Presenter: Dr. Adam Davis USDA-CSREES Stakeholders' Workshop, 11/20/2007

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. As such, our research priorities overlap with USDA-CSREES strategic goals 2 ("enhance the competitiveness and sustainability of rural and farm economies") and 6 ("protect and enhance the nation's natural resource base and environment").

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 NRI Competitive Grants Program continues to be an important source of research funding for U.S. weed scientists. Several aspects of program 51.9, "Biology of Weedy and Invasive Species in Agroecosystems", however, are of ongoing concern to the WSSA membership. The points raised by Dr. David Shaw, in his 2005 report to the CSREES Stakeholder Workshop are still pressing:

- "Program 51.9 now targets not only weedy and invasive plants, but all other invasive species without an increase in funding. The WSSA would like to point out that NRI Programs 51.2, 51.3 and 51.8 that deal with the biology of arthropods, nematodes, and microorganisms were not opened up to invasion biology for their representative organisms. The WSSA would like to see invasion biology for different species placed in their respective NRI Programs.
- The current request for application (RFA) for Program 51.9 appears to be focused on ecological studies on invasive species at the population level and above with no emphasis on weed biology at the suborganismal level on physiology, biochemical, genetic, and molecular aspects. This is surprising with recent initiatives on weed genomics. The WSSA would like to see a balance in research priorities that consider both suborganismal and population level weed biology. Furthermore, this balance in research should address current problems using economically relevant species. There has been a recent trend towards funding NRI projects that seem to focus on model systems and invasive species with limited geographic range and little economic relevance in agroecosystems.
- Only the RFA for Program 51.9 now requires a letter of intent by December 6 after which a committee will decide on invitations by January 1, 2006. This process will not provide much flexibility to consider other programs and limits the grant preparation period to less than 1.5 months."

Research areas of primary interest to the WSSA membership identified by a 2007 survey include, by category:

- **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
- **Environmental impacts of weeds and weed management systems**: herbicide fate and transport in soil, water and air; phytoremediation; drift management