

The mission of the Weed Science Society of America (WSSA), a non-profit professional society, is to "promote research, education, and extension outreach activities related to weeds; provide science-based information to the public and policy makers; and foster awareness of weeds and their impacts on managed and natural ecosystems." Member research on weedy and invasive plants covers a wide spectrum, from fundamental biology to applied management to environmental impacts of weeds and weed management systems. A systems oriented field of study, our discipline is central to USDA-NIFA program priorities addressing sustainable food and fuel crop production, the response of such systems to climate change and all aspects of integrated pest management.

Weed science as a discipline has had many successes over the years, but its future is in some ways imperiled by its very success. A confluence of factors, including reduced farming system diversity, the widespread adoption of herbicide resistant crops grown in monoculture, a near cessation in herbicide discovery by industry, and lack of herbicide rotation has gradually undermined the foundations of weed management. Herbicide resistant weed biotypes are proliferating at the same time that producer knowledge of the fundamentals of weed management is eroding. We need to add new weed management tools that increase options for the future, and this will require a far better understanding of weed biology and ecology than we currently have. Unfortunately, with the weed management successes of the past we have seen reduced public and commodity group concern with weeds, consolidation of industry, and stagnant government funding for weeds. How will we fund the basic and applied science needed to develop the next generation weed management tactics?

Because of the systems level approach taken by scientists in this pest management discipline, weed scientists are uniquely positioned to be integrators and cropping systems diagnosticians. While these systems level studies do involve scientists with weedy plant expertise, it is critically important to underscore the fact that there is much basic science that a narrower focus within the discipline and it will be critical that funding sources be available to address such problems. A concern of scientists in our field is that our discipline could be lost within "climate change science" and "sustainable energy production". Historically, we've had one source committed to supporting such science and that was the Biology of Weedy and Invasive Species AFRI program. We are aware that this program will not continue in its former configuration.

In a recent survey of our membership (Summarized in Davis, AS, C Hall, M Jasieniuk, MA Locke, EC Luschei, DA Mortensen, DE Reichers, RG Smith, RM Sterling, and JH Westwood. 2009. Weed Science research and funding: a call to action. *Weed Science*, 57:442-448) areas of primary interest of scientists working in our field include: **Weed biology and ecology**: herbicide resistance; invasion biology; cropping system ecology and crop-weed interactions; transgenic crop cultivars; crop tolerance; weed evolution; genomics; landscape ecology; site-specific management; seed biology; population dynamics; allelopathy. **Applied weed management**: herbicide discovery and efficacy; decision support systems; non-chemical weed management methods; management thresholds; weed management system models; neutraceuticals; biocontrol; and **Environmental impacts of weeds and weed management systems**: herbicide fate and transport in soil, water and air; phytoremediation; drift management.

Recommendations for Shaping USDA Competitive Programs

1. The WSSA is supportive of the prospect of longer-term studies that will be funded at a level sufficient to address large-scale, complex problems.
2. We are concerned that highly important areas of systems science won't fall neatly under the five pillars. For example, weedy plant resistance to glyphosate herbicide threatens to undermine the utility of genetically modified glyphosate resistant soybean, corn and cotton. For example, currently 93% of the nation's soybean crop is glyphosate tolerant and recent reports indicate 17 weedy plant species are now glyphosate resistant. Therefore, we recommend that some allotment of funds be reserved to address systems level problems that don't fall within the five proposed pillars (areas of focus). Or expand the areas of focus to be more inclusive.
3. The composition of NIFA grant review panels should include at least one weed scientist.



June 1, 2010

AFRI Competitive Programs (CP) Unit
National Institute of Food and Agriculture
U.S. Department of Agriculture
STOP 2240
1400 Independence Avenue, SW.
Washington, DC 20250-2240

Docket Number NIFA-2010-0001

The **Weed Science Society of America (WSSA)**, **Aquatic Plant Management Society (APMS)**, **North Central Weed Science Society (NCWSS)**, **Northeastern Weed Science Society (NEWSS)**, **Southern Weed Science Society (SWSS)**, and the **Western Society of Weed Science (WSWS)** are writing in response to Docket Number NIFA-2010-0001 regarding the Department of Agriculture's (USDA) National Institute of Food and Agriculture (NIFA) Agriculture and Food Research Initiative (AFRI). We appreciate this opportunity to comment on the 2010 NIFA RFA as you prepare for the 2011 RFA. This willingness to engage stakeholders will help make NIFA relevant and effective for solving pressing agricultural issues and advancing agricultural sciences. This communication follows our letter of April 27, 2010 to Dr. Beachy. As previously stated, we are excited to hear about the expansion of AFRI funding and **are fully supportive of continued growth** of this program to help meet the future food, fiber and bioenergy needs of the Nation and the world. However, we are also very concerned that the 2010 RFA, and the tentative priorities for the 2011 and 2012 RFAs, do not explicitly acknowledge the critical weed management needs to achieve these agricultural goals. To rectify this omission, we offer three primary recommendations specific to Weed Science for future RFAs:

1. **Add an AFRI Foundational Program addressing weedy plant biology, ecology and management**, a program similar in scope to phytopathology and entomology programs.
2. **Reconfigure the larger AFRI programs so that they encompass the full breadth of disciplines comprising agricultural sciences.** Currently, the RFA objectives are written so narrowly as to exclude not only weed science but also many other areas of study. In particular, **place an equal priority on weed management as management of other plant pests.**

3. **Restore funding for Integrated Activities under Section 406** Legislative Authority research programs in the FY 2011 Federal budget, and maintain funding for these programs in future years.

Agricultural production is dependent upon the removal of weeds as they are competitors with crops for water, nutrients, light and space. Weeds can be considered a far greater threat to agricultural productivity than plant diseases or insects, which are present some years but not others and, typically, in more isolated locales. **Losses to weeds account for approximately one-half of all yield losses to pests** (Oerke, E.-C. 2006. Crop losses to pests. *J. Agric. Sci.* 144:1:31-43). Weed seeds are ubiquitous, and weeds can reduce crop yields by as much as one percent each day they are not controlled. (Hartzler, R. Iowa State University, May 16, 2005). The recent sensational press coverage of the development of glyphosate resistant weed biotypes demonstrates the emotional, as well as practical, impact the loss of effective weed management can have. Is weed management a solved problem, with no further active science necessary? Nothing could be further from the current reality. In our last report to the CSREES Plant and Pest Biology stakeholder meeting in 2007 (which was based upon a survey of the WSSA membership research priorities, published in *Weed Science* (<http://www.wssa.net/WSSA/Grants/WS-09-020-Survey%20paper.pdf>), we stated that:

“Weed science as a discipline has had many successes over the years, but its future is in some ways imperiled by its very success. A confluence of factors, including reduced farming system diversity, the widespread adoption of herbicide resistant crops grown in monoculture, a near cessation in herbicide discovery by industry, and lack of herbicide rotation has gradually undermined the foundations of weed management. Herbicide resistant weed biotypes are proliferating at the same time that producer knowledge of the fundamentals of weed management is eroding. We need to add new weed management tools that increase options for the future, and this will require a far better understanding of weed biology and ecology than we currently have. Unfortunately, with the weed management successes of the past have come reduced public and commodity group concern with weeds, consolidation of industry, and stagnant government funding for weeds. How will we fund the basic and applied science needed to develop the next generation weed management tactics?”

The recent release of the National Academy of Sciences report “*Impact of Genetically Engineered Crops on Farm Sustainability in the United States*” reiterates many of these points and calls for additional research to maintain the present weed management tools, understand their environmental and social impacts, and develop non-pesticidal options for the future. The very recent NIFA RFA for “Critical Issues: Emerging and New Plant and Animal Pests and Diseases” shows that NIFA is aware of some of the weed management challenges U.S. farmers are facing. However, this Critical Issues RFA is **only proposing \$60,000 in funds for one project** that is limited in its weed science scope to glyphosate resistant weeds.

The development of herbicide resistant biotypes is only one example illustrating how fragile our current weed management successes are. The challenges we faced in 2007

have, if anything, **grown more urgent in 2010**. It has been 15 years since the last commercialization of a new herbicide mode-of-action. Herbicide **resistant weed biotypes** continue to evolve and overrun long-established cropping systems (e.g. loss of cotton production areas in the South). **Organic farmers** have a pressing need for new, effective tactics to support weed management without herbicides in the face of a growing demand for organically produced food. Sustaining food, fiber and fuel production in a **changing climate** will not be possible without adaptive responses to changing weed problems. Our managed **forests and aquatic ecosystems** are being compromised by unchecked spread of invasive plants. We need to maintain our wetlands and waterways to ensure potable water, hydroelectric power, flood control and conservation. Effective weed management systems have contributed much to reduced agricultural soil losses and improved water quality.

The **omission** of weed management as a priority now and for the next two years **jeopardizes the careers of both young and established weed scientists**. Furthermore, frankly, it has the potential to destroy weed science as a discipline. It is impossible to see how new and innovative approaches to weed management will be discovered unless there is a healthy and vibrant weed science community. In addition, there is a danger that the students who would develop these new ways of dealing with weeds will not be trained.

The National and Regional Weed Science Societies understand that the emphasis on targeted, narrowly defined, focus areas is part of a strategy to demonstrate the effectiveness of AFRI to address and solve pressing national and international challenges. However, it is **essential these focus areas not be defined so narrowly** as to preclude wide participation, and especially, creative approaches from agriculture scientists, including weed scientists, to them.

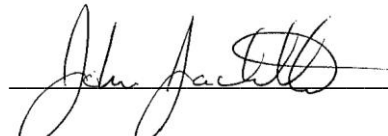
It is also critical that **AFRI maintain annual requests for proposals** to ensure research continuity. While it is expected that the priorities in AFRI will need to change over time, these changes should not be so abrupt as to preclude improvement of proposals declined after their first submission. One of the characteristics of a good funding program is that it allows peer review to provide feedback so that good ideas needing additional work eventually become great ideas that get funded. This approach should continue.

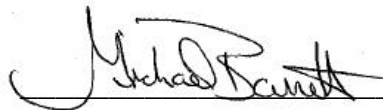
The agricultural community has long wished to see the previous National Research Initiative, now NIFA-AFRI, have equal stature and support as the National Institutes of Health and National Science Foundation. The move to “forward funding” AFRI has the potential to help accomplish this. As non-profit professional scientific societies, we will continue to work to ensure AFRI funding increases. However, we also urge that USDA request sufficient increases each year to provide adequate support for new grants each year. Without these, AFRI would not have the ability to issue new RFAs in some years. We were excited to see the reference to the recent NRC report, *A New Biology in the 21st Century*, in the NIFA RFA. Weed Science has much to offer in meeting the four grand challenges, sustainable food production, ecosystem restoration, optimized biofuel

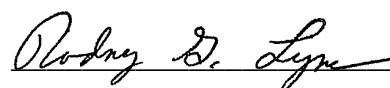
production, and improvement in human health, laid out in the report. However, the report is also pointed in its **recommendation that these challenges be met with new funding, not the erosion of funding for current research**. The loss of the foundation program for weed science is one casualty in USDA's desire to tackle these grand challenges in its focused restructuring.

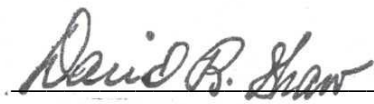
Thank you for considering our comments. It is extremely important to us, as stakeholders, to have this opportunity to influence the future course of agricultural research funding. We want to end by emphasizing our support and offer our help for your efforts in increasing support for agricultural research, extension and education. However, this support is balanced by our call for greater attention to the weed management needs to meet our agricultural production objectives.

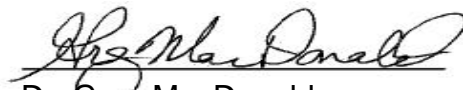
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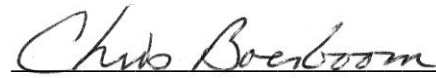

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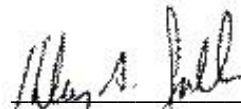

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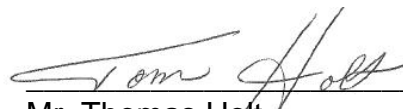

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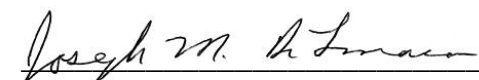

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