found after any application. Data collected July 9 (18 days after first application) is summarized in Table 1. Data collected July 20 (11 days after second application) is summarized in Table 2. Data collected August 12 (34 days after second application) is summarized in Table 3. Data collected October 18 (67 days after the third application) is summarized in Table 4.

After the first application, the level of morningglory control was higher than expected due to the large size of the plants sprayed. The higher gallonage provided excellent coverage of the weed resulting in complete burndown of 80 percent of the plants. No injury was noted on July 28 from the Ignite treatments applied. Information collected is shown in Table 1.

On July 9 the second applications of herbicides were applied to control the morningglory that had emerged since the last application. Most of the plants had runners from 6 to 8 inches long. In the plot where the pre-emergent Caperol was applied, no soil residual activity remained and the plant population of the morningglory was the same as the other treated plots. The herbicides applied provided complete burndown of the morningglory and no herbicide injury was noted on July 16 from any of the herbicides applied. Information collected July 20 is shown in Table 2.

On August 12 the final application was made using a hooded sprayer. Most of the morningglory had runners from 6 to 8 inches long. The application of the herbicides applied provided for complete burndown of the morningglory plants covered by the application. Two new herbicides were applied in plots adjacent to the original test plot in an area where the producer had made two applications of Ignite. All areas treated were similar in morningglory population. When the plots were examined on August 20 no herbicide injury was noted in any of the treated area. Data collected on August 12 is reported in Table 3.

The plot was examined on September 23 and most of the treatments were providing acceptable levels of control. The final evaluation was conducted on October 18 and the results are reported in Table 4.

The only statistical difference between treatments were found in plots where applications of herbicides were made after the initial application on June 21. The later applications controlled morningglory emerging from later flushes; this plot had four different flushes of weed.

The Ignite did an excellent job in controlling morningglory, however, the key to its success was coverage. A minimum of 15 gallons of water per acre is needed to properly cover the targeted weed. The use of a pre-emergent like Caparol helped to reduce weed population, but a post directed application would be needed to extend the period of control. The use of Staple provided an extended period of control and it was one of the lowest weed populations on October 18.

The level of morningglory control in the Suprend and Envoke plots was statistically the same as the other treatments in the test. This was the first time these herbicides have been included in a plot and additional work is needed to find the proper rate and time of application.

If additional applications of Ignite had been used the level of morningglory control at the end of the season would have been higher. A big challenge seen in this plot is how much is enough? The check plot only produced 8 pounds of lint per acre and the treated areas produced 250 pounds of lint per acre. Every treatment resulted in statistically the same level of cotton lint production. Even the lowest level of morningglory control produced the same level of lint production. The problem is the morningglory seed production. The number of seeds produced in all plots was unacceptable from the standpoint that they have a 25 year life expectancy in the soil. So seeds are being produced that will cause problems for years to come. All plots with at least 75 percent weed control should be easily harvested with the use of a desiccant that will dry the morningglory plant down. Producers that use gin trash to build up organic matter levels need to be concerned about the potential spread of morningglory seed on their farm.

Table 1. Nolan County Morningglory Control Test(plot rating conducted on July 9, 2004)

| Treatment   | Herbicide cost per acre                                | % Morningglory Control |
|---|--|------------------------|
| AE F039866 00 SL25 T3 @ 23 oz. ----> followed by<br>AE F039866 00 SL25 T3 @ 23 oz.  | \$??.??  | 85 a                   |
| Pre-plant Incorporated Treflan ----> followed by<br>Pre-emerge Caperol ----> followed by<br>Ignite @ 32 oz.   | \$4.00 +<br>\$8.63 +<br>\$9.00                         | 84 a                   |
| Pre-plant Incorporated Treflan ----> followed by<br>Ignite @ 32 oz. + Ammonium Sulfate (AMS) ----> followed by<br>Ignite @ 32 oz. + Ammonium Sulfate (AMS)                            | \$4.00 +<br>\$9.00 + \$0.51+<br>\$9.00 + \$0.51+       | 89 a                   |
| Pre-plant Incorporated Treflan ----> followed by<br>Ignite @ 32 oz. ----> followed by<br>Ignite @ 32 oz. Plus Staple @ 1.5 oz.  | \$4.00 +<br>\$9.00 +<br>\$9.00 + \$27.00               | 86 a                   |
| Pre-plant Incorporated Treflan ----> followed by<br>Pre-emerge Caperol ----> followed by<br>Ignite @ 32 oz. ----> followed by<br>Ignite @ 32 oz. ----> followed by<br>Ignite @ 16 oz. | \$4.00 +<br>\$8.63 +<br>\$9.00 +<br>\$9.00 +<br>\$4.50 | 72 a                   |
| Pre-plant Incorporated Treflan ----> followed by<br>Pre-emerge Caperol ----> followed by<br>Ignite @ 32 oz. ----> followed by<br>Ignite @ 32 oz.                                      | \$4.00 +<br>\$8.63 +<br>\$9.00 +<br>\$9.00             | 91 a                   |
| Pre-plant Incorporated Treflan ----> followed by<br>Ignite @ 32 oz. ----> followed by<br>Ignite @ 32 oz.  | \$4.00 +<br>\$9.00 +<br>\$9.00                         | 95 a                   |
| Ignite @ 32 oz. ----> followed by<br>Ignite @ 32 oz.  | \$9.00 +<br>\$9.00                                     | 91 a                   |
| Check   | \$0.00   | 0 b                    |

NOTE: In Table 1, the individual or combination of letter a or b 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).

Table 2. Nolan County Morningglory Control Test (plot rating conducted on July 20, 2004)

| Treatment   | Herbicide cost per acre                                | % Morningglory Control |
|---|--|------------------------|
| AE F039866 00 SL25 T3 @ 23 oz. ----> followed by<br>AE F039866 00 SL25 T3 @ 23 oz.  | \$??.??  | 87 a                   |
| Pre-plant Incorporated Treflan ----> followed by<br>Pre-emerge Caperol ----> followed by<br>Ignite @ 32 oz.   | \$4.00 +<br>\$8.63 +<br>\$9.00                         | 62 a                   |
| Pre-plant Incorporated Treflan ----> followed by<br>Ignite @ 32 oz. + Ammonium Sulfate (AMS) ----> followed by<br>Ignite @ 32 oz. + Ammonium Sulfate (AMS)                            | \$4.00 +<br>\$9.00 + \$0.51+<br>\$9.00 + \$0.51+       | 94 a                   |
| Pre-plant Incorporated Treflan ----> followed by<br>Ignite @ 32 oz. ----> followed by<br>Ignite @ 32 oz. Plus Staple @ 1.5 oz.  | \$4.00 +<br>\$9.00 +<br>\$9.00 + \$27.00               | 88 a                   |
| Pre-plant Incorporated Treflan ----> followed by<br>Pre-emerge Caperol ----> followed by<br>Ignite @ 32 oz. ----> followed by<br>Ignite @ 32 oz. ----> followed by<br>Ignite @ 16 oz. | \$4.00 +<br>\$8.63 +<br>\$9.00 +<br>\$9.00 +<br>\$4.50 | 70 a                   |
| Pre-plant Incorporated Treflan ----> followed by<br>Pre-emerge Caperol ----> followed by<br>Ignite @ 32 oz. ----> followed by<br>Ignite @ 32 oz.                                      | \$4.00 +<br>\$8.63 +<br>\$9.00 +<br>\$9.00             | 92 a                   |
| Pre-plant Incorporated Treflan ----> followed by<br>Ignite @ 32 oz. ----> followed by<br>Ignite @ 32 oz.  | \$4.00 +<br>\$9.00 +<br>\$9.00                         | 72 a                   |
| Ignite @ 32 oz. ----> followed by<br>Ignite @ 32 oz.  | \$9.00 +<br>\$9.00                                     | 77 a                   |
| Check   | \$0.00   | 0 b                    |

NOTE: In Table 2, the individual or combination of letter a or b 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).

Table 3. Nolan County Morningglory Control Test(plot rating conducted on August 12, 2004)

| Treatment   | Herbicide cost per acre                                | % Morningglory Control |
|---|--|------------------------|
| AE F039866 00 SL25 T3 @ 23 oz. ----> followed by<br>AE F039866 00 SL25 T3 @ 23 oz.  | \$??.??  | 82 a                   |
| Pre-plant Incorporated Treflan ----> followed by<br>Pre-emerge Caperol ----> followed by<br>Ignite @ 32 oz.   | \$4.00 +<br>\$8.63 +<br>\$9.00                         | 65 a                   |
| Pre-plant Incorporated Treflan ----> followed by<br>Ignite @ 32 oz. + Ammonium Sulfate (AMS) ----> followed by<br>Ignite @ 32 oz. + Ammonium Sulfate (AMS)                            | \$4.00 +<br>\$9.00 + \$0.51+<br>\$9.00 + \$0.51+       | 90 a                   |
| Pre-plant Incorporated Treflan ----> followed by<br>Ignite @ 32 oz. ----> followed by<br>Ignite @ 32 oz. Plus Staple @ 1.5 oz.  | \$4.00 +<br>\$9.00 +<br>\$9.00 + \$27.00               | 83 a                   |
| Pre-plant Incorporated Treflan ----> followed by<br>Pre-emerge Caperol ----> followed by<br>Ignite @ 32 oz. ----> followed by<br>Ignite @ 32 oz. ----> followed by<br>Ignite @ 16 oz. | \$4.00 +<br>\$8.63 +<br>\$9.00 +<br>\$9.00 +<br>\$4.50 | 73 a                   |
| Pre-plant Incorporated Treflan ----> followed by<br>Pre-emerge Caperol ----> followed by<br>Ignite @ 32 oz. ----> followed by<br>Ignite @ 32 oz.                                      | \$4.00 +<br>\$8.63 +<br>\$9.00 +<br>\$9.00             | 88 a                   |
| Pre-plant Incorporated Treflan ----> followed by<br>Ignite @ 32 oz. ----> followed by<br>Ignite @ 32 oz.  | \$4.00 +<br>\$9.00 +<br>\$9.00                         | 68 a                   |
| Ignite @ 32 oz. ----> followed by<br>Ignite @ 32 oz.  | \$9.00 +<br>\$9.00                                     | 80 a                   |
| Check   | \$0.00   | 0 b                    |

NOTE: In Table 3, the individual or combination of letter a or b 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).

Table 4. Nolan County Morningglory Control Test (plot rating conducted on October 18, 2004)

| Treatment   | Herbicide cost per acre                                | % Morningglory Control |
|---|--|------------------------|
| AE F039866 00 SL25 T3 @ 23 oz. ----> followed by<br>AE F039866 00 SL25 T3 @ 23 oz.  | \$??.??  | 77 ab                  |
| Pre-plant Incorporated Treflan ----> followed by<br>Pre-emerge Caperol ----> followed by<br>Ignite @ 32 oz.   | \$4.00 +<br>\$8.63 +<br>\$9.00                         | 63 b                   |
| Pre-plant Incorporated Treflan ----> followed by<br>Ignite @ 32 oz. + Ammonium Sulfate (AMS) ----> followed by<br>Ignite @ 32 oz. + Ammonium Sulfate (AMS)                            | \$4.00 +<br>\$9.00 + \$0.51+<br>\$9.00 + \$0.51+       | 92 a                   |
| Pre-plant Incorporated Treflan ----> followed by<br>Ignite @ 32 oz. ----> followed by<br>Ignite @ 32 oz. Plus Staple @ 1.5 oz.  | \$4.00 +<br>\$9.00 +<br>\$9.00 + \$27.00               | 92 a                   |
| Pre-plant Incorporated Treflan ----> followed by<br>Pre-emerge Caperol ----> followed by<br>Ignite @ 32 oz. ----> followed by<br>Ignite @ 32 oz. ----> followed by<br>Ignite @ 16 oz. | \$4.00 +<br>\$8.63 +<br>\$9.00 +<br>\$9.00 +<br>\$4.50 | 83 a                   |
| Pre-plant Incorporated Treflan ----> followed by<br>Pre-emerge Caperol ----> followed by<br>Ignite @ 32 oz. ----> followed by<br>Ignite @ 32 oz.                                      | \$4.00 +<br>\$8.63 +<br>\$9.00 +<br>\$9.00             | 95 a                   |
| Pre-plant Incorporated Treflan ----> followed by<br>Ignite @ 32 oz. ----> followed by<br>Ignite @ 32 oz.  | \$4.00 +<br>\$9.00 +<br>\$9.00                         | 77 ab                  |
| Ignite @ 32 oz. ----> followed by<br>Ignite @ 32 oz.  | \$9.00 +<br>\$9.00                                     | 88 a                   |
| Suprend @ 1.5 pounds + Crop Oil Concentrate @ 1% v/v  | \$15.00 + \$1.39                                       | 82 ab                  |
| Envoke @ 0.25 oz. + Crop Oil Concentrate @ 1% v/v   | \$19.25 + \$1.39                                       | 82 ab                  |
| Check   | \$0.00   | 0 c                    |

NOTE: In Table 4, 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).

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

- Bayer Corporation who provided the Ignite
- Dow Crop Science who provided the Treflan
- DuPont who provided the Staple
- Syngenta Crop Protection, Inc. who provided the Caparol 4L, Envoke, and Suprend
- UAP Southwest who provided the Activator 90 (non-ionic surfactant) and Herbimax (crop oil concentrate)

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