

Weed Science Society of America

Policy Priorities: Ensure safe, secure, reliable food and fiber supply

The Weed Science Society of America (WSSA) is an organization that fosters awareness of weeds and their impact on our environment. We provide science-based information to the public and government policymakers and promote research, education, and outreach activities. Founded in 1956 as a nonprofit professional organization, WSSA has approximately 2,000 members around the world. Members include academic, government, and private industry research scientists; Extension educators, consultants, teachers, and students; and federal, state, county, and private land managers.



EXTENSION & RESEARCH:

Develop, educate, and deploy integrated and effective strategies to optimize weed management and preserve biodiversity through leverage of federal, state, and private funding.

- **Capacity funds:** Federal appropriations (**Hatch & Smith-Lever**) combined with **Research Facilities Act** are critical to land-grant research, extension, and education efforts. Federal investment in agricultural research delivers annual rates of return of 20-60% (ERS 2007) and underpins US agricultural innovation.
- **The Agriculture and Food Research Initiative (AFRI) Competitive Grants Program:** Supports six priority areas—including weed science—to advance fundamental and applied research.
- **Crop Protection & Pest Management (CPPM):** Provides practical, multi-strategy solutions to weed, insect, and disease problems by funding Extension IPM research and a competitive IPM grants program to develop new IPM tactics, technologies, practices, and strategies. Enables collaboration with growers, regulators and industry to enhance U.S. biosecurity.
 - **Regional Coordination Program (RCP):** Funds four IPM centers (Northeast, South, West, North Central) that deliver region-specific solutions like weed-emergence models, pest-tracking IT tools, cheatgrass-burn/herbicide/biocontrol programs, and the “*War Against Weeds*” podcast.
 - **Applied Research & Development Program (ARDP):** Funds new IPM technologies, e.g., laser/electric weeders, supported jointly with OREI.
- **IR-4 Project:** Since 1963 has partnered with growers, scientists, and industry to generate data for registering crop-protection products for specialty crops, fruits and vegetables. Specialty crop growers need new, safe pest management products to fight the increasing number of invasive weeds and other pests that attack crops. The IR-4 Project provides a great return on funding investment (~600 to 1). A recent study reported that the IR-4 Project contributes \$8.9 billion to the annual U.S. GDP and supports more than 123,260 jobs.



New York table beet yield with and without weed management



waragainstweeds.libsyn.com



Herbicide resistant kochia in Washington wheat



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ENHANCING INTEGRATED WEED MANAGEMENT (IWM):

Advanced and transformative tools through public-private partnerships.

- **Industry–University Research & Development:** Private industry collaborates with Land-Grant Universities in developing new weed management technologies and extending knowledge to ensuring safe and effective use across diverse environments.
- **Precision-Weed TECH:** Advances in machine learning, drone-based scouting, weed image repositories, robotics, optical spot spraying, and electric and laser weeding is providing targeted weed control, reduced herbicide use and manual labor, and increased productivity in specialty and row crops.
- **Harvest weed seed control (HWSC):** Combines retrofitted with weed seed-crushers reduce infestations of herbicide-resistant species like Italian ryegrass in wheat and Palmer amaranth in soybeans.



Electric weeder in New Jersey blueberry

AMERICAN BIOSECURITY AT RISK:

Economic prosperity, public health and natural ecosystems are under threat from invasive weeds, insects, and diseases.

- **Negative Impacts:** 1) Reduce land value and profits for farmers and ranchers, 2) consume water in drought-prone areas, 3) exacerbate wildfire frequency and intensity, and 4) increase disease prevalence like Lyme disease.
- **Early Detection and Rapid Response:** Investments in weed prevention, invasive species control, and native plant restoration are needed to enhance biosecurity.
- Renewing the federal charter of the **Invasive Species Advisory Council** will ensure Executive agencies have the best available information to address invasive species.
- **Hydrilla Regulation:** Government agencies, university researchers, and private industry co-develop, evaluate, and enforce science-based policies—a proven model for invasive-weed management.
- **Integrated Weed Management of Fire-Adapted Invasive Plants:** Over 100 people died in the Lahaina fire in Hawaii in 2023, primarily due to vacant lands that were infested with invasive buffelgrass and guinea grass that aided in the rapid spread of the wildfires. Buffelgrass is also the archenemy of the Sonoran Desert by increasing the frequency and intensity of wildfires, which devastate iconic native species like the saguaro cactus. Restoration will be critical to long term success, but this aspect remains a critical challenge.



Kudzu in South Carolina

ENSURING CROP PRODUCTIVITY & AMERICAN RESOURCES FOR GENERATIONS:

Advancing regenerative agriculture through Integrated Weed Management, environmental adaptation, and land stewardship.

- **Regenerative & Sustainable Agriculture:** No-till acreage rose 35% with the adoption of herbicide-resistant crops. Increasing adoption of cover-crops for weed suppression reduces soil erosion and enhances soil quality.
- **Environmental Adaptation:** Weed ecologists assess how extreme weather alters weed biology and crop-weed interactions, develop adaptive management tools for farmers, and identify potential new crops.
- **Herbicide-resistant Weed Management:** University-industry teams study resistance mechanisms and develop practices that keep herbicides effective and protect crop yields.
- **PRIA Compliance:** Adhering to Pesticide Registration Improvement Act timelines will ensure transparent, timely EPA evaluations that will enable greater innovation from industry stakeholders. Collaboration with USDA's **Office of Pest Management Policy (OPMP)** guarantees product safety, efficacy, and alignment with grower needs.
- **America's Land:** We promote science-based legislation and regulation that creates collaborative land use policies that benefit both people and the natural ecosystem.



Waterhemp in Iowa soybean

WORKFORCE COMPETENCY:

Weed scientists protect food and fiber yields, as well as safeguard natural areas across academic, government, independent and industry sectors.

- **USDA Research:** Triketone herbicides like mesotrione are effective for weed control but can form toxic degradation products, so ARS researchers developed new malonic acid-derived triketone analogs without benzoic rings that retain strong herbicidal activity while improving environmental safety and leaching profiles.
- **University Extension:** Scientists and educators deliver real-time, locally-tailored weed-management solutions based on locally relevant research.
- **Agronomy Consultants:** Independent and retail consultants provide scouting and management recommendations to farmers to protect crop yields and integrate new technologies.
- **Workforce Development:** Developing a new herbicide or herbicide-tolerant trait requires more than 250 experts over a decade, with weed scientists at the center of integrating chemistry, trait biology, and field-level weed challenges—expertise that is increasingly at risk due to workforce decline and skill gaps.
- In less than 20 years, we have **lost >50% of the workforce skilled in weed science**. Support is needed to develop more capacity to **train the next generation** of weed scientists.



Students learning to identify and diagnose herbicide field injury



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