

# HERBICIDE RESISTANCE UPDATE

Caitlin Youngquist, Gustavo Sbatella, and Andrew Kniss  
University of Wyoming - July 17, 2015

## GLYPHOSATE RESISTANT KOCHIA IN WASHAKIE COUNTY

In July, 2015 glyphosate-resistant kochia (*Kochia scoparia*) was identified in a field in Washakie County. It is highly likely that additional glyphosate-resistant populations will soon be confirmed in the region. Glyphosate is the active ingredient in Roundup® and many other herbicides. Resistance develops when herbicides with the same mode of action (MOA) are used repeatedly over time.

**Decisive and coordinated action on the part of farmers, homeowners, municipalities, counties, rights-of-way managers, and weed and pest districts is necessary to prevent further spread.**



### HIGH RISK AREAS

- *Ditches, roadsides, railroad right-of-ways, and other areas that have been repeatedly sprayed with glyphosate.*
- *Edges of fields where inconsistent herbicide application kills some weeds but only injures others.*
- *Areas with alkaline or saline soil where kochia is difficult to kill.*
- *Anywhere that glyphosate has been used repeatedly as the primary control tactic.*

### IDENTIFYING HERBICIDE RESISTANCE

Scout for weeds 7 to 14 days after herbicide application and properly identify any surviving weed species. Initially, the number of surviving individuals may be low, and distributed in small patches. Resistant plants are typically surrounded by plants that are dead or dying (see photo). Resistant plants may initially show herbicide injury symptoms, but recover after a few days or weeks. More mature plants will be more difficult to kill, as will plants under stress.



**If you suspect resistance contact your local UW Extension Educator as soon as possible.**

## CRITICAL MANAGEMENT STRATEGIES

**IF GLYPHOSATE-RESISTANCE IS SUSPECTED, TAKE ALL REASONABLE MEASURES TO PREVENT SEED PRODUCTION.** Each kochia plant can produce thousands of seeds. Zero-tolerance for suspected resistant kochia populations is the goal!

- *Remove surviving kochia plants by uprooting, either by hand or tillage. Mowing will not kill the plant and resistant kochia plants will still produce seed.*
- *Avoid pollen movement, don't allow kochia to flower and produce seeds.*
- *Spot-spraying a systemic herbicide (page 2) can be effective when kochia is small, but few herbicides will provide adequate control of large kochia (greater than 10-inches tall).*
- *Pay close attention to fence lines, field edges, ditches, and roadsides as these areas can be reservoirs for herbicide-resistant populations.*
- *Harvest and tillage equipment can spread resistant kochia populations, as can grazing livestock. Be sure to clean equipment thoroughly before moving from a field with resistant kochia.*

## CHEMICAL CONTROL OPTIONS FOR KOCHIA

***Do not rely on glyphosate alone in any year of a crop rotation, even if rotating Roundup Ready and conventional crops. Always include another effective herbicide for kochia control.***

Product	Rate	Notes
SPOT SPRAYING, FENCE ROWS, NON-CROPLAND		
Banvel <u>or</u> Clarity	8 to 16 oz/acre	Do not use near trees or other desirable broadleaf vegetation, as severe injury can result.  Backpack sprayers: mix Vista XRT at 0.4 fl. oz. per gallon of water. One gallon will treat 1,000 square feet.
Starane Ultra <u>or</u> Vista XRT	17 oz/acre	
Widematch	1.33 pints/acre	
SUGAR BEETS		
Nortron PRE + Roundup PowerMax POST + Betamix POST + Upbeet POST	40 oz/acre + 32 oz/acre + 32 oz/acre + 0.5 oz/acre	Expect only partial control of kochia with this treatment. POST mixture of Roundup, Betamix, and Upbeet will need to be applied twice.  If sugar beets are past the 10 true-leaf stage, reduce Roundup rate to 22 ounces per acre.
BARLEY		
Huskie POST + MCPA ester POST <u>or</u> Starane Ultra POST <u>or</u> Starane NXT POST <u>or</u> Widematch POST	13.5 oz/acre + 12 oz/acre  6 oz/acre  14 oz/acre  1.3 pt/acre	Huskie rates below 13.5 oz/acre <i>will not</i> control kochia. 2,4-D ester may be used instead of MCPA ester.  Additional herbicides may be needed to tank-mix with Starane to control other weeds.
CORN		
Prowl H2O PRE <u>or</u> Verdict PRE	28 oz/acre  12 - 18 oz/acre	Sugar beets should not be planted within 12 months of Prowl application. Verdict rate depends on soil type, consult the pesticide label for appropriate rate.  Clarity rate depends on timing. Maximum of 8 fluid ounces per acre should be applied if corn is between 8 and 36 inches tall.
Status POST <u>or</u> Clarity POST <u>or</u> Starane Ultra POST	6 oz/acre  8 - 16 oz/acre  6.4 oz/acre	
DRY BEANS		
Prowl H2O PRE <u>or</u> Sonalan PPI	2 pints/acre  2 pints/acre	Sugar beets should not be planted within 12 months of Prowl application. Sonalan must be incorporated into the soil for best results. Only barley, sunflower, safflower, or canola should be planted the following season after Sonalan.
Basagran 5L POST <u>or</u> Varisto POST	25 oz/acre  21 oz/acre	

*Reference to commercial products does not constitute an endorsement by the University of Wyoming. Consult pesticide labels for specific use recommendations and rotational crop restrictions. Always read and follow pesticide labels carefully*

*Issued in furtherance of extension work, acts of May 8 and June 30, 1914, in cooperation with the U.S. Department of Agriculture. Glen Whipple, director, University of Wyoming Extension, University of Wyoming, Laramie, Wyoming 82071.*