

Engenia®
Herbicide

The Most Flexible and Advanced Dicamba for Dicamba-Tolerant Cotton

 **BASF**
We create chemistry

Do You Have the Best Plan for Your Dicamba-Tolerant Cotton?

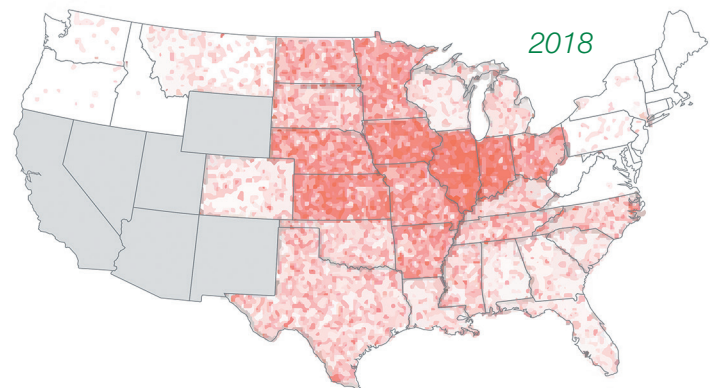
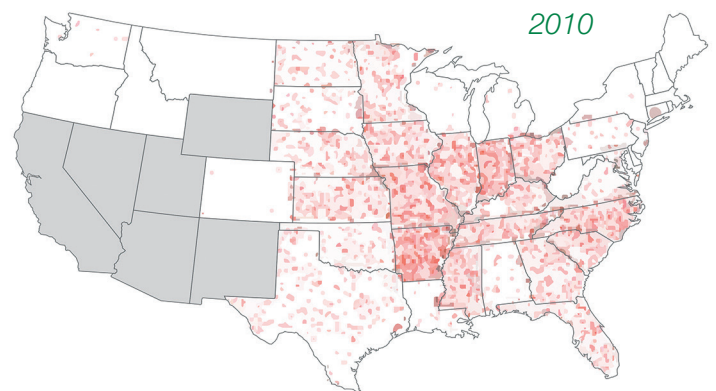
Why the Weed Control Challenges of Today...

- Weed resistance continues to expand. 77% of growers report glyphosate resistance.¹
- Palmer can grow 2-3" per day and emerge from May-Oct.² This creates challenges when coming up with an effective weed control program.
- Studies have shown that approximately 1 Palmer plant per square meter can reduce cotton lint yield by up to 59%.³

...Will Impact the Weed Control Challenges of The Future:

- Even a single weed escape can create challenges for future seasons.
- Many of the most troublesome weeds can produce >200K seeds per plant.³
- Weed infestations can reduce land value due to loss of productivity.

All Confirmed Glyphosate Resistance — Acres Infested¹



Engenia® herbicide is the most flexible and advanced dicamba for dicamba-tolerant crops

¹ Weed Resistance Tracking Survey - Stratus Ag Research, 2018

² "Palmer Amaranth," USDA: Available at https://www.nrcs.usda.gov/Internet/FSE_PLANTMATERIALS/publications/mtpmcfs13130.pdf

³ Morgan, G.D., P. A. Baumann, and J.M. Chandler. 2001. Competitive impact of Palmer amaranth (*Amaranthus palmeri*) on cotton (*Gossypium hirsutum*) development and yield. Weed Technol. 15: 408-412.



To Beat the Worst Weeds, You Need the Best Performing Tool

Engenia® herbicide's patented formulation was specifically developed for use in dicamba-tolerant cotton.



Lower Use Rate:

Engenia herbicide has a lower use rate compared to other postemergence options to cover more acres with less product.



Residual Control:

Engenia herbicide offers 2 weeks of broadleaf residual control and provides control for PPO and Glyphosate resistant broadleaf weeds.



Additional Site of Action:

DT crops enable the use of an additional herbicide site of action. This helps control weeds that are resistant to glyphosate and PPOs.



Systemic Activity:

Its unique systemic activity provides consistent performance. Unlike a contact herbicide, as a systemic herbicide, Engenia herbicide will move from the point of application to other parts of the plant.

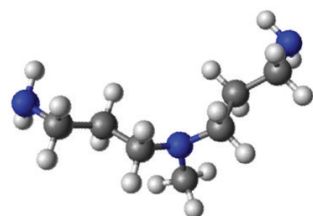


Engenia® Herbicide is the Most Advanced Dicamba on the Market

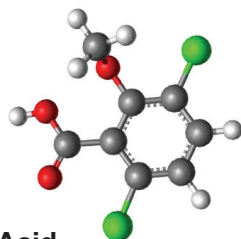
What Makes Engenia Herbicide Unique?

Advanced Chemistry

- Most advanced formulation: Dicamba BAPMA
 - Patented product
 - Developed by and exclusive to BASF
 - Unique BAPMA salt reduces volatility potential
 - Excellent crop tolerance



BAPMA+



-Dicamba Acid

Weed Control

- Provides postemergence broadleaf weed control
 - Effective on over 200 broadleaf weeds
 - Including control of glyphosate, triazine, ALS, and PPO resistant broadleaf weeds
 - Up to two weeks residual
 - More effective than weed control programs based on PPOs* and 2,4-D**

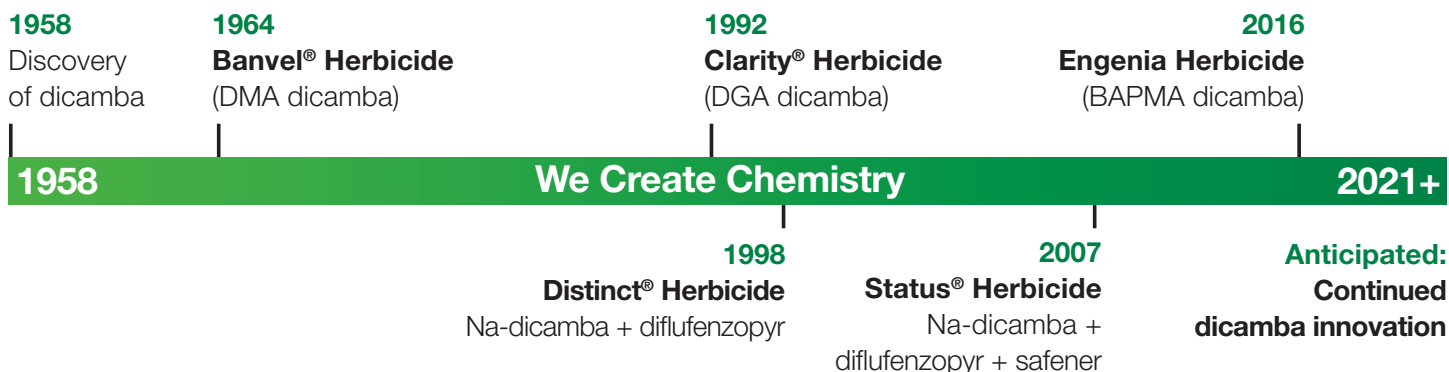
Use Rate

- Lowest use rate of dicamba ever offered to market = 12.8 fl oz/A
 - 5 lbs ae/gal formulation
 - Less product to handle
 - Convenient for use with direct injection

*Data from BASF internal and sponsored trials, 2017, data not shown.

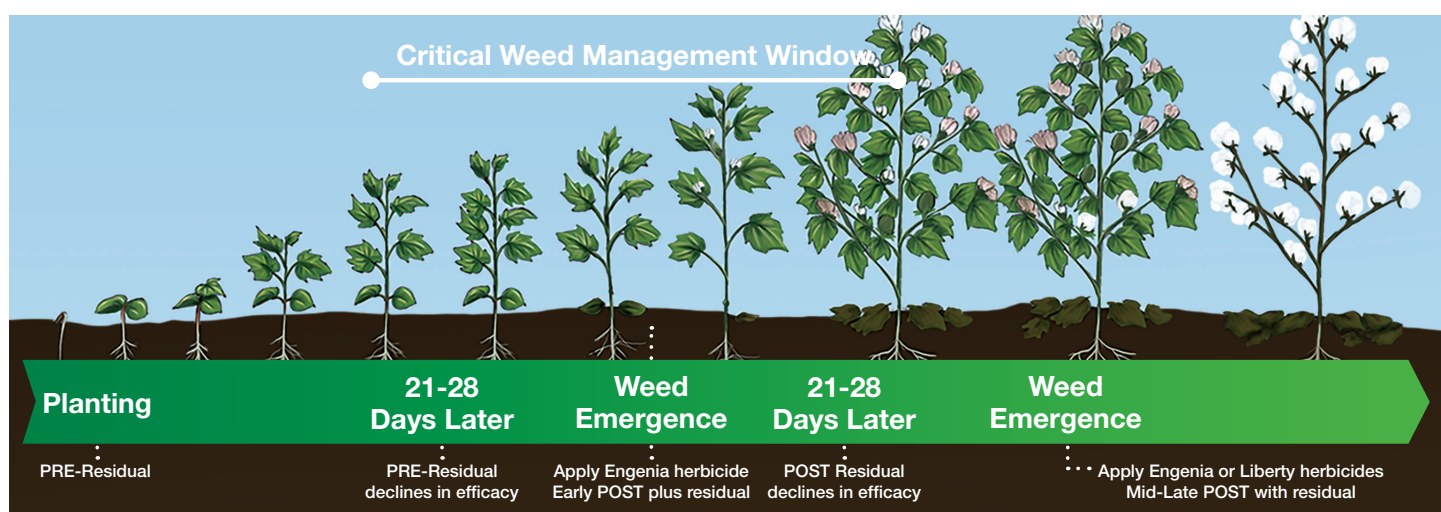
**Data from BASF internal and sponsored trials, 2019, data not shown.

A 50+ Year Culmination of Innovation and Experience

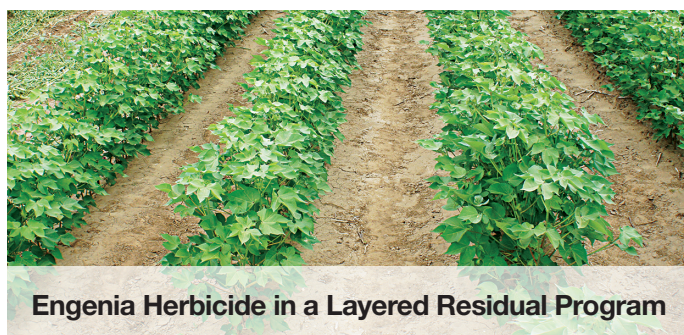


Importance of Including Residual Herbicides

- Include a residual in PRE applications to reduce early season competition
- Use of residuals is particularly important for combating weeds with a long emergence period, such as Palmer amaranth
- Engenia® herbicide followed by Liberty® herbicide provides a tool for resistance management by incorporating an additional site of action while still providing excellent weed control in POST applications
- Use of a residual in both an Early POST (21 to 28 days after planting) and Mid-Late POST application helps ensure that emerging weeds are controlled during the critical management window



Engenia Herbicide Weed Control



BASF sponsored trial, Lubbock, TX. Photos taken 42 days after 5 leaf application (7/21/2015).



BASF Offers Industry Leading Experience and Support



Most Experience

Millions of Treated Acres

- Over 3 years
- Across 34 states
- Thousands of applicators
- BASF has 50+ years of dicamba experience and continues to innovate on the technology
- BASF built a better dicamba from the ground up with the development of the BAPMA salt



Robust Support

Training and Resources

- 25K trainees per year
- Digital Spray Tool
- Spray Checklists
- Supplemental Education

Helpful Links

- www.engeniaspraytool.com
- www.engeniatankmix.com

Backed by the 2021 Engenia® Herbicide Weed Control Guarantee

Designed to give growers confidence in their decision to use Engenia herbicide, the Engenia Herbicide Weed Control Guarantee supports growers using the weed management requirements outlined below.



Weed Management Requirements

1. Use adequate tillage or a BASF burndown herbicide.
2. Apply an effective residual program pre-plant for preemergence incorporating brands such as Prowl® H2O herbicide
3. Postemergence (two postemergence applications must be made)

Application 1: Apply Engenia herbicide. Outlook® herbicide is required on either the first or second post application, and a residual herbicide is recommended for both applications.

Application 2: Apply Engenia herbicide or Liberty® herbicide.



Weed Height

Spray existing weeds up to 4" tall.



Application Requirements

Engenia herbicide is a US EPA Restricted Use Pesticide. Apply according to label requirements. Additional state restrictions may apply.

To learn more about Engenia Herbicide, visit www.engeniastewardship.com.

For information on approved nozzles and tank-mixes, visit www.engeniatankmix.com.

Grower may be eligible for up to \$10 per acre toward the cost of herbicides associated with a respray if commercially acceptable weed control is not met after following the outlined application practices. See program document for full details.



Engenia® Herbicide Application Stewardship

Reducing risk of off-target movement and sensitive plant injury is a result of effective application stewardship. The advanced dicamba formulation of Engenia herbicide, along with proper application, can provide maximum broadleaf weed control and effectively minimize off-target potential.

Label Summary – For Use on Dicamba-Tolerant Cotton:

This summary is not a substitute for reading and following all product labeling. Additional state restrictions may apply. Engenia Herbicide is a Restricted Use Pesticide.

EVERY application of Engenia herbicide requires the use of an approved pH buffering adjuvant.

- **Use Rate:** 12.8 fl oz/A
- **Application Timing:** DO NOT apply Engenia herbicide after July 30th, 2021
 - Limited to two POST over-the-top applications. Engenia herbicide can also be used pre-emergence, but annual sequential use rate limit of 51.2 fl oz/A remains.
- **Application Volume:** ≥ 15 GPA
- **Windspeed:** 3 to 10 MPH
- **Boom Height:** 24 inches or less above target
- **Sensitive Crops:** DO NOT spray if wind is blowing toward neighboring sensitive crops (like non-dicamba-tolerant soybeans) or residential areas
- **Sensitive Areas:** Leave 240' downwind buffer to bodies of water and non-residential, uncultivated areas that may harbor sensitive plant species
- **Sensitive Areas in Endangered Species Counties:** Leave 310' downwind buffer in counties with endangered species with 57' buffer on all other sides of the field
 - Consult www.epa.gov/espp or call 1-844-447-3813 and follow any county specific dicamba use restrictions for corresponding endangered species
- **Ground Speed:** ≤ 15 mph, recommend 5 mph on field edges
- **Use Only Approved Nozzles:** For a list of approved nozzles visit www.engeniatankmix.com
- **Tank Mixtures:** Visit www.engeniatankmix.com for a list of approved tank-mix partners and adjuvants
 - No acidifying water conditioners; DO NOT use ammonium additives (e.g., AMS, UAN)
- **Avoid Inversions:** DO NOT apply when temperature inversions exist at the field level. Temperature inversions occur when temperatures increase with altitude. Presence is often indicated by ground fog, dust hanging over road, smoke not rising, or presence of dew or frost.
- **Daytime Spraying:** Only apply from 1 hour after sunrise until 2 hours before sunset
- **Training:** Complete annual dicamba specific training
- **Certified Applicator Record Keeping:** *Create records within 72 hours* Applicator, product and planting date information, application parameters, pH buffer adjuvant and use rate, tank mixes, spray conditions, tank cleanout, buffer zone determination
- **Sprayer Cleanout:** Triple rinse, use a detergent-based commercial cleaner before and after application
- **Rain Free Interval:** DO NOT apply if expected rainfall within 48 hours after application will result in runoff
 - **Rainfast:** 4 hours

Applicator training requirements vary depending on the state. Visit www.engeniastewardship.com for BASF resources on proper application according to label requirements. Proper nozzle selection, calibration, boom height, weather conditions, and the use of approved tank-mixtures are all addressed.





Scan this QR Code for more
information about Engenia®
Herbicide



To learn more about Engenia
Herbicide, visit engeniaherbicide.com.

Engenia Herbicide is a U.S. EPA Restricted Use Pesticide.
Additional state restrictions may apply.

Always read and follow label directions.

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