



U.S. ENVIRONMENTAL PROTECTION AGENCY  
 Office of Pesticide Programs  
 Registration Division (7505P)  
 1200 Pennsylvania Ave., N.W.  
 Washington, D.C. 20460

EPA Reg. Number:

62719-649

Date of Issuance:

10/15/2014

Date of Expiration:

See Below:  
 Registration  
 Term 4

NOTICE OF PESTICIDE:

Registration  
 Reregistration  
 (under FIFRA, as amended)

Term of Issuance:

Unconditional

Name of Pesticide Product:

Enlist Duo

Name and Address of Registrant (include ZIP Code):

Diego Fonseca  
 Dow AgroSciences LLC  
 9330 Zionsville Road  
 Indianapolis, IN 46268

Note: Changes in labeling differing in substance from that accepted in connection with this registration must be submitted to and accepted by the Registration Division prior to use of the label in commerce. In any correspondence on this product always refer to the above EPA registration number.

On the basis of information furnished by the registrant, the above named pesticide is hereby registered under the Federal Insecticide, Fungicide and Rodenticide Act.

Registration is in no way to be construed as an endorsement or recommendation of this product by the Agency. In order to protect health and the environment, the Administrator, on her motion, may at any time suspend or cancel the registration of a pesticide in accordance with the Act. The acceptance of any name in connection with the registration of a product under this Act is not to be construed as giving the registrant a right to exclusive use of the name or to its use if it has been covered by others.

This product is unconditionally registered in accordance with FIFRA section 3(c)(5) provided that you:

1. Submit and/or cite all data required for registration/reregistration/registration review of your product under FIFRA when the Agency requires all registrants of similar products to submit such data.

Signature of Approving Official:

Kathryn V. Montague, Product Manager 23  
 Herbicide Branch, Registration Division (7505P)

OCT 15 2014

2. The data requirements for storage stability and corrosion characteristics (Guidelines 830.6317 and 830.6320) are not satisfied. A one year study is required to satisfy these data requirements. You have 18 months from the date of registration to provide these data.
3. Make the following label changes before you release the product for shipment:
  - Revise the EPA Registration Number to read, “EPA Reg. No. 62719-649.”
4. This registration will automatically expire on 10/15/2019 if, in the 2015 growing season, more than 100,000 acres are planted with Enlist soybean and corn seed combined. This registration will automatically expire on 10/15/2020 if, in the 2015 growing season, 100,000 or fewer acres are planted in Enlist soybean and corn seed combined.
5. You must maintain a website at <http://EnlistTankMix.com>. That website will include a list of products that have been tested pursuant to Appendix A and found, based upon such testing, not to adversely affect the spray drift properties of Enlist Duo. The website will identify a testing protocol, consistent with Appendix A, that is appropriate for determining whether the tested product will adversely affect the drift properties of Enlist Duo. The website will state that any person seeking to have a product added to the list must perform a study either pursuant to the testing protocol identified on the website or another protocol that has been approved for the purpose by EPA, and must submit the test data and results, along with a certification that the study was performed either pursuant to the testing protocol identified on the website or pursuant to another protocol approved by EPA and that the results of the testing support adding the product to the list of products tested and found not to adversely affect the spray drift properties of Enlist Duo, to EPA. EPA will notify you when the Agency determines that a product has been certified to be appropriately added to the list, and you will add appropriately certified products to the list no more than 90 days after you receive such notice from EPA. Testing of Tank-Mix Products must be conducted in compliance with procedures as stated forth in Appendix A.
6. All test data relating to the impact of tank-mixing any product with Enlist Duo on drift properties of Enlist Duo generated by you or somebody working for you must be submitted to EPA, along with a certification indicating whether the study was performed either pursuant to the testing protocol identified on the website or pursuant to another protocol approved by EPA and whether the results of the testing support adding the product to the list of products tested and found not to adversely affect the spray drift properties of Enlist Duo, at the following address: Chief of Environmental Risk Branch 1, Environmental Fate and Effects Division, Office of Pesticide Programs. If the certification states that the study was performed either pursuant to the testing protocol identified on the website or pursuant to another protocol approved by EPA, and the results of the testing support adding the product to the list of products tested and found not to adversely affect the spray drift properties of Enlist Duo, you may add the product to the list.
7. The prohibition of using products in a tank-mix with Enlist Duo unless the product used is contained on the list at [EnlistTankmix.com](http://EnlistTankmix.com), and the identification of the website address, shall be

included in educational and information materials developed for Enlist Duo, including the materials identified in Appendix D, Section B(1).

8. You must develop and follow an Herbicide Resistance Management Plan (HRM) as laid out in Appendix D regarding grower agreements, field detection and remediation, education, evaluation, reporting, and best management practices (BMPs).
9. On an annual basis, you must report your survey results on growers' adherence to the terms of the grower agreements regarding whether purchasers of Enlist seed are using forms of 2,4-D that do not have the low-drift/volatility characteristics of Enlist Duo. These reports must be submitted to the Agency no later than January 15<sup>th</sup> of each year. See Appendix D Section D.
10. Submit one copy of the final printed label for the record before you release the product for shipment.

If you fail to satisfy these data requirements, EPA will consider appropriate regulatory action including, among other things, cancellation under FIFRA section 6(e). Your release for shipment of the product constitutes acceptance of these conditions. A stamped copy of the label is enclosed for your records. Please also note that the record for this product currently contains the following CSFs:

- Basic CSF dated 9/12/2011
- Alternate CSF #1 dated 9/12/2011

If you have any questions, please contact Emily Schmid at (703)347-0189 or [schmid.emily@epa.gov](mailto:schmid.emily@epa.gov).

*For*   
Kathryn V. Montague, Product Manager 23  
Herbicide Branch  
Registration Division (7505P)

## **APPENDIX A**

### **Testing of Tank Mix Products**

1. Products proposed for tank-mixing with Enlist Duo may be added to the list of products that will not adversely affect the spray drift properties of Enlist Duo contained on the web site if a study is performed under the testing conditions set forth below; the test information is reported as set forth below; and the results are interpreted as set forth below and the interpretation supports adding the tested product to the list of products that will not adversely affect the spray drift properties of Enlist Duo:

#### Testing Conditions

Spray chamber test using conditions described in ASTM E-2798-11; or Wind Tunnel test using conditions described in EPA Final Generic Verification Protocol for Testing Pesticide Application Spray Drift Reduction Technologies for Row and Field Crops (September 2013)

Testing Media: Enlist Duo and Enlist Duo + Proposed Tank Mix Product

Test Nozzle: AIXR 11004 at 40 psi

Number of Replicates: 3 for each tested medium

#### Reporting

Validation information as summarized in Appendix B

Full droplet spectrum to be reported for each replicate of each tested medium

Perform AGDISP (8.26) modeling run for each replicate droplet spectrum for each tested medium (AGDISP input parameters described in Appendix C)

Establish 30 foot spray drift deposition estimate from AGDISP run on each replicate for each tested medium

Establish mean and standard deviation of 30 foot deposition for the 3 replicates of each tested medium

One-tail (upper bound) t-test ( $p=0.1$ ) to determine if proposed tank-mix product is above Enlist Duo 30 foot spray drift deposition

#### Interpretation of Results

If mean 30 foot deposition for proposed tank-mix product is not statistically greater than mean 30 foot deposition for Enlist Duo, proposed tank-mix product can be added to the list of products that will not adversely affect the spray drift properties of Enlist Duo contained on the web site. If mean 30 foot deposition for proposed tank-mix product is statistically greater than mean 30 foot deposition for Enlist

Duo, proposed tank-mix product cannot be added to the list of products that will not adversely affect the spray drift properties of Enlist Duo contained on the web site

2. Results from other testing protocols will be acceptable for adding products to the list of products that will not adversely affect the spray drift properties of Enlist Duo provided that EPA has determined in writing that such other protocol is appropriate for such purpose.

## **APPENDIX B**

### **Validation Criteria**

- a. Detailed information of instrument setting and measurements
  - The distance from the nozzle tips to the laser settings
  - Measurements of airspeed and flow rate of liquid
- b. Detailed information of test substances
  - Volume composition and density of Enlist formulation (2,4-D choline and glyphosate) and tank mixes
- c. Summary of the entire spray output distribution for each nozzle/tank mixes with statistical analysis of replicates.
- d. Graphical outputs of Sympatec Helos laser diffraction particle size analyzer FOR individual spectrum Report of Dv0.1 (SD), Dv0.5 (SD), and DV0.9 (SD) as well as mean % fines of ( $\leq 141\mu\text{m}$  SD) fractions

### APPENDIX C

#### AGDISP Input Parameters

Parameter	Value	comments
Application method section		
Method	Ground	
Nozzle type	Flat fan (Default)	The direct use of the DSD overrides the use of "Nozzle type.
Boom pressure	40 psi	If nozzles/tank mixes were tested at 40 psi. It has to be consistent with tank mix as well as Enlist for both TeeJet and AI XR nozzles.
Release height	3 ft	Default
Spray lines	20	Default
Meteorology section		
Wind type	Single height	Default
Wind speed	15 mph	Under bound from label
Wind direction	-90 deg	Worst-case and default
Temperature	65 F	Default
Relative humidity	50%	Default
Surface section		
Angles	0	Default
Canopy	None	Default
Surface roughness	0.12 ft	Mean of "crops" cover type
Application technique section		
Nozzles	54, even spacing	Standard boom setup
DSD	From wind tunnel results, imported in library	
Atmospheric stability	Strong	Default
Swath section		

Swath width	90 ft	Standard boom
Swath displacement	0 ft	Worst-case
Spray material section		
Spray volume rate	15 gal/acre	From Enlist Duo label
Volatile/nonvolatile fraction	Enlist Duo at 2.8% v/v	To calculate volatile/nonvolatile fraction in the tank mix for the model input, provide detailed information of the tested formulations and tank mixes. See sample calculation below used in WT study submitted by DOW (MRID 49384801) <sup>1</sup>
<sup>1</sup> The tested mixture was 2.8% (v/v) Enlist Duo in water. Enlist Duo has a density of 1.171 kg/L and contains 24.42 % (w/w) of 2,4-D choline salt (16.65% (w/w) 2,4-D acid equivalent) and 22.17% (w/w) glyphosate dimethylammonium salt. For example, a 100-liter batch would contain the following: Enlist Duo 2.8% * 100 L = 2.8L; 2.8L * 1.171 kg/L = 3.279 kg Water: 100 - 2.8 L = 97.2 L = 97.2 kg Total weight: 3.279+97.2 = 100.497 kg Active ingredient fraction: 3.279 kg * 16.65 % (a.e.) = 0.546 kg; 0.546 kg/100.497 kg = <b>0.0054</b> (dimensionless) Non-volatile fraction: 3.279 kg* (24.42 % + 22.17%) = 1.528 kg; 1.528 kg/100.497 kg = <b>0.0152</b> (dimensionless)		

**APPENDIX D**  
**Herbicide Resistance Management Plan**

Dow AgroSciences (DAS) must:

**A. Grower Agreements, Field Detection and Remediation Components:**

1. Ensure that any person who purchases any Enlist seed sign a binding contract, enforceable by DAS, herein referred to as a “grower agreement.” In such grower agreement, DAS will reinforce with users of Enlist Duo the critical importance of following resistance management practices. This includes stressing the need for pre- and post-application field scouting and that lack of herbicide efficacy should be reported promptly to DAS or its representative.
2. Provide a copy of the grower agreement to EPA;
3. Retain copies of all executed grower agreements for a period of 3 years from the date of execution, and make such copies available to EPA upon request;
4. If any grower informs you of a lack of herbicide efficacy, then you or your representative must make an effort to evaluate the field for “likely resistance” to Enlist Duo by applying the criteria set forth in Norsworthy, *et al.*, “Reducing the Risks of Herbicide Resistance: Best Management Practices and Recommendations,” *Weed Science* 2012 Special Issue:31–62 (*hereinafter* “Norsworthy criteria”);
5. Keep records of all field evaluations for “likely resistance” for a period of 3 years, and make such copies available to EPA upon request; and
6. If one or more of the Norsworthy criteria are met, then:
  - a. Provide the grower with specific information and recommendations to control and contain likely resistant weeds, including retreatment and/or other non-chemical controls, as appropriate. If requested by the grower, DAS will become actively involved in implementation of weed control measures;
  - b. Request, at the time of the initial determination that one or more of the Norsworthy criteria are met and prior to any application of alternative control practices, that the grower provide you with access to the relevant field(s) to collect specimens of the likely resistant weeds (potted specimens or seeds) for further evaluation in the greenhouse or laboratory, and so collect such specimens if possible (or, alternatively, request that the grower provide such specimens to you, at your expense);
  - c. Commence greenhouse or laboratory studies to confirm resistance as soon as practicable following sample collection;

- d. To the extent possible, contact or visit the grower in an appropriate timeframe after implementation of the additional weed control measures in order to evaluate success of such measures; and
- e. If the additional weed control measures were not successful in controlling the likely resistant weeds, then:
  - i. Work with the grower to determine the reason(s) why the additional control measures were not successful;
  - ii. Report annually the inability to control the likely resistant weeds to relevant stakeholders; and
  - iii. Offer to further assist the grower in controlling and containing the likely resistant weeds, including retreatment and/or other non-chemical controls, as appropriate.

**B. Educational / Informational Component:**

- 1. Develop and implement an education program for growers that includes the following elements:
  - a. The education program shall identify appropriate best management practices (BMPs), set forth under “Best Management Practices (BMPs) Component,” below, to avoid and control weed resistance, and shall convey to growers the importance of complying with BMPs;
  - b. The education program shall include at least one written communication regarding herbicide resistance management each year to purchasers of Enlist seed (separate and apart from the grower agreement document); and
  - c. You must make the education program available to DAS sales representatives for distribution to growers.
- 2. Provide to EPA the original education program within three months of the issuance of this registration.

**C. Evaluation Component:**

- 1. Annually conduct a survey of users of Enlist seed. This survey must be based on a statistically representative sample of users of Enlist seed. The sample size and geographical resolution should be adequate to allow analysis of responses within regions, between regions, and across the United States. This survey shall evaluate, at a minimum, the following:
  - a. Growers’ adherence to the terms of the grower agreements, and

- b. Whether growers have encountered any perceived issue with non-performance or lack of efficacy of Enlist Duo and, if so, how growers have responded.
2. Utilize the results from the survey described in paragraph 1 of this section to annually review, and modify as appropriate for the upcoming growing season, the following:
    - a. Efforts aimed at achieving compliance with the grower agreement;
    - b. Responses to incidents of likely resistance and confirmed resistance; and
    - c. The education program. At the initiative of either EPA or DAS, EPA and DAS shall consult about possible modifications of the education program.

**D. Reporting Component:**

1. Submit annual reports to EPA by January 15<sup>th</sup> of each year, beginning on January 15, 2016. Such reports shall include:
  - a. Annual sales of Enlist seed and Enlist Duo herbicide by state;
  - b. The current grower agreement;
  - c. The first annual report shall include the current education program and associated materials, and subsequent annual reports shall include updates of any aspect of the education program and associated materials that have materially changed since submission of the previous annual report;
  - d. Summary of your efforts aimed at achieving compliance with the grower agreements;
  - e. Summary of your determinations as to whether any reported lack of herbicide efficacy was “likely resistance,” your follow-up actions taken, and, if available, the ultimate outcome (e.g., evaluation of success of additional weed control measures) regarding each case of “likely resistance.” In the annual report, DAS will list the cases of likely resistance by county and state.
  - f. The results of the annual survey described in paragraph 1 under “Evaluation Component,” above, including whether growers are implementing herbicide resistance BMPs, and a summary of your annual review and possible modification – based on that survey – of the education program, grower agreement compliance efforts, and response to reports of likely resistance, described in paragraph 2 under “Evaluation Component,” above; and
  - g. Summary of the status of any laboratory and greenhouse testing performed by, or at the direction of, Dow AgroSciences following up on incidents of likely resistance, performed

in the previous year. Data pertaining to such testing need not be included in the annual reports, but such data must be made available to EPA upon request.

2. Following your submission of the annual report, you shall meet with the EPA at EPA's request in order to evaluate and consider the information contained in the report.

E. **Best Management Practices (BMPs) Component:**

1. Best management practices (BMPs) must be identified in your education program. You must advise growers to follow them in your grower agreements. The following are examples of BMPs:
  - a. Regarding crop selection and cultural practices:
    - i. Understand the biology of the weeds present.
    - ii. Use a diversified approach toward weed management focused on preventing weed seed production and reducing the number of weed seeds in the soil seed-bank.
    - iii. Emphasize cultural practices that suppress weeds by using crop competitiveness.
    - iv. Plant into weed free fields, keep fields as weed free as possible, and note areas where weeds were a problem in prior seasons.
    - v. Incorporate additional weed control practices whenever possible, such as mechanical cultivation, biological management practices, crop rotation, and weed-free crop seeds, as part of an integrated weed control program.
    - vi. Do not allow weed escapes to produce seeds, roots or tubers.
    - vii. Manage weed seed at harvest and post-harvest to prevent a buildup of the weed seed-bank.
    - viii. Prevent field-to-field and within-field movement of weed seed or vegetative propagules.
    - ix. Thoroughly clean plant residues from equipment before leaving fields.
    - x. Prevent an influx of weeds into the field by managing field borders.
    - xi. Fields must be scouted before application to ensure that herbicides and application rates will be appropriate for the weed species and weed sizes present.
    - xii. Fields must be scouted after application to confirm herbicide effectiveness and to detect weed escapes.

- xiii. If resistance is suspected, treat weed escapes with an alternate mode of action or use non-chemical methods to remove escapes.
- b. Regarding herbicide selection:
- i. Use a broad spectrum soil applied herbicide with a mechanism of action that differs from this product as a foundation in a weed control program.
  - ii. A broad spectrum weed control program should consider all of the weeds present in the field. Weeds should be identified through scouting and field history.
  - iii. Difficult to control weeds may require sequential applications of herbicides with alternative mechanisms of action.
  - iv. Fields with difficult to control weeds should be rotated to crops that allow the use of herbicides with alternative mechanisms of action.
  - v. Apply full rates of this herbicide for the most difficult to control weed in the field. Applications should be made when weeds are at the correct size to minimize weed escapes.
  - vi. Do not use more than two applications of this herbicide or any herbicide with the same mechanism of action within a single growing season unless mixed with another mechanism of action herbicide with overlapping spectrum for the difficult to control weeds.
  - vii. Report any incidence of lack of efficacy of this product against a particular weed species to Dow AgroSciences or a Dow AgroSciences representative.

This list may be updated or revised as new information becomes available.