



Global Perspectives Grant Program Spring 2010 Report UW College of Agriculture and Natural Resources

By M. Anowarul Islam

Summary

Global perspectives grant program spring 2010 has allowed me to bring scientist (**Dr. Manjula Bandara**) from Canada to the University of Wyoming and travel (myself) to Canada.

Both trips were sponsored by the **Global Perspectives Grant Program**. These trips were part of the international collaborative research project “**Assessment of Fenugreek for Adaptation to South East Wyoming**”. The major goals of the project were to: a) evaluate most promising Canadian genotypes/accessions of fenugreek under two growing environments in Wyoming for the phenotypic adaptability and stability for growth, seed yield, and quality, b) exchange scientific and technical expertise and ideas relating to fenugreek grown in Canadian Prairies, an area similar to Wyoming’s environment, and c) identify possible future collaborative projects.

Fenugreek and Related Research Work in Canada

Fenugreek (*Trigonella foenum-graecum* L.), a self-pollinating, annual leguminous crop, native to Asia and Southeast Europe, is cultivated worldwide. This is a historically valuable medicinal as well as a culinary herb and spice specialty crop. The yellow to amber colored seed of fenugreek is extensively used in preparing pickles, curry powders, paste, and often in Indian cuisine to impart flavor, color, and aroma. In some countries, seeds are also used as tea after being boiled and sweetened. The young leaves and sprouts of the plant are used as vegetables while the fresh or dried leaves are used as to flavor other dishes. Fenugreek is also widely used in producing lower-cost artificial maple syrup. Fenugreek is a rich source of polysaccharide galactomannan which helps in lowering of plasma cholesterol and triglyceride levels, thus resulting reduced



Fenugreek plant observation: Drs. Groose and Bandara, UW Greenhouse, Laramie



Dr. Bandara discussing about Canada Prairies, Tinsley Farm, Wheatland



Dr. Bandara examining fenugreek lines, SAREC, Lingle



Discussion between Drs. Krall and Bandara, SAREC, Lingle



Dr. Hess presenting token gift of UW Ag College to Dr. Bandara, SAREC, Lingle

cholesterol synthesis in liver and lowered blood sugar. Studies have reported that fenugreek is a potent stimulator of breastmilk production and its use was associated with an increase in milk production up to 900%. Fenugreek has also been extensively reported in Canada to be grown to feed animal. Studies showed that nutritive value of fenugreek forage is comparable to early-bloom alfalfa regardless of its growth stage. It has been shown in a trial in western Canada that steer growth on mature fenugreek and early-bloom alfalfa silage supplemented by barley did not differ. The fact is that fenugreek produces high quality forages in all growth stages, does not create bloat problem in cattle, contains animal growth promoting substances (e.g. diosgenin) – all which makes it attractive forage crop for North American cattle industries. Furthermore, as a member of Fabaceae and nitrogen fixing crop, it has the potential to maintain and build soil health and quality up.

Travel and Programs for Dr. Bandara, July 19-23, 2010

Mon, Jul 19 – Arrive DIA, Denver; pick up by Dr. Islam.
 Tue, Jul 20 – Seminar at UW, "*Advances in Medicinal Plant Research in Alberta, Canada*"; meet with Drs. Willson, Groose, Panter, Franc, and Islam; UW greenhouse plots and Lab visit, UW campus tours.
 Wed, Jul 21 – Travel to Wheatland for Tinsley’s Farm Field Day, sightseeing, return to UW.
 Thu, Jul 22 – Visit to SAREC, Lingle; attend Field Day; seminar at SAREC "*Fenugreek: A Multipurpose Legume Crop*"; meet with Drs. Hess, Herbert, Krall, and Kniss; return to UW.
 Fri, Jul 23 – Arrive DIA, Denver with Dr. Islam; Depart for Canada.

Dr. Bandara gave two seminars, one at the University of Wyoming Laramie Campus and the other one at SAREC, Lingle during the Field Day. Also, Dr. Bandara attended the Producers’ Field Day at Tinsley Farm, Wheatland and discussed about Canadian Prairies. Additionally, Dr. Bandara visited fenugreek experimental plots at Laramie and Lingle, examined establishment and growth of plants and discussed weeds and other management issues. Furthermore, Dr. Bandara met with a numbers of scientists at UW and discussed about future collaborations. His seminars and discussions were well attended.



Dr. Bandara giving seminar at SAREC, Lingle



Dr. Bandara discussing about field peas with Dr. Islam at SAREC, Lingle



Drs. Islam, Acharya, and Bandara at Lethbridge Research Center, Canada



Grazing trials of alfalfa mix with sainfoin at Lethbridge Research Center, Canada; no symptoms of bloat at all!



Drs. Acharya, Islam, and Bandara at Lethbridge Research Center, Canada. Background is a huge grazing study



Drs. Bandara, Acharya, and Islam discussing fenugreek project at Lethbridge Research Center, Canada

Travel and Programs for Dr. Islam, August 9-14, 2010

Mon, Aug 9 – Depart DIA, Denver; arrive Calgary, Alberta, Canada; pick up by Dr. Bandara; arrive Brooks, Alberta.

Tue, Aug 10 – Field visit of the special crops plots at the Crop Diversification Centre South, Brooks; meet with Dr. Christ Neeser, Weed Scientist; Mr. Art Kruger, Special Crops Technologist; Dr. Ron Howard, Pathologist; depart for Agriculture and Agri-Food Canada Centre, Lethbridge, meet with Dr. Surya Acharya, Forage Breeder and Adjunct Professor; visit field test plots (fenugreek, alfalfa, PC rye advanced lines and mutants); discuss future collaborative project development; depart for Saskatoon, Saskatchewan via Bow Island Substation.

Wed, Aug 11 – Arrive University of Saskatchewan; meet with Dr. Bruce Coulman, *Professor and Head*, Department of Plant Sciences; visit *Phytotron* and greenhouse facilities; visit field plots and research stations; tour campus; meet with Dr. Karen Tanino, Professor and Plant Physiologist (drought physiology), visit plant physiology Lab; discuss future collaborative project development.

Thu, Aug 12 - Depart for Vancouver, BC via Edmonton; stay a day in Vancouver and depart for DIA, Denver (Aug 14); drive to UW, Laramie.

During my travel to Canada, I had opportunities to visit Canada Food and Agriculture (Crop Diversification Centre South, Brooks, Alberta; Agriculture and Agri-Food Canada Lethbridge Centre, Lethbridge, Alberta) and the University of Saskatchewan (Saskatoon, Saskatchewan). I met scientists, researchers, extension educators, academicians, and students (see the above programs for details) and discussed potential collaboration, especially for research and student exchange programs. My final meeting was with **Dr. Bruce Coulman, Professor and Head** of the Department of Plant Sciences, College of Agriculture and Bioresources, University of Saskatchewan. Dr. Coulman is one of the renowned forage researchers and breeders in Canada and developed many highly productive and improved varieties. Dr. Coulman gave me a brief overview of the Department and College and showed me the structures and facilities through a short orientation. Finally, Dr. Coulman provided me a tour throughout the campus, greenhouse, and research stations. I was amazed by all the wonderful education, research and outreach activities at the University of Saskatchewan and Canada Food and Agriculture.



Drs. Coulman, Bandara, Tanino, and a graduate student, University of Saskatchewan, Canada



Grass breeding nursery, University of Saskatchewan research plots, Canada



Lab Manager and Dr. Bandara, Grains Innovation Laboratory, University of Saskatchewan, Canada



Grinding Laboratory, University of Saskatchewan, Canada



Dr. Islam observing aquaponics at the Crop Diversification Centre South, Brooks, Alberta, Canada



Specialty crops evaluation plots, Crop Diversification Centre South, Brooks, Alberta, Canada

Future plans and opportunities

The trips were wonderful international experience and provided many positive outputs and insights. Canada has made a significant improvement and varietal development of fenugreek through extensive research, education, and extension activities. Unfortunately, no extensive work has been conducted on this potential multi-purpose useful legume crop in the USA and no work has been done at all in Wyoming. We will continue working on this project and submit extended project to other sources for funding when we will generate preliminary data and information. Our efforts will continue to establish sustainable international collaboration and student exchange programs between the University of Wyoming and the University of Saskatchewan and Alberta Agriculture and Rural Development, Canada.



Drs. Islam, Coulman, Tanino, and Bandara, University of Saskatchewan, Saskatoon, Canada

Finally, we thank and gratefully acknowledge the UW College of Agriculture and Natural Resources and Global Perspectives Program for sponsoring the trips.



Canadian beautiful grass prairies in August 2010, Alberta, Canada