



THE UNIVERSITY OF GEORGIA
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Purple Moonflower Identification and Control



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Introduction

Purple moonflower (*Ipomoea turbinata*), also known as purple morningglory or lilacbell, is becoming common in many agricultural production fields in Georgia (Figures 1, 2). Because this weed has typically not been a major problem, growers may be unfamiliar with its identification and control. Morningglory species often respond differently to herbicides, thus proper identification is critical for control.



Figure 1. Purple moonflower infestation after corn harvest.



Figure 2. Purple moonflower.

History

Purple moonflower is not native to the United States. Its country of origin is believed to be India. Purple moonflower was most likely introduced into the United States as an ornamental vine. One of the earliest collections of this plant in North America occurred in the early 1800s on the Jorullo volcano in Mexico. In the early 1900s, the W. Atlee Burpee Seed Company sold seed of this species under the common name of giant purple morningglory. Fortunately, purple moonflower is now designated as a “noxious weed” in Georgia and its sale or transport is prohibited.

Biology

Purple moonflower is a member of the Convolvulaceae or Morningglory plant family. Thus, it is very closely related to more common morningglory species such as cypressvine (*I. quamoclit*), ivyleaf (*I. hederacea*), pitted (*I. lacunosa*) and red (*I. coccinea*).

Purple moonflower is an annual, climbing vine that reproduces from seed that are much larger than other commonly observed morningglory species (Figure 3). Purple moonflower plants can produce an average of 9,350 seeds per plant. These seed can emerge from soil depths of up to six inches. Purple moonflower seed have a hard, impermeable coat that allows them to survive in the soil for an extended period of time. Results from a study conducted in Mississippi indicated that 33 percent of purple moonflower seed were viable after being buried for 5.5 years.

In the field, purple moonflower can grow from seed to anthesis (flowering) in as little as 51 days. Germinable seed can be produced as early as 20 days after anthesis; however, physiologically-mature seed may not be produced until 34 days after anthesis. Interestingly, purple moonflower will bloom very little during bright sunlight hours.

Identification

Several characteristics make purple moonflower relatively easy to identify. Large, shiny, butterfly-shaped cotyledon leaves (Figure 4) and fleshy stem prickles (Figure 5) are characteristics unique to purple moonflower. Purple moonflower plants also produce large, lavender colored flowers (Figure 6). Of all the common Southeastern morningglory species mentioned previously, purple moonflower produces the largest leaves, flowers and seeds.



Figure 3. Purple moonflower seed. Average seed length is approximately 5/16". (J. Brock)



Figure 4. Purple moonflower has butterfly-shaped cotyledon leaves.



Figure 5. Purple moonflower is easily identified by its fleshy stem prickles.



Figure 6. Purple moonflower flower. Average corolla diameter and length are 1.9" and 2.8", respectively.

Purple Moonflower Control Strategies

Season-long residual control of purple moonflower may be impossible due to its large seed size, impermeable seed coat and ability to emerge from deeper soil depths. Additionally, limited information is available on the control of purple moonflower with residual herbicides. Postemergence herbicides need to be applied before purple moonflower plants exceed three inches in height (Figure 7). Refer to the latest edition of the Georgia Pest Management Handbook for more specific information about rates and timing of application for the herbicides mentioned in the following section.



Figure 7. A two-leaf purple moonflower seedling.

Peanut

Strongarm can be used for residual control of purple moonflower in peanut (70 to 80 percent control). At-crack sprays of paraquat + Storm should also provide acceptable control of emerged purple moonflower. Postemergence herbicides that provide good to excellent control (more than 80 percent) include Cobra, Storm, Ultra Blazer and 2,4-DB. Aim can be used as a harvest-aid to help facilitate peanut digging and combining.

Soybean

Most residual herbicides labeled for use in soybeans do not provide effective control of purple moonflower. Post-emergence herbicides that provide good to excellent control (more than 80 percent) of purple moonflower include Cobra, Storm, Reflex and Ultra Blazer. Sequential applications of glyphosate will be more effective than single applications in RR soybeans. Post-directed herbicides that provide good to excellent control include Aim, 2,4-DB and Sencor + 2,4-DB.

Cotton

Herbicides such as Cotoran, Prowl or Staple will not provide acceptable residual control of purple moonflower in cotton. Table 1 illustrates various cotton weed control programs for purple moonflower.

| Table 1. Cotton weed control programs for purple moonflower, Dooly County, Georgia, 2003. | | | |
|--|---------------|---------------------------|---------------------------------|
| Herbicide | Rate/A | Timing^a | Control - %^{bc} |
| Prowl 3.3EC | 2 pt | PPI | 92 ^a |
| Roundup WeatherMax 5.5L | 16 oz | 1-leaf cotton | |
| Roundup WeatherMax 5.5L | 21.3 oz | 4-leaf cotton | |
| Staple 85WP | 0.6 oz | 4-leaf cotton | |
| Roundup Weathermax 5.5L | 21.3 oz | LPD | |
| Direx 4L | 1.5 pt | LPD | |
| Prowl 3.3EC | 2 pt | PPI | 93 ^a |
| Roundup WeatherMax 5.5L | 16 oz | 1-leaf cotton | |
| Roundup WeatherMax 5.5L | 21.3 oz | 4-leaf cotton | |
| Staple 85WP | 0.6 oz | 4-leaf cotton | |
| Roundup WeatherMax 5.5L | 21.3 oz | LPD | |
| Staple 85WP | 0.6 oz | LPD | |
| Prowl 3.3EC | 2 pt | PPI | 95 ^a |
| Roundup WeatherMax 5.5L | 16 oz | 1-leaf cotton | |
| Roundup Weathermax 5.5L | 21.3 oz | LPD | |
| Valor 51WG | 2 oz | LPD | |
| Prowl 3.3EC | 2 pt | PPI | 95 ^a |
| Roundup WeatherMax 5.5L | 16 oz | 1-leaf cotton | |
| Roundup WeatherMax 5.5L | 21.3 oz | LPD | |
| Aim 2EC | 1.5 oz | LPD | |
| Prowl 3.3 EC | 2 pt | PPI | 77 ^b |
| Roundup WeatherMax 5.5L | 16 oz | 1-leaf cotton | |
| Roundup Weathermax 5.5L | 21.3 oz | 4-leaf cotton | |
| Roundup Weathermax 5.5L | 21.3 oz | LPD | |

^a Timing: PPI = pre-plant incorporated; PRE = preemergence; 1-leaf cotton (12 days after planting, DAP); 4-leaf cotton (22 DAP); LPD = late post-directed (41 DAP).
^b Means in the same column with the same letter are not significantly different according to Duncan's Multiple Range Test (P = 0.10).
^c Visual control ratings were taken 74 DAP.

Field Corn

Limited information about the control of purple moonflower in field corn is available. Research suggests that pre-emergence applications of Atrazine (two lbs. ai/A) will provide some residual control, but not full-season. A field trial conducted in Georgia in 2008 indicated the following herbicides provided good to excellent postemergence control when applied after corn harvest: Aim, Atrazine, Evik and Ignite (Table 2).

| Herbicide ^a | Rate/A | Control - % | | | |
|------------------------------|------------------|--------------------|-------|-------|-------|
| | | 1 WAT ^b | 2 WAT | 3 WAT | 4 WAT |
| Aim 2EC + Agridex | 1.5 oz + 1% v/v | 87 b ^c | 87 b | 75 c | 53 a |
| Ignite 280 SL 2.34SL + Affix | 23 oz + 3 lb | 81 b | 88 b | 82 b | 55 a |
| Atrazine 4L + Agridex | 2 qt + 1% v/v | 82 b | 95 a | 90 a | 55 a |
| Evik 80DF + 80/20 | 2 lb + 0.25% v/v | 95 a | 93 a | 88 a | 55 a |
| Status 56WG + 80/20 | 5 oz + 0.25% v/v | 50 c | 60 c | 70 c | 55 a |

^a Herbicides were applied after corn harvest to purple moonflower plants that were two to three inches tall with two true leaves.

^b WAT = weeks after treatment.

^c Means in the same column with the same letter are not significantly different according to Duncan's Multiple Range Test (P = 0.10).

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