

NAFA Garneres \$\$ For Research

NAFA has been working to raise the awareness of the alfalfa and forage industry in the nation's capitol with congressional offices and agencies. Success came, thanks to Washington's Senator Patty Murray and Congressman Doc Hastings, with a \$200,000 appropriation to the ARS research station in Prosser, WA, for Forage Crop Stress Tolerance and Virus Disease Management. The funding was used to hire a post-doc to work on abiotic and biotic stresses of alfalfa.

ARS has committed to close collaboration between the Prosser post-doc and other scientists within ARS, industry and the Noble Foundation. Who is the new 'alfalfa' post-doc? Dr. Per McCord.

In July 2010, Dr. Per McCord joined the alfalfa/forage research team of the USDA-Agricultural Research Science,

Vegetable and Forage Research Laboratory in Prosser, WA, as a Research Associate. He completed his PhD in 2009 at North Carolina State University and worked on potato genetics at USDA-ARS-Prosser prior to joining the alfalfa research team. His specialty is molecular breeding which will remain his focus as a member of the alfalfa team.

Dr. McCord has initiated a collaborative project with Pioneer Hi-Bred, Forage Genetics International, CalWest Seeds, and the Samuel Roberts Noble Foundation, to identify DNA markers for resistance to stem nematode and Verticillium wilt. The seed companies are screening their germplasm for resistant and susceptible individuals, while Dr. Maria Monteros of the Noble Foundation has made available a core set of DNA markers and laboratory facilities to perform the initial marker screening. In addition to the core markers, Dr. McCord will also use newer markers developed at the

Noble Foundation, and markers he plans to design that will target disease resistance genes. Molecular markers developed in this project will be made available to public and private breeders, for use in the development of new varieties resistant to Verticillium wilt and stem nematode.



Dr. Per McCord

In addition, Dr. McCord has initiated a longer term research project aimed at developing markers for enhanced drought tolerance and/or water use efficiency in alfalfa. The development of alfalfa cultivars with increased drought tolerance and/or water use efficiency would increase the quality of forage in dryland grazing situations, and allow hay growers to produce a profitable crop with less water. He has been collecting stands of alfalfa that have been growing under dryland conditions in the Columbia Basin region. Populations from these collections will be tested in field trials under dryland conditions to identify those that do well in non-irrigated rangeland environments, as well as under varying levels of irrigation. In this project, Dr. McCord will also collaborate with Dr. Mike Peel of the USDA-ARS Forage and Range Research Laboratory in Logan, Utah. Dr. Peel is screening alfalfa populations for salt tolerance. Populations with enhanced salt tolerance will be tested for drought tolerance because tolerance to drought and salt stress share similarities at the molecular level. Alfalfa cultivars with increased drought tolerance and/or water use efficiency will be critical for sustained production of alfalfa hay under water-limited conditions.

Results of the alfalfa research program will continue to be presented at the North American Alfalfa Improvement conference, Washington State Hay Growers Conference and other industry meetings. "NAFA's support of the alfalfa/forage scientists in Prosser is extremely important in terms of continuity and direction," said McCord. "It's nice as a researcher to know you have such a strong level of support within the industry."

Prosser USDA-ARS Research

Program Objectives

- Identify molecular markers linked to tolerance to lodging in commercial alfalfa populations.
- Identify molecular markers that can unambiguously discriminate between *Aphanomyces euteiches* Race 1 & Race 2.
- Identify molecular markers linked with resistance to Verticillium wilt and stem nematode in alfalfa.
- Identify fungi that can be used as biological controls to manage white mold in alfalfa seed production.
- Determine the effects of field burning and alternative residue management practices on population density of the problematic weeds prickly lettuce and western salsify in alfalfa seed production.
- Evaluate the efficacy of herbicides to control mayweed chamomile, prickly lettuce, and white campion in alfalfa seed and forage production.