lbs of N supply (fertilizer+soil sources) per 100 lbs expected seed yield. Phosphorus, potassium, and sulfur recommendations can be based on soil test levels with interpretations similar to those of cereals. Canola has a lower tolerance of seed-placed starter fertilizers than cereals so rates of nitrogen+potassium should not exceed 5 lb/acre.

There are several unknowns regarding canola fertility. In existing literature, nitrogen recommendations for canola are quite variable, ranging from 4 to 11 lbs nitrogen supply per 100 lb seed yield. There is also debate over the optimum timing of nitrogen application for winter canola to ensure high yields but minimize the potential for winterkill. Optimal placement of banded fertilizer at planting and canola root responses to banded fertilizer is poorly understood. Relatively little is known about how fertility management affects oil yield and quality in canola since the majority of studies assess only management effects on seed yield. Finally, very little is known about camelina nutrient requirements to optimize oil yield.

This project involves a series of experiments designed to assess canola and camelina seed and oil yield responses to nutrient rates and application timing. Studies are located near Prosser, Davenport and Pullman, WA. Winter canola studies were initiated at each location in fall 2007. Spring canola and camelina studies are planned for 2008 at Davenport and Pullman. Treatments include nitrogen and sulfur rates, fall-spring nitrogen application timing, and phosphorus rate responses. In fall 2007, winter canola failed to establish at Pullman due to inadequate seed zone moisture. Establishment was spotty at Davenport. Fall establishment of winter canola is a major challenge that will have to be overcome in order for this crop to be successfully grown in dryland environments.

Links to other extension resources on canola fertility:
Ontario, Canada: http://www.omafra.gov.on.ca/english/crops/pub811/8fert.htm#table81
Great Plains, U.S.: http://www.oznet.ksu.edu/library/crpsl2/mf2734.pdf
North Dakota: http://www.ag.ndsu.edu/pubs/plantsci/soilfert/sf1122w.htm
Montana: http://landresources.montana.edu/FertilizerFacts
Oregon State University: http://extension.oregonstate.edu/catalog/pdf/em/em8943-e.pdf

Management of Rhizoctonia Damping-off of *Brassica* Oilseed Crops in the PNW

SCOT HULBERT[1], EBRAHIEM BABIKER[1], TIMOTHY PAULITZ[2], AND KURTIS SCHROEDER[2]
1. DEPARTMENT OF PLANT PATHOLOGY, WSU
2. USDA-ARS ROOT DISEASE AND BIOLOGICAL CONTROL RESEARCH UNIT, PULLMAN WA

Rhizoctonia solani can cause pre and post-emergence damping off of *Brassica* oilseed species with adverse effects on stand establishment. In greenhouse experiments, we have examined resistance to two groups (AGs) of *Rhizoctonia solani* among various *Brassica* species and varieties. *R. solani* AG 2-1 is among the most virulent strains and can drastically reduce seedling emergence. *R. solani* AG 8 can cause seedling stunting and also infects wheat. A few *B. napus* canola varieties appeared more tolerant to both groups of the pathogen in greenhouse experiments. The hybrid cultivars Flash and Sitro, from the German company DSV, and the open-pollinated DeKalb variety CWH687 showed the best tolerance to the two *Rhizoctonia* groups. Camelina was similar in susceptibility to most canola varieties, as were yellow, brown and Ethiopian mustards. We have examined various chemical seed treatments on the incidence of seedling damping-off of canola in the greenhouse, inoculated with *R. solani* AG 2-1. We found the seed treatments to be mostly ineffective. Since the pathogen attacks the young hypocotyls, these tissues were not protected by non-systemic seed treatments. We are now developing assays to determine if the differences in greenhouse resistance among the canola varieties can be observed in the field.

Tall Wheatgrass Feedstock Evaluation

MARK STANNARD[1] AND STEVEN FRANSEN[2]
1. USDA PLANT MATERIALS CENTER, PULLMAN, WA
2. DEPARTMENT OF CROP AND SOIL SCIENCES, IAREC-PROSSER, WSU

Only a handful of grasses grow in Washington that produce enough biomass volume to warrant biofuel attention. Switchgrass has received the lion's share of the attention because it produces large volumes of biomass that can be