



# CSA Newsletter

Canadian Society of Agronomy

December 2012



## PRESIDENT'S MESSAGE

### Fellow CSA Members:

In Manitoba, the winter snow has begun to cover our fields as I write this first President's message. Nevertheless, I hope that your 2012 field season was successful. For my part, I had to contend with cool, wet conditions in eastern Saskatchewan and very hot and dry weather in Manitoba. Fortunately, very few trials were lost and most datasets are complete which makes the "analysis season" less trying.

In July, following an outstanding annual meeting of the Society in Saskatoon, I took over position of CSA President from Malcolm Morrison. I want to thank Malcolm for the excellent job he did as president. He left the Society in a sound financial state and with a fine, new executive. I will endeavor to do no less during my tenure. Malcolm continues to work for the betterment of the Society as Chair of the Societies Journal Committee.

Since July, the Society has been active on several fronts. The CSA executive approved a proposed a new three-editor team structure to replace the present Chief Editor structure for the Canadian Journal of Plant Science (CJPS). The executive approved Ali Navabi, a pulse breeder with AAFC and the University of Guelph, as the CSA member of the new editor team. We continue to provide the CJPS with new Associate Editors and I would encourage any of you who are interested in the position of CJPS Associate Editor to contact Shahrokh Khanizadeh (CJPS, editor) and myself.

In 2013, the CSA is planning a joint meeting with the American Society of Agronomy (ASA). In preparation for 2013, Malcolm Morrison and I met with the ASA executive and the conference organisers in Cincinnati. The CSA was warmly welcomed by the ASA and we had useful discussions regarding the upcoming meeting. **So mark your calendars for the 2013 CSA meeting November 3-5 in Tampa, Florida!** The CSA continues to be active in Plant Canada, which has already begun preparations for the 2015 meeting to be held in Edmonton in collaboration with the American Botanical Society.

The CSA is a non-profit incorporated organisation. As such, our by-laws are subject to approval by Industry Canada. Recently, new legislation was created which modifies the oversight role of Industry Canada. The new legislation should facilitate future minor changes to the by-laws. To be covered by the new legislation, two-thirds of the CSA membership must vote in favor of moving to the new Industry Canada Act. We are investigating the possibility that the vote will be included as part of your 2013 membership renewal. I would ask for your support on this initiative as it will facilitate on-going modernization of the Society. If this vote is not passed, CSA effectively will be unincorporated when the new Act becomes obligatory – a waste of a lot of time and energy.

In closing, I encourage all of you to get involved in the CSA. Please consider letting you name stand for a CSA executive position or nominating a colleague for one of the several CSA awards. If you know a colleague who is not a CSA member encourage them to join the Society and attend the CSA meeting. Members are the foundation of the Society. If we can strengthen the membership, we can strengthen the Society.

*Gavin Humphreys, President*

## CJPS Editor's Report

The following nine new Associate Editors were nominated by sponsoring societies (CSA, CSHS and CWSS) and will serve for 2011-2013 period.

Dr. Rosalind Bueckert	University of Saskatchewan	rosalind.bueckert@usask.ca
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Dr. Christian Willenborg	University of Alberta	chris.willenborg@usask.ca

CJPS Statistics for original manuscripts whose submission date is on or after Jan 1, 2012 to date.

Manuscript Type	Original	Revised	Total
Cultivar description	16	0	16
Full Paper	212	0	212
Letter to the Editor	1	0	1
Review	13	0	13
Short Communication	16	0	16
Special Issue Paper	3	0	3
Total	261	0	261

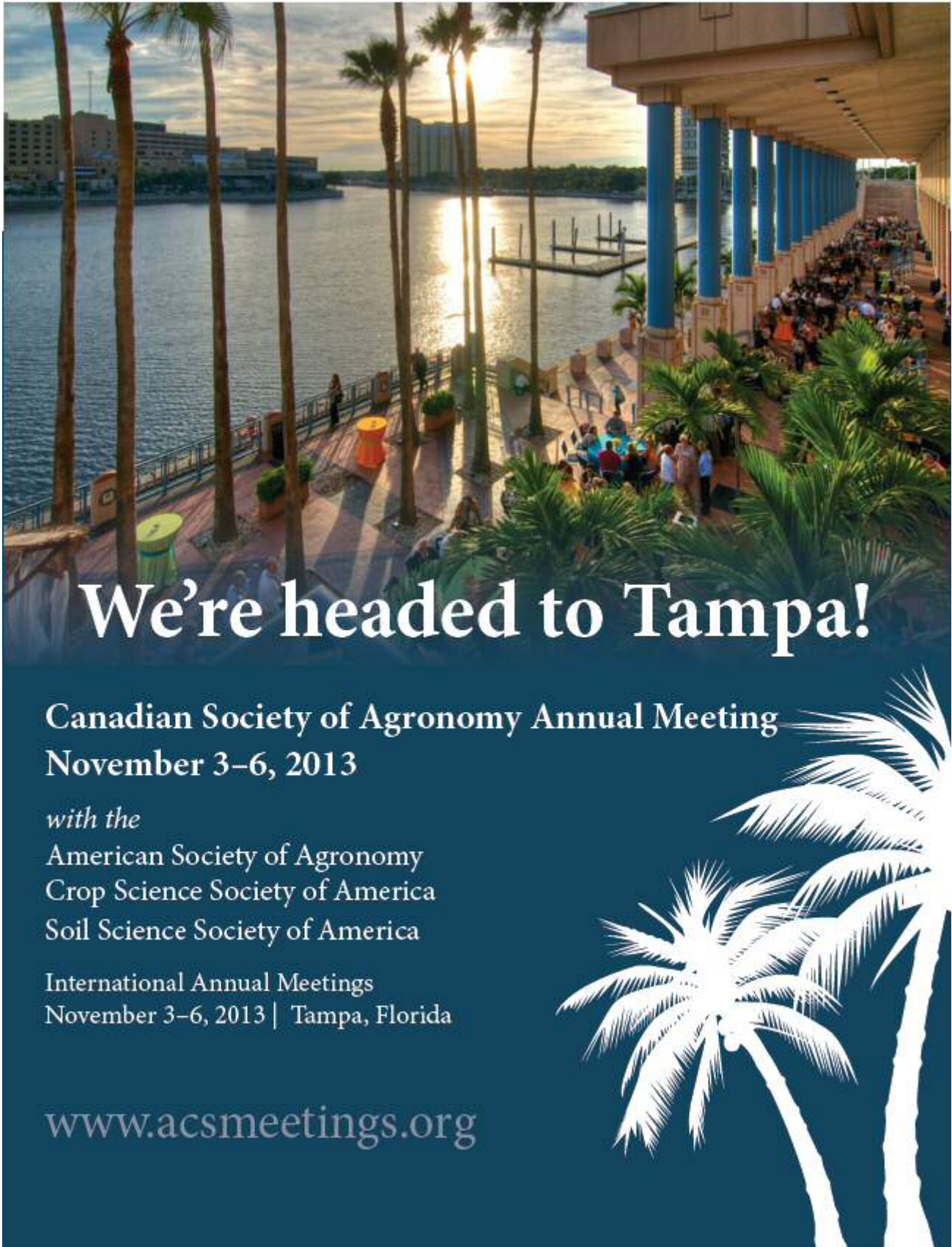
### Prairie Soils and Crops: Scientific perspectives for Innovative Management

The Saskatchewan Soil Conservation Association offers an e-publication, **Prairie Soils and Crops: Scientific Perspectives for Innovative Management**. The main objective of the publication is to provide producers with high quality, unbiased information on soil and crop management. Prairie agricultural researchers and other experts are invited to write articles on various topics and provide an unbiased scientific opinion on a range of topics. Volume 5 is dedicated to the research findings pertaining to the Long-Term Crop Rotations in Western Canada and includes crop rotation bulletins dating back to 1928, a bibliography of all papers published to date on these crop rotations, and a searchable database. The e-publication can be freely accessed at [www.prairiesoilsandcrops.ca](http://www.prairiesoilsandcrops.ca).

### 2012 CSA Corporate Sponsors







# We're headed to Tampa!

Canadian Society of Agronomy Annual Meeting  
November 3–6, 2013

*with the*

American Society of Agronomy  
Crop Science Society of America  
Soil Science Society of America

International Annual Meetings  
November 3–6, 2013 | Tampa, Florida

[www.acsmeetings.org](http://www.acsmeetings.org)



## Diversity can be a Good Thing

A recent study completed at the University of Alberta found that production practices can affect soil microbial diversity. The research team of Alison Nelson, working with Dean Spaner, Sylvie Quideau, Jill Clapperton, David Nizioł and Brenda Frick, wanted to see if there are connections between production practices, the soil microbial community and crop quality.

To answer the question, we compared five Canadian spring wheat cultivars grown under organic and conventional managements systems for yield, breadmaking quality and soil microbial community. We found that production practice differences between the organic and conventional systems led to differences in the soil microbial communities, and that wheat cultivars varied for yield, quality and microbial measures. The organic system, with higher plant diversity in the plots from weeds, had higher soil microbial diversity.

With a greater understanding of the interconnections within the cropping system, there may be potential to manage a system to promote the presence of beneficial soil microbes and high quality crops.

### **Management Systems Lead to Differences in Wheat Yield and Quality**

The wheat cultivars were grown on two nearby plots of land that had each been managed either organically or conventionally for the previous five years. By comparing two closely located plots, we ensured that differences between the two management systems were due to differences in production practices, not because of different soil types or climate.

Production practice differences between the two systems led to differences in yield and grain quality. The organic system used tillage, crop rotation and delayed seeding for weed control, but had no in-crop weed control. The conventional system used herbicides and was seeded earlier in the spring. Manure was used as a soil fertility amendment in the organic system, while the conventional system relied on chemical fertilizers. Organic wheat yields were 2.74 tonnes per hectare, roughly half of conventional yields at 5.02 tonnes per hectare, but protein levels were higher in the organic system at 16.6% compared to the conventional grain with 15.3% protein.

The newest cultivar in the study, AC Superb, had the highest organic and conventional yields, while the oldest cultivar, Marquis, had the lowest yields in both systems of production. Cultivars varied for breadmaking quality traits, but most were within acceptable levels for Canadian Western Red Spring wheat, indicating that all the chosen cultivars would produce quality bread wheat in both organic and conventional systems of production.

### **Microbial Communities Altered by Management Systems and Wheat Cultivars**

One of our primary interests in this study was to see if the management systems altered the soil microbial community. The two systems did have different soil microbial communities, and because of the close pairing of the two research sites, we can reasonably assume that those differ-

## Diversity can be a Good Thing (continued)

ences were due to production practice differences. The organic system had higher levels of bacteria, fungi (including beneficial arbuscular mycorrhizal fungi) and diversity in the soil microbial community. The presence of mycorrhizal fungi in our study was positively associated with yield and some breadmaking quality attributes in the organic system, where nutrients may not be as readily available as in conventional systems.

Other research has shown that increased soil organic matter and greater plant diversity can lead to higher microbial populations and more diverse microbial communities. Increased above-ground diversity can cause a corresponding increase in belowground diversity, because soil microbes feed on plant material and with more plant species there is greater variety of food available. Weeds created greater above-ground diversity in the organic system, and we calculated that microbial diversity was, in fact, related to the presence of weeds in this study.

Using composted manure in the organic system may have also played a role in the observed differences in soil microbial communities between the two cropping systems, because manure is a direct addition of organic matter to the soil system.

A surprising and exciting result from this research was that the newest wheat cultivar in the study, Superb, had the highest levels of mycorrhizal fungi associated with the roots in the conventional system. Arbuscular mycorrhizal fungi form mutually beneficial associations with many crops, including wheat, exchanging nutrients such as phosphorus for plant carbon products. Other studies have suggested that mycorrhizal dependency is being bred out of modern wheat cultivars. Our results suggest that breeding efforts in conventional environments have cultivated mycorrhizal dependence in that environment.

### Positive and Negative Effects of Weeds

In this study, we saw that increased soil microbial diversity often led to decreased wheat yield and breadmaking quality measures. Weeds helped increase soil microbial diversity in the organic system, so some the negative effects of diversity on yield can be attributed to the presence of weeds. We know that the presence of weeds in a field can lower yields, and possibly crop quality as well. So, the positive benefits from weeds (an increase in microbial diversity) were tempered by the impact of the weeds on crop yield and quality.

If we could harness the beneficial effects of weeds, while avoiding the negative yield and quality impacts of unwanted plants, we could build cropping systems that encourage beneficial soil microbes. An intercropping system that included mycorrhizal crops and nitrogen-fixing legumes could increase above-ground diversity and may be able to harness the benefits of these valuable soil microbes. We observed benefits to increased plant diversity in this study; the challenge now is to determine the best methods for building greater diversity into our cropping systems.



## CSA and AIC (ITPP) International Program Update

The CSA had its first venture into international projects by participating in the AIC International Twinning Partnership Program (ITPP) in 2010 to 2011. A detailed description of that project in the mid-hill (Tanahu Valley) region in Nepal was recently provided in the Canadian Journal of Plant Science. See Burlakoti et al. 2012 (CJPS 92:997-1003). The broad goals of any ITPP partnership project must address capacity development of partner organizations, food security and/or income generation, along with the cross cutting theme of gender equality. The project, entitled 'Research and support to organic agriculture in Tanahu district of Nepal' combined the collaborative efforts of Canadian partners AIC, CSA and CSHS, and Nepalese partners Sustainable Agriculture Development Program (SADP) ([www.sadpnepal.org](http://www.sadpnepal.org)) and the Agriculture and Forestry University (AFU), Nepal. Briefly, the goal was to help improve the livelihood of ethnic and marginal farmers of the mid-hill area through organic agriculture. The core premise of the project was that there are ample opportunities to adopt organic farming and improve income generation in Nepal since the majority of the traditional subsistence farmers either use very little to no commercial inorganic fertilizers and pesticides. The CSA and CSHS provided technical input and advice, and monitored project progress. Although only lasting one year the project did manage to strengthen the organizational capacity of, and linkages between, the partner organizations in Nepal, conduct baseline assessments of the potential for new market opportunities among the target marginalized farmers in the Tanahu region, and promote specific organic management approaches. For the CSA it was also an important first venture as an organization in engaging internationally in scientific partnerships and capacity development.

A proposal to seek funding for the next phase of the project was submitted in the last year as part of an umbrella 5-year (2011-2016) funding proposal for all AIC-ITPP funding projects. Unfortunately CIDA declined to support renewed funding for this long standing AIC initiative. A subsequent proposal for follow on work in Nepal focused specifically on organic management of late blight of tomato and potato was submitted by a team of CSHS, CSA and Nepalese partners to the International Development Research Centre (IDRC). While the proposal was well received apparently the IDRC competition was very challenging and this proposal was not funded.

The AIC ITPP program (see <http://www.aic.ca/international/itpp.cfm>) was funded by the Canadian International Development Agency (CIDA) and over the past 23 years coordinated many highly successful and long-running partnership projects around the world including Sri Lanka, Vietnam, Tanzania, Ghana and Ethiopia. In addition to attempting to improve the livelihood of resource poor people in the host countries, the program provided opportunities for CSA members and those of our sister organizations, the CSHS and CSSS to offer, on a voluntary basis, their expertise in agriculture and scientific society capacity development, and to learn of their specific challenges from local stakeholders and partner organizations in developing countries. One of the most rewarding aspects and legacies of the ITPP program has been the success in helping develop and strengthen the organizational capacity of the local partner organizations, and establishing long-term relations between scientific communities. These included for exam-

## CSA and AIC (ITPP) International Program Update (continued)

ple, societies organizing around soil science in Vietnam (the National Institute for Soils and Fertilizer Branch of the Vietnam Society of Soil Science), Sri Lanka (Soil Science Society of Sri Lanka), and Ethiopia (Ethiopian Society of Soil Science), horticulture (Ghanaian Society for Horticulturists) and animal science (Ghana Society for Animal Production) in Ghana; and extension in Tanzania (the Tanzania Society of Agricultural Education and Extension), in addition to the project partners in Nepal.

AIC's interest in international development and partnering scientific societies remains strong and, through volunteer commitment, it plans to continue to seek funding opportunities to implement projects with Canadian and partner societies.

*Derek Lynch*

## A new era for NSAC and Dalhousie University

On Sept. 1st of this year, the **Nova Scotia Agricultural College** formally merged with **Dalhousie University** to become the newest and 12th faculty, the **Faculty of Agriculture** (<http://www.dal.ca/faculty/agriculture.html>), within Dalhousie. The institute in Truro is now known as the **Agricultural Campus of Dalhousie University**, one of four campuses of Dalhousie University.

The Province of Nova Scotia had initiated the process, in May, 2011, to move NSAC out of its place within the provincial government following a recommendation for an NSAC-Dalhousie merger by a provincially sponsored study on reorganization of all higher education institutions in the Nova Scotia.

The two institutes, NSAC and Dalhousie, had a longstanding and close academic relationship prior to the merger. NSAC degrees since the 1980's were jointly awarded by Dalhousie and NSAC was represented on the Dalhousie Senate.

While the merger has widely been received as an exciting new opportunity for both staff and students of both former institutes, it's worth briefly noting the passing of NSAC. Founded in 1905 on a provincial demonstration farm in Truro-Bible Hill, the NSAC was one of the oldest agricultural institutes in Canada. The history of NSAC was closely interwoven with the development of the agriculture industry in Nova Scotia and the Atlantic Provinces and throughout its over 100 years of history it was the only university in the region offering agricultural education and specialized agricultural training at the technical, technology, bachelor, and masters levels. While this is an exciting new era of collaboration and linkages within a larger institute for the staff and students at the new Dalhousie Agricultural Campus, the close knit community of NSAC will be fondly remembered by the alumni and those who worked here over the years.

*Derek Lynch*

## SPOTLIGHT: University of Alberta Students

Name	Degree	Topic	Supervisor
Jakir Hasan	Ph.D.	Genetics and molecular mapping of clubroot resistance in Brassica.	Dr. Habibur Rhaman
Derek Flad	M.Sc.	Use of Rutabagas for broadening genetic diversity in spring Brassica napus canola.	Dr. Habibur Rhaman
Rameez Iftikhar	M.Sc.	Use of Brassica oleracea for broadening genetic diversity in spring B. napus canola.	Dr. Habibur Rhaman
Rohit Attri	M.Sc.	Use of Brassica rapa for broadening genetic diversity in spring B. napus canola.	Dr. Habibur Rhaman
Bekzat Turegeldiyev	M.Sc.	Use of Chinese semi-winter Brassica napus for broadening genetic diversity in spring B. napus canola.	Dr. Habibur Rhaman
Xue Pan	Ph.D.	Molecular biology of oil biosynthesis in developing flax seed.	Dr. Randall Weselake
Michael Scott Greer	Ph.D.	Characterization of a key enzyme (diacylglycerol acyltransferase) involved in oil formation in developing canola seed.	Dr. Randall Weselake
Yuning Gao	M.Sc.	Investigation of oil accumulation in cell suspension cultures of Brassica napus.	Dr. Randall Weselake
Klaus Strenzke	MSc.	Low P genetics in wheat	Dr. Dean Spaner
Brian Beres	PhD.	Stem sawfly management in wheat	Dr. Dean Spaner
Hiroshi Kubota	MSc.	Organic agronomy	Dr. Dean Spaner
Atif Kamran	PhD.	Early maturity in wheat	Dr. Dean Spaner
Hua Chen	PhD.	Early maturity in wheat	Dr. Dean Spaner
Graham Collier	MSc.	Agronomy in triticale	Dr. Dean Spaner
Muhammad Asif	PhD.	Doubled Haploidy in wheat	Dr. Dean Spaner
Ivan Adamyk	MSc.	Wheat agronomy	Dr. Dean Spaner
Neshat Pazooki	MSc.	Wheat agronomy	Dr. Dean Spaner
Jun Zou	PhD.	Genetics of stripe rust resistance	Dr. Dean Spaner
Enid Perez	PhD.	QTL mapping of disease resistance	Dr. Dean Spaner
Hiroshi Kubota	PhD.	Organic agronomy	Dr. Dean Spaner
Moshood Bakere	MSc	Tentative thesis title: Spatial statistical analyses of field-scale agronomy and variety trials.	Dr. Rong-Cai Yang
Dan Stanton	PhD	An integrated pest management approach for evaluation, breeding and deployment of Brassica napus cultivars with enhanced root maggot ( <i>Delia</i> spp.) (Diptera: Anthomyiidae) resistance.	Dr. Lloyd Dossdall and Dr. Rong-Cai Yang
Alireza Akhavan	Ph.D.	Diversity in genetics, virulence and fungicide sensitivity in western Canadian <i>Pyrenophora teres</i> populations.	Dr S. Strelkov
Robyne Bowness	M.Sc.	Sensitivity of <i>Mycosphaerella pinodes</i> to pyraclostrobin fungicide and optimum sprayer delivery onto the pea crop canopy. Dr S. Strelkov	Dr S. Strelkov
Thomas Ernst	M.Sc.	<i>Plasmodiophora brassicae</i> resting spore loads in resistant canola cropping systems.	Dr S. Strelkov
Michelle Fraser	M.Sc.	Sustainable fungicidal control of blackleg of canola.	Dr S. Strelkov
Ronald Nyandoro	M.Sc.	Investigation and management of root rot of soybean in Alberta.	Dr S. Strelkov
Mirko Tabori	M.Sc.	Impact of crop rotation and soil characteristics on clubroot development.	Dr S. Strelkov
Anh Van Tran	M.Sc.	Reaction of Canadian wheat lines to the host-specific toxins of <i>Pyrenophora tritici-repentis</i> .	Dr S. Strelkov
Barbara Ziesman	M.Sc.	Development of a quantitative PCR system for stem rot forecasting in western Canada.	Dr S. Strelkov
Krista Zuzak	M.Sc.	Soil fumigation for treatment of localized clubroot infestations.	Dr S. Strelkov



## Changes to CSA web site, email systems and on-line registration

We're re-inventing the whole thing. The web site is moving (this week I think) to a new host and we will re-hire the person who used to tend the site before 2011 to help us in future. This came about because our previous site host was bought out, our contacts were laid off, and after a year of trial (and tribulation), we gave up on the new company. Once we are fully moved, we'll upgrade the site as well. Yvonne Lawley will guide us on this.

Not related, we also lost patience with our previous list-emailing and on-line registration system. It was also bought out (twice) since we started with them, and the service as well as their office literally went south. So now we have engaged Membee, a society registration system based in Calgary but providing service globally. They understand the 9 tax regimes we have in Canada and know the names of the Provinces! We have migrated most of the member files containing your names and contact information to the Membee system, and will 'go live' soon. This move had ripples. CSA now has a credit card Merchant Account, something we got away from in about 2009 but have no choice now. The Membee system does not do surveys/voting or list-emails, but Membee is easily linked to Survey Monkey and Mail Chimp. Sounds like a primate zoo. You've already seen the Survey Monkey and Mail Chimp applications at work, the response we've had was quite positive.

All this said, this should have only minor effects on your communications with CSA. The membership renewal will be available soon, we've had our training and most the issues have been resolved.

Steve S.

### CSA Student Awards 2012

#### Poster Presentation Awards

<u>Award</u>	<u>Name</u>	<u>University</u>
Gold	<b>Ketema Abdi</b>	Saskatchewan
Silver	<b>Jinghan Su</b>	McGill

#### Oral Presentation Awards

Gold	<b>Edmund Sottie</b>	Lethbridge
Silver	<b>Jamie Larsen</b>	Guelph
Bronze	<b>Michelle Hubbard</b>	Saskatchewan

## CSA EXECUTIVE

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