2,4-D-Based Weed Management Programs for 2017 Enlist Cotton

(A. S. Culpepper, A. C. York, and J.C. Smith)

Mitigating off-target movement of 2,4-D is the greatest challenge for a 2,4-D-based weed management system. Georgia has many areas where this herbicide should not be applied in-season; for areas where it can be applied safely, review labels closely. Mitigating off-target movement of 2,4-D and implementing sound programs are addressed. *The Georgia Cotton Commission, Cotton Incorporated, and Industry are primary funding sources!!*

Enlist Duo, a premix of glyphosate and 2,4-D choline, is the only formulation labeled for use at planting or in-season for Enlist cotton.

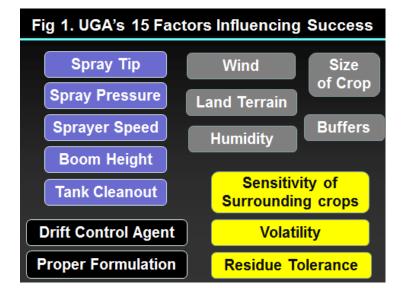
Enlist Duo can only be tank mixed with products approved at www.EnlistTankmix.com. As of Jan 16, no herbicides are approved for tank mixing. See discussion on back.

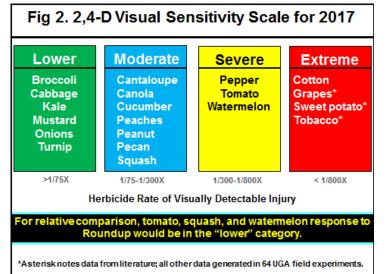
CRITICAL STEPS FOR ON-TARGET 2,4-D CHOLINE APPLICATIONS (yes, it is complex)

- 1. Person responsible for an in-crop application of Enlist Duo must have attended the <u>Using Pesticides Wisely</u> Training.
- 4. Apply in <u>winds between 3 to 10</u> <u>mph</u>; drift distances can still be large. <u>Land terrain</u> and <u>direction of</u> wind have huge impacts on drift.
- 7. Boom height should be minimized based upon the nozzle selected; 24" above the target is ideal when feasible.
- 10. <u>Labels are written</u> to protect the manufacturer from drift. No matter the distance, if you have spray drift, you are solely responsible.

- 2. At least <u>15 factors</u> should be understood for success; only having the right nozzle or only applying in low winds will not end well (Fig 1).
- 5. Sprayer ground speed influences drift greatly. Suggest staying under 10 mph. Absolutely no aerial applications!
- 8. Drift distances can be cut nearly in half with a 24" boom height compared to one at 50".
- 11. Strongly encourage applying 2,4-D through <u>hoods or layby rigs</u>. DO NOT make more than 2 applications/year in a field for resistance mgmt.

- 3. Most broadleaf vegetables, fruits, and nuts are <u>very sensitive to 2,4-D</u>, avoid applications near these sensitive crops (Fig 2).
- 6. Enlist Duo label currently allows numerous <u>spray nozzle</u> options; see back page for more details.
- 9. <u>Downwind in-field buffers</u> for 1X rate is 30 ft. Label clearly restricts any application being made with winds toward susceptible plants.
- 12. <u>Water volume</u> 10-15 GPA with applications from burndown through cotton in full flower; UGA suggest direct sprays only after 8-lf.





Herbicide resistance is threatening the sustainability of ALL FAMILY FARMS. The use of cover crops and/or tillage with a diversified herbicide program will reduce herbicide dependency and improve weed control. HAND WEED ESCAPES!



The University of Georgia and Ft. Valley State University, the U.S. Department of Agriculture and counties of the state cooperating. Cooperative Extension, the University of Georgia College of Agricultural and Environmental Science, offers educational programs, assistance and materials to all people without regard to race, color, national origin, age, gender or disability.

An Equal Opportunity Employer/Affirmative Action Organization Committed to a Diverse Work Force

Issued in furtherance of Cooperative Extension work, Acts of May 8 and June 30, 1914, The University of Georgia College of Agricultural and Environmental Sciences and the U.S. Department of Agriculture cooperating.

J. Scott Angle, Dean and Director

POTENTIAL ENLIST DUO (2,4-D CHOLINE) PROGRAMS

STEP 1: Burndown: no Palmer emerged at planting.

2,4-D is not that effective controlling pigweed over 3". Standard programs using Valor (before Palmer emergence), Direx, and Gramoxone are better. Dicamba or 2,4-D should be considered for primrose, horseweed, and radish. No plant back interval exists for Enlist Duo in Enlist cotton; however, weeds should be killed ≥ 10 d before planting. Plantback interval for Enlist cotton following dicamba is similar to standard cultivars.

STEP 2: Preemergence (PRE) herbicide application.

Two herbicide active ingredients should be applied PRE together, even in a 2,4-D system. Higher rates of a single active ingredient are less effective than two ingredients at lower rates (Fig 3). Research suggests Reflex + Warrant or Direx, Direx + Warrant, or Brake F16 are great options. Select rates per acre that have minimal injury potential on your soil such as: Reflex (10-12 oz), Direx (12-16 oz), Warrant (2-2.5 pt), and Brake F16 (1 pt). Enlist Duo is not an effective residual alternative.

STEP 3: Sequential POST's are needed for most fields.

The Enlist Duo label restricts tank mixtures with other herbicides to date; check web site for updates. Enlist Duo programs currently labeled are in Table 1. Make all topical applications prior to the 8-leaf of cotton development.

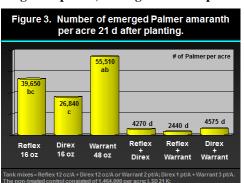
Table 1. Labeled Enlist Duo systems as of Jan 16, 2017.								
POST 1 ~17 d after PRE^1	POST 2 ~ 13-17 d after POST 1 ^{1,2}							
Biggest pigweed in field 3":	Biggest pigweed in field 3":							
Enlist Duo 3.5 to 4.75 pt/A ³	Enlist Duo 3.5 to 4.75 pt/A ³							
or	or							
Liberty + Dual Mag., Warrant, or Staple	Liberty + Dual Mag., Warrant, or Staple							

¹Day interval assumes PRE's were activated. ²Need \geq 12 d between applications. ³Use higher rate on difficult to control weeds such as Palmer.

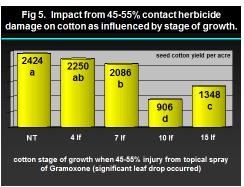
Enlist Duo tank mixtures with herbicides ARE NOT APPROVED AND SHOULD NOT be applied until approved by the EPA; for latest details visit www.EnlistTankMix.com. If approved, Dual Magnum or Warrant mixed with Enlist Duo at POST 1 will likely improve weed control; mixtures will increase injury, occasionally exceeding 20%, as compared to Enlist Duo alone. For POST 2, apply Enlist Duo alone or apply a Liberty mixture and-follow with a sound directed layby application 12-17 d later.

STEP 4: Lavby NEEDS TO BE DIRECTED and not overtop.

A directed or hooded application is needed for auxin systems as it will improve farm sustainability through improved weed control and resistance management while reducing injury potential. Figures 4 and 5 stress the importance of not damaging cotton after the 8 leaf stage with topical applications; thus, one should direct the layby. Direx + MSMA (best for pigweed) or Roundup + Direx are great options; adding Envoke improves morningglory control. For grasses, make sure to utilize Roundup.







Maximum Operating Pressure (psi)

Nozzle selection and pressures approved for use on the Enlist Duo label as of Jan 16, 2017.

		Maximum Operating Pressure (psi)									
		10	20	30	40	50	60	70	80	90	100
Manufacturer	Model										
ABJ Agri	ABJ11004			MA	X 40						
	ABJ10006		MA	X 30							
GreenLeaf	TDXL11003			MA	X 40						
	TDXL11004				MAX 45						
	TDXL11006							MAX 75	5		
	TDXL11003-D								MA	AX 90	
	TDXL11004-D								MA	AX 90	
	TDXL11006-D									MA	X 100
	TDXL11008-D							M.A	08 X		
Hypro	ULD12004						MA	X 70			
	ULD12006			MAX	(50						
Lechler	ID11004			MA	X40						
	ID11005		MAX 60								

		10	20	30	40	50	60	70	80	90	100
	_										
	Al11004					MA	X 60				
TeeJet	Al11006					MA	XX 60				
	Al11008						MA	X 70			
	AITTJ60-11006			MA	X 40						
	AIXR11003		MA	X 30							
	AIXR11004			MA	X 40						
	AIXR11006			MA	X 40						
	TTI11004								MAX 85	5	
Wilger	MR11006					MA	X 60				
wiger	MR11008					MA	XX 60				