

## **NE-1010: Breeding and Genetics of Forage Crops to Improve Productivity, Quality, and Industrial Uses.**

### **Research Project Description**

**Title:** Evaluation of meadow and hybrid bromegrass

**Lead Scientist:** Bruce Coulman, AAFCSK

**Collaborating Scientists:** Yousef Papadopoulos (AAFCCH), Arvid Boe (SD), Réal Michaud (AAFCSF), Mike Casler (WI)

**Objective(s):** The objective of the research is to evaluate cultivars and breeding lines available in the AAFC Saskatoon program at a range of locations to determine adaptation and select lines adapted to individual locations.

**Justification:** Meadow bromegrass is a relatively new forage grass in North America. The cultivar Regar was registered in the U.S. in 1966, and the cultivars Paddock and Fleet in Canada in 1987. Meadow bromegrass is a non creeping grass that forms many basal leaves. Its fast regrowth after cutting and grazing has made it one of the most popular forage grasses in western Canada, with seed production hectareage exceeding that of smooth bromegrass. It is now recommended across Canada, and is receiving increasing interest in the U.S. with cultivars being developed in Montana and Utah. Hybrid populations have been produced at AAFC Saskatoon from crosses of meadow and smooth bromegrass. These hybrids show high first cut yields like smooth brome, and good regrowth like meadow brome. The variety AC Knowles was released in 2000, and AC Success in 2003. These hybrids have not been tested widely to determine their adaption outside of western Canada.

**Brief Description of Methods:** Approximately forty plants of each line will be spaced-planted (1m centres) over four replicates at each site. Lines will be evaluated for some or all of the following characters: forage dry matter yield, seed yield, spring and fall vigor, disease, and speed of regrowth. The best genotypes will be isolated for seed production. Seed of new synthetics will be planted at all locations and evaluated for potential germplasm or cultivar release.

From 2002-2004, nurseries of eight meadow brome, two hybrid brome and one smooth brome lines were established at Saskatoon, Ste-Foy, Charlottetown, Madison and Brookings. These nurseries were evaluated for two years and seed was harvested from selected plants to create the following populations:

Location	Species	No. of plants selected
Madison	Meadow brome	10
Charlottetown	Meadow brome	10
Charlottetown	Hybrid brome	10
Saskatoon	Meadow brome	15
Saskatoon	Hybrid brome	10
Ste-Foy	Meadow brome	37 (includes 6 hybrid)
Brookings	To be harvested in 2008)	

Seed of the above first six lines was sent to Saskatoon and planted in isolated seed increases in 2008. Seed will be harvested in 2009 and distributed to the four sites to be seeded in evaluation trials in 2010.

**Expected Impacts:** Information will be available on the adaptation and performance of meadow and hybrid brome at diverse sites across Canada and the northern U.S. Lines selected may become cultivars used in the various areas of testing.