comparing the suite of acoustic and physical data at each treated site with control sites. The first-year results have already contributed to refinements in treatments and monitoring. Evaluation of herbicide efficacy is critical to managing invasive, non-native *Egeria* in the highly complex aquatic environment of the California Bay-Delta. Maximizing results while reducing risks, impacts, and expenditures requires increasingly refined and robust analytic tools. The success of this new acoustic technology for quantifying herbicide efficacy in the Delta marks a significant leap forward in achieving this goal. (263)

Validation of the WheatScout decision aid for integrated management of grass weeds in spring wheat. Wiersma, J.J.[1,*], Archer, D.[2], Forcella, F.[2], Durgan, B.R.[1], Ecklund, J.[2] and Martinson, K.[1] [1]University of Minnesota, Department of Agronomy & Plant Genetics, St. Paul, MN, [2]USDA-ARS North Central Soil Conservation Research Lab, Morris, MN. The purpose of the WheatScout software is to aid weed management decisions to control green foxtail and wild oat (*Setaria viridis* and *Avena fatua*) in hard red spring wheat (*Triticum aestivum* L.). The software generates biological, management, and economic information to aid the decision making process. Biological information generated by WheatScout includes: (a) emergence timing and leaf-stage development of weed and wheat; (b) weed/crop interference; and (c) weed seed production as functions of weed density and herbicide rate. Management information includes: (a) herbicides appropriate for specific plant growth stages, (b) herbicide dose-responses for each labeled graminicide, and (c) effects of delayed herbicide application on herbicide efficacy. Economic information provides net returns for each potential herbicide, including those for a range of reduced application rates, at the current scouting date as well as at future evaluation dates. The objective of this research was to validate the output of the WheatScout model with actual data collected in field experiments. For this purpose, three experimental sites were established in Crookston, Morris and Rosemount, MN in 2004. The three sites were selected to represent three different weed population scenarios. In Crookston, MN wild oat was the predominant species, while green foxtail predominated at Rosemount, MN. The Morris, MN site had a mixed population of both green foxtail and wild oat. To validate the biological information generated by WheatScout, daily minimum and maximum air temperature and the amount of precipitation was recorded at each location and used as meteorological input to the WheatScout model. In addition, time of emergence, growth stage and density of the green foxtail and/or wild oat was recorded at seven day intervals. To validate the management and economic information generated by WheatScout four common graminicides were applied at the labeled and one-half of the labeled rate at two different growth stages of hard red spring wheat using a randomized complete block design with 3 replicates at each site. Data will be presented in which the output generated by the WheatScout model is compared to the data collected in the field experiments for each of the three sites. (264)

The use of a bioherbicide and a phenylpropanoid pathway inhibitor for combined control of water hyacinth. Shabana, Y.M.[1,*] and Mohamed, Z.A.[2] [1]Plant Pathology Dept., Faculty of Agriculture, El-Mansoura, Dakahlia, Egypt, [2]Department of Botany, Faculty of Agriculture, El-Mansoura, Dakahlia, Egypt. The fungus *Alternaria eichhorniae* isolate 5 (Ae5) is being developed as an effective mycoherbicide against water hyacinth in Egypt. To improve its virulence, integration with 3, 4-methylenedioxy trans-cinnamic acid (MDCA), a phenylpropanoid pathway inhibitor which weakens the plants defense system, was explored. The severity of the disease induced by Ae5 increased when it was applied to water hyacinth plants pretreated with MDCA. Infection with Ae5 amplified the total phenol concentration in diseased water hyacinth leaves whereas MDCA reduced it. Plants treated with both Ae5 and MDCA contained a comparable level of total phenols to that in the untreated control plants. Phenol-storing cells were located in 3 places in the leaf: within the adaxial palisade tissue, above the abaxial epidermis and in the vicinity of the vascular bundles. Dimensions of these three types of cells were increased by infection with Ae5, decreased by MDCA treatment and, in the combined treatment, were similar to those in control leaves. Increased numbers of phenol-storing cells were found only in the region near vascular bundles of plants treated with either Ae5 or MDCA. (265)

Patch management of herbicide-resistant wild oat (*Avena fatua*). Beckie, H.J.[1,*], Hall, L.M.[2] and Schuba, B.[3] [1]Agriculture & Agri-Food Canada, Saskatoon, SK, [2]Alberta Agriculture, Food and Rural Development/, University of Alberta, Edmonton, AB, [3]Prairie Farm Rehabilitation Administration, Melfort, SK. A study was conducted at a 64-ha site in western Canada to determine how preventing seed shed from herbicide-resistant wild oat affects patch expansion over a 6-yr period. Seed shed was prevented in two patches and allowed to occur in two patches (untreated controls). Annual patch expansion was determined by seed bank sampling and mapping. All crop management practices were performed by the grower. Area of treated patches increased by 35% over the 6-yr period, whereas untreated patches increased by 330%. Patch expansion was attributed mainly to natural seed dispersal or seed movement by equipment at time of seeding. Extensive seed shed from plants in untreated patches before harvest or control of resistant plants by alternative herbicides minimized seed movement by the combine harvester. Although both treated and untreated patches were relatively stable over time in this cropping system, preventing seed production and shed in herbicide-resistant wild oat patches can markedly slow the rate of patch expansion. (266)

Toxicity of Rodeo® and Arsenal® tank mixes to juvenile rainbow trout. King, K.A.[1], Curran, C.A.[1,*], Smith, B.C.[1], Laboratory, F.4.[2], Grassley, J.M.[1] and Grue, C.E.[1] [1]Washington Cooperative Fish and Wildlife Research Unit, University of Washington, Seattle, WA, [2]School of Aquatic and Fishery Sciences, University of Washington, Seattle, WA. Efforts to utilize herbicides in aquatic environments have been hampered by concerns

Wiersma, J.J., D.A. Archer, F.Forcella, B.R. Durgan, J. Eklund and K. Martinson. 2005. Validation of WheatScout decision aid for integrated management of grass weeds in spring wheat. Weed Sci. Soc. Am. 45:80.