



PACIFIC NORTHWEST HERBICIDE RESISTANCE INITIATIVE

Safeguarding U.S. Agriculture, Exports & Rural Economies



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HERBICIDE RESISTANCE INITIATIVE OVERVIEW & PNW AGRICULTURAL CONTRIBUTION TO THE U.S. ECONOMY

What is the PNW Herbicide Resistance Initiative?

Established to address the herbicide resistance crisis, the Herbicide Resistance Initiative funds **3 USDA-ARS research positions** and **3 land-grant universities** conducting coordinated research and education to protect producers, exports, and rural economies.

\$3B

Commodity Value

~5M

Acres Produced

~80%

Exported Globally

KEY IMPACTS OF THE HERBICIDE RESISTANCE INITIATIVE

11,000+

acres with resistant Palmer amaranth & waterhemp tracked & mapped

623

farms surveyed for herbicide resistance

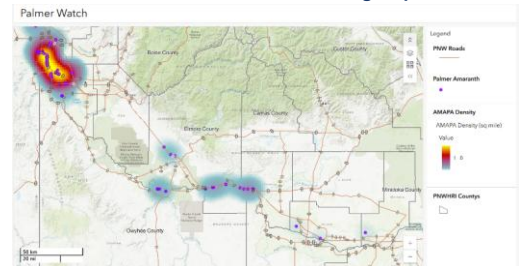
40

herbicides tested

22

resistance detected to 22 different herbicides; farmers given management options

Palmer Amaranth Monitoring Map

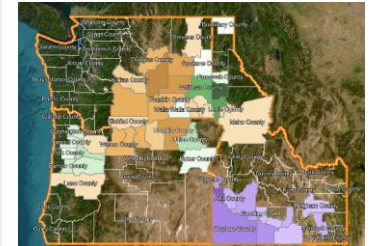


OUTCOMES FOR FARMERS

Research and Education Outcomes for Farmers

- ✓ Management recommendations with early detection of resistance hotspots
- ✓ Crop rotations significantly reducing weed seed banks
- ✓ Next-generation weed seed control technologies tested for farmer return on investment
- ✓ Decision-support tools for farmers
- ✓ Farmer-partnered innovations increasing best practice adoption

County level resistance mapping



RISK TO PNW AGRICULTURE IF FUNDING IS CUT

⚠ IF FUNDING IS CUT, THE PNW RISKS:

Loss of coordinated regional research

Accelerated spread of resistant weeds

Higher production costs for farmers

Reduced global competitiveness

⚡ Emerging Crisis

Widespread resistance driving higher costs and threatening export markets with zero-tolerance import standards.

Annual yield losses: **\$190M**

UNIVERSITIES, STAKEHOLDERS/ PARTNERS

Research & Education Institutions:



Stakeholders/ Partners:



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Critical to U.S. Food Security & Global Competitiveness



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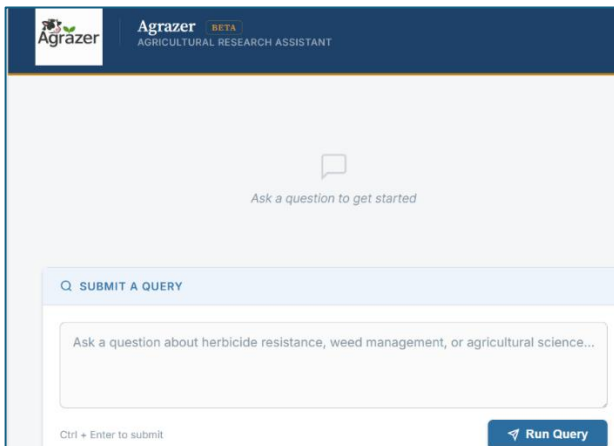


Herbicide-resistant prickly lettuce (left) and kochia (right) are the only green plants remaining after herbicide application to wheat. Uncontrolled weeds reduce yield, interfere with harvest and contaminate grain.

Weeds collected from **623** farms were screened for resistance to 40 different herbicides, and resistance was detected to 22 herbicides

Weed species	Resistance detected to the following herbicides*
Barnyardgrass	glyphosate
Downy brome	glyphosate, imazamox, mesosulfuron-methyl, metribuzin, propoxycarbazone, pyroxsulam, quizalofop p-ethyl, sulfosulfuron, thiencazone
Common lambsquarters	glyphosate, imazethapyr
Italian ryegrass	clethodim, mesosulfuron-methyl, pyroxsulam, quizalofop p-ethyl, sethoxydim, triasulfuron, thiencazone
Interrupted windgrass	flucarbazone, imazamox, mesosulfuron-methyl, pyroxsulam, thiencazone
Kochia	glyphosate
Palmer amaranth	glyphosate, mesotrione, metribuzin, rimsulfuron
Russian thistle	dicamba, glyphosate, imazethapyr, prosulfuron
Waterhemp	glyphosate, rimsulfuron
Wild oat	clethodim, ethalfluralin, fenoxaprop-p-ethyl, imazamox, mesosulfuron-methyl, pinoxaden, pyroxsulam, quizalofop p-ethyl, thiencazone, triallate

*Farmers in the PNW rely heavily on these herbicides (or herbicides within the same chemical family as most of these herbicides) to control weeds in small grains production systems



Decision-support tools for farmers

Decision-support tools are being developed to help farmers make timely, science-based weed management decisions that improve productivity, profitability, and long-term sustainability.

For example, **Agrazer**, is an agriculture-focused large language model designed to provide accessible, research-based guidance on crop production and herbicide resistance management, helping producers respond more effectively to emerging weed resistance challenges.



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