Western Region Joint Summer Meeting — July 15-18, 2013

The Coeur d'Alene Resort — Coeur d'Alene, Idaho

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MULTI-STATE RESEARCH WINNER

W-2045: Agrochemical Impacts on Human and Environmental Health: Mechanisms and Mitigation

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By mid-century, the human population is predicted to reach 9 billion. While there will be greater pressure to develop sustainable systems, agrochemical use will remain a cornerstone for protection of crop yields, thereby helping to meet demands for increased food production. Further, climate change predictions suggest even more need for agrochemical use to protect public health against insect-borne diseases. The future needs for environmentally sound crop and public health protection aligned with sustainable crop production systems and protection of environmental quality will pose increasingly difficult challenges and go well beyond the scope of any individual state AES or USDA-ARS unit.

Since being chartered in 1956, the W-2045 has provided leadership in identifying agrochemical fate, exposure, and health effects, putting into practice mitigation technologies that reduce risks to humans and the environment. Today, the work of W-2045 extends well beyond the western region with involvement from a wide assemblage of USDA-ARS and nationwide state AES land-grant university researchers and Extension specialists. The W-2045 integrates information across scales ranging from molecular to landscape level to address the fate and effects of pesticides and emerging contaminants on human and environmental health. Cooperating researchers represent an integration of disciplines in basic and applied biology, toxicology, environmental chemistry, outreach, and education to address human-environmental agrochemical health issues. USDA-ARS facilities in MN, MD, and SD, and state land-grant AES colleges and their affiliate institutions span over the west (HI, CA, NV, NM, WA, OR, AZ, MT), Great Plains (KS), Midwest (IN, MI, MN), east (NY), and southern states (FL, MS). W-2045 research and Extension cross disciplinary boundaries, providing key information to state and national public-environmental health regulatory agencies, soil conservation districts, regional agricultural commodity groups, and agrochemical users. The W-2045 has helped these stakeholders identify agrochemical impacts and has developed effective mitigation measures applicable to urban and rural areas.

Photo by Global Water Partnership

W-2045 researchers and Extension specialists have advanced our understanding of toxicity of pesticides and other agrochemicals (e.g., pharmaceuticals, antibiotics, and disinfectants used in animal production). This research has addressed the fate and effects of these contaminants on human and environmental health, and has helped design mitigation technologies that reduce risks to humans and land and aquatic ecosystems.