

Rothamsted Repository Download

A - Papers appearing in refereed journals

Liu, C., Neve, P., Glasgow, L., Wuerffel, R. J., Owen, M.D.K. and Kaundun, S. S. 2020. Modeling the sustainability and economics of stacked herbicide-tolerant traits and early weed management strategy for waterhemp (*Amaranthus tuberculatus*) control. *Weed Science*. 68 (2), pp. 179-185.

The publisher's version can be accessed at:

- <https://dx.doi.org/10.1017/wsc.2020.6>

The output can be accessed at:

<https://repository.rothamsted.ac.uk/item/9783x/modeling-the-sustainability-and-economics-of-stacked-herbicide-tolerant-traits-and-early-weed-management-strategy-for-waterhemp-amaranthus-tuberculatus-control>.

© 13 January 2020, Please contact library@rothamsted.ac.uk for copyright queries.

Erratum

Cite this article: Liu C, Neve P, Glasgow L, Wuerffel RJ, Owen MDK, Kaundun SS (2020) Modeling the sustainability and economics of stacked herbicide-tolerant traits and early weed management strategy for waterhemp (*Amaranthus tuberculatus*) control – ERRATUM. *Weed Sci.* **68**: 195–196. doi: [10.1017/wsc.2020.20](https://doi.org/10.1017/wsc.2020.20)

Keywords:

cross-resistance; herbicide resistance mitigation; multiple resistance; preemergence applications; residual herbicides; transgenic crops; erratum

Modeling the sustainability and economics of stacked herbicide-tolerant traits and early weed management strategy for waterhemp (*Amaranthus tuberculatus*) control – ERRATUM

Chun Liu, Paul Neve, Les Glasgow, R. Joseph Wuerffel, Micheal D. K. Owen and Shiv S. Kaundun

<https://doi.org/10.1017/wsc.2020.6>, published online by Cambridge University Press, 03 March 2020

In the original publication of this article (Liu et al. 2020), several errors relating to the table footnotes were present due to a processing oversight by the publisher.

Note “b” for Table 1 was mistakenly omitted. The note should read:

^bSurvival at recommended doses of Y and Z depended on genotypes, and therefore these values were not used in the model.

The positioning of several note callouts within Table 3 was incorrect, and the contents of notes “j” and “k” were swapped. The correct table, with notes, appears on the subsequent page. The publisher apologizes for these errors, and no fault is attributed to the authors.

Reference

Liu C, Neve P, Glasgow L, Wuerffel RJ, Owen MDK, Kaundun SS (2020) Modeling the sustainability and economics of stacked herbicide-tolerant traits and early weed management strategy for waterhemp (*Amaranthus tuberculatus*) control. *Weed Sci* 68:179–185

© Weed Science Society of America, 2020. This is an Open Access article, distributed under the terms of the Creative Commons Attribution-NonCommercial-NoDerivatives licence (<http://creativecommons.org/licenses/by-nc-nd/4.0/>), which permits non-commercial re-use, distribution, and reproduction in any medium, provided the original work is unaltered and is properly cited. The written permission of Cambridge University Press must be obtained for commercial re-use or in order to create a derivative work.



Table 3. Cost-benefit calculation of three example weed control scenarios using products available on the U.S. soybean market.^a

Scenario	Costs				Resistance and yield ^b			Commodity price ^c		Net gain per year			
	Herbicides ^d	Adjuvants ^e	Seeds ^f	Labor/ machine ^g	Duration of good control	Good yield	Bad yield	Good quality grain	Poor quality grain	Per good year	Per bad year ^b	Net gain in 20 yr	
	-----US\$ ha ^{-1h} -----				years	---L ^h ha ⁻¹ ---		-----US\$ L ⁻¹ -----		-----US\$ ha ⁻¹ -----			
Example	Herbicide Q (2× POST)	= 30 × 2	= 5 × 2	100	= 20 × 2	5	6,095	2,612	0.23	0.17	1,192 ⁱ	234 ^j	9,470 ^k
H	Glyphosate solo (3× POST)	39	15	104	55	7	6,095	2,612	0.23	0.17	1,189	231	11,326
H+X+Y	Glyphosate+2,4-D+glufosinate (1× POST)	64	11	128	55	>20	6,095	NA	0.23	NA	1,027	NA	20,540
EWM(ii)	2,4-D+glufosinate (2× POST)	95	22										
	SMOC+fomesafen (PRE)	26	0	114	37	>20	6,095	NA	0.23	NA	1,182	NA	23,640
	Glyphosate+2,4-D (1× POST)	32	11										

^aNote that the calculations here are only presented as figurative examples and do not aim to promote any particular herbicide.

^bGood yield without herbicide failure or bad yield (or bad year) due to resistance/weed control failure.

^cConsidering impacts of weed seed contamination and grain quality.

^dBased on Enlist One[®] (Corteva Agriscience, Wilmington, DE), Enlist Duo[®] (Corteva Agriscience, Wilmington, DE), Liberty[®] 280 SL (BASF Corporation, Raleigh, NC), Prefix[®] (Syngenta Crop Protection, Inc., Greensboro, NC), and Roundup[®] PowerMax (Bayer Crop Science, St. Louis, MO).

^eBased on N-Pak[®] AMS (Source AMS 34 2 × 2.5. Winfield[®] United, St. Paul, MN) and drift reduction agent Intact[™] (2 × 2.5. Precision Labs Inc., Northbrook, IL).

^fBased on Enlist[™] soybeans (Corteva Agriscience, Wilmington, DE), Enlist E3[™] soybeans (Corteva Agriscience, Wilmington, DE), and Roundup Ready[®] 2 soybeans (Bayer Crop Science, St. Louis, MO).

^gBased on 2018 Iowa Farm Custom Rate Survey.

^h1 ha = 2.47 acre; 1 L = 0.028 U.S. bushel.

ⁱEquals (6,095 L × US\$0.23 L⁻¹) – (US\$30 × 2 herbicide cost) – (US\$5 × 2 adjuvant cost) – US\$100 seed cost – (US\$20 × 2 labor and machine cost).

^jEquals (2,612 L × US\$0.17 L⁻¹) – (US\$30 × 2 herbicide cost) – (US\$5 × 2 adjuvant cost) – US\$100 seed cost – (US\$20 × 2 labor and machine cost).

^kEquals (5 good years × US\$1,192) + (15 bad years × US\$234).