Trilateral Cooperation to Promote the Protection of Water Quality Through Sustainable Agriculture

Trilateral Workshop October 22-24, 2003, Banff, Alberta

WORKSHOP REPORT

Background

The main objectives of the workshop were to generate new ideas and find workable solutions and processes in trilateral governmental collaboration to promote the protection of water quality through sustainable agriculture practices.

The workshop was organized around 6 topics:

1. How do we measure and monitor the impacts of agriculture on water quality?
2. What are the impacts of agriculture on water quality?
3. What are the on-farm practices that we use to reduce the impacts of agriculture on water quality?
4. What can governments do to help reduce the impacts of agriculture on water quality?
5. What can our farmer organizations do to help reduce the impacts of agriculture on water quality?
6. What can our three countries do together to help reduce the impacts of agriculture on water quality?

Nearly 30 persons attended the workshop (a list of participants is attached.). The participants included government scientific experts and policy representatives of producer organizations, farmers and ranchers from Canada and the USA, and a representative of the Ministry of Agriculture, Mexico. The representatives of two inter-American organizations, the CEC and IICA also participated. Deputy Minister Samy Watson (AAFC) and Deputy Secretary of Agriculture Jim Moseley (USDA) participated at the opening and the closing sessions of the workshop. More information on the workshop is available at: http://www.iisd.org/natres/agriculture/water_quality.asp

Summary findings

The workshop proved to be an excellent opportunity for experts from the agencies to meet the US-Canada-Mexico counterparts and representatives from South America and producers organizations. The two-day workshop was characterized by good information exchange, everyone being open to the idea of sharing information and looking for opportunities for collaboration. Areas of common interest and specific action items for cooperation were identified. These items are discussed in more detail below. Some key observations for consideration of follow-up action are:

i) Science must be linked with policy development to ensure that strategic outcomes are achieved in the most effective manner and that decisions are based on good science
ii) Policymakers must meaningfully engage producers in the early stages of policy development and in the planning of research and technology transfer activities way
iii) Government efforts must be connected with the larger international community to ensure the broadest opportunities for intellectual engagement and knowledge development
iv) There is a need to explore mechanisms and avenues that raise awareness and more directly engage the urban community in the stewardship approaches and practices of agricultural stakeholders.

Specific opportunities for follow-up were identified in the field of research, policy, and technical transfers are:

Research and Information:

- Coordination of research results from north-south activities
- Joint research initiatives using a watershed-based approach

Examples:

- Develop a nutrient management model to be used at the farm level
- Explore GIS initiatives that allow for greater dissemination of planning information and analysis to the industry.

Policy Instruments:

- Exploring alternative methods and approaches in the area of economic incentives, education, research and performance based standards.

Examples:

- Conduct an inventory and comparative analysis of environmental indicators for water quality
- Hold a joint symposium on research to evaluate the effectiveness of conservation practices on water quality.

Program Delivery:

- Examining each other's approaches and reviewing the types of practices to ensure they are aligned with sustainable management and garner the greatest opportunities for behavior change.
- Explore capacity building opportunities with community-based models.

Examples:

- Comparison between countries of on-farm/ranch conservation (environmental) planning processes and their supporting technical tools.
- Joint meetings on re-tooling the extension effort in water quality to emphasize urban and rural/agricultural water quality issues.
- Each country alternately host Tri-National Water Quality Meetings.

- Explore opportunities for cross-boundary collaboration on on-the-ground partnerships a watershed that borders both Canada and the U.S. and potentially the U.S. and Mexico
- Inventory and compare BMPs between countries to learn what has been successfully adopted.

Introduction

The two deputies gave introductory notes at the beginning of the workshop. Samy Watson explained the selection of the workshop topic and reviewed the Canadian efforts to raise the issue of water on the national agenda. He outlined the Agricultural Policy Framework (APF) and how this new comprehensive policy for agriculture helps move the agriculture sector away from crisis management to forward looking, policy-based activities. He explained the main components of the agriculture policy framework (APF) and how they reflect global drivers in agriculture. He pointed out that agriculture is part of the knowledge economy and there is a fundamental shift in how we look at agriculture and that we have to create a domestic structure to address the new challenges. He concluded that this workshop is the first step to start a dialogue on these issues on a continental basis.

Jim Moseley underlined the importance of cooperation in our agriculture practices identification of compatibilities and common directions. He agreed with Samy Watson that water is going to become a critical resource through the century and noticed that the US faces the same problems as Canada. He pointed out that agriculture must exist, but we need to find compromises in order to minimize its environmental impacts. He described the results of this recognition in US legislation, particularly related to the working lands, and the importance of further work as well as opportunities to serve the agriculture and food industry and citizens. He concluded with a reference to the US conservation programs that address improved cover, improved wildlife habitat, water quality, farmland retention, and carbon sequestration.

The discussions

A Canadian and a US presentation, followed by a short question period and a longer discussion session, introduced each of the workshop's topics.

1. How do we measure and monitor the impacts of agriculture on water quality?

The Canadian presentation reviewed the history of agro-environmental indicator (AEI) efforts and the indicators related to water quality. It discussed risk indicators and their function in integrated economic modeling approaches, showing the linkages to federal policy making through the agricultural policy framework and applications to BMPs and

provincial environmental targets. The presentation also discussed how the model should be improved and linked to other AEI models.

The US presentation reviewed the role of water quality monitoring and assessment efforts in implementing the Clean Water Act. It discussed the concept of total maximum daily load (TMDL) and its role in integrated watershed planning. It reviewed the results of a representative survey of impaired waters and the main sources of pollution. It also discussed future actions, including improved monitoring, better access to data and the use of water quality trading.

The first part of the discussion was focused on indicator selection and monitoring. The participants discussed the reasons why N and P are the central indicators in the suite of AEIs: mainly because these are the areas where good data exists (particularly for N in Canada and P in the US). They extensively discussed water quality monitoring issues and the need to link indicator systems to the monitoring system. Monitoring efforts are more advanced in the US than in Canada on the federal level. The role of the national water quality monitoring council in the US was explained. They noted that one of the obstacles in Canada is that provincial monitoring is not uniform and not consistent. They clarified the US concept of impaired water. They briefly discussed the possibilities of standardization and jointly defining an agricultural water index. They also discussed the similarities and complementarities in the modeling efforts and noted that Canada is more advanced in the theory and linking models with risk indicators. They noted that all models could probably be improved and prioritization for future work can be a good area for cooperation.

The second part of the discussion was focused on the issue of delivering programs and technological transfer to the people at ground level and the role of indicators for policy makers and grassroots/stakeholders. They agreed that this is an important area of future partnership, particularly in disseminating such US programs as the “know your watershed” program and the “sustainable water resources” roundtables. These programs are designed to include federal and state agencies as well as NGOs. The Mexican participant mentioned that small working groups are effective tools to bring stakeholders together. It was pointed out that to trigger change on the producer level it is important to identify and measure behavioral indicators and understand how farmers adopt certain management practices. They agreed that policy makers have to acknowledge and utilize “early adopters” in marketing their programs and they have to start thinking like a marketer.

It was pointed out that indicators can also contribute to regulatory purposes. The role of litigation and in environmental statutes in the US was explained. They discussed a need to address some of the social issues and identification of social-based indicators.

2. What are the impacts of agriculture on water quality?

The Canadian presentation reviewed water distribution in Canada, linking the distribution of precipitation to crop and cattle production. It described the impacts of agriculture on environment and water; identified priorities by issues and substances, such as pesticides, P and nitrates. The presentation discussed the relationship of nutrients and water, agricultural chemicals in ground water, and the health risks of N and P; it identified these issues as national science themes.

The US presentation discussed water impairments reported by states. It linked the results to further research and education needs. On the research side it discussed the relationship between watershed scale work and plot/field scale work and noted that results may show up on the watershed scale while not on the plot scale. The presentation described several research activities such as agricultural and economic research services and the need to link science based knowledge to the education of producers and other constituencies.

The discussion first concentrated on the policy-research interaction. While noting on the importance of a two-way feedback between scientists and policy makers, the participants pointed out the reluctance of some scientists to be involved in policy making. They noted that there is sometimes resistance to watershed-scale research. They agreed that there is a need to have information that makes sense not only to policymakers but also to the agricultural community. They quoted examples from Canada and the US for conflicting policy goals, such as the desire for reduction of grazing on riparian areas versus taxation disincentive to maintain green cover. A "portfolio" approach to conservation programs identified as a program and coordination tool for private lands.

Part of the discussion focused on extension services and how to influence urban consumer behavior. Reducing the budget of extension makes it difficult to educate urbanites on changing behavior and reduce the contribution of urban centers to water pollution. US participants provided information on the work exploring biotechnology to experiment with crops that use less water. They noted that the research is running up against the reluctance of international markets to trade GE crops. The discussion addressed the use of water quality guidelines, the US EPA's role in setting numerical targets and how these are linked to BMPs, and how they can be enforced and what are the obstacles to achieving the goals. It was mentioned that in Canada the development of standards (task of EC) and linking them to BMPs (developed by AAFC) should be an iterative process.

The participants identified the sharing of research priorities and information as a means of collaboration. They emphasized that the watershed level might be the best start to collaborate, particularly forming a standardized way how to approach watershed issues.

3. What are the on-farm practices that are used to reduce the impacts of agriculture on water quality?

The Canadian presentation gave a summary of the key areas of the APF and their linkages to other initiatives. It described the National Farm Stewardship Program and gave details of the following BMP: EFP; NMP with special emphasis on improved manure application, treatment, storage and handling; run-off controls; product and waste management; riparian area management; erosion control; conservation tillage and direct seeding; improved pest management. The presentation discussed the role of these practices in conservation.

The first US presentation, given by a producer, focused on farm practices. It emphasized the close relationship between water and soil quality and described conservation tillage and direct seeding as a "giant leap forward" that must be considered the most important technique towards resource sustainability. It dispelled rumours that low or no-till requires increased technology; they have been in place for over 30 years and their result is excellent soil quality, confirmed by researchers, and improved infiltration rates. The presenter raised the question why farmers do not make farm plans on a broader scale. Further, he pointed out the challenge to public policy to reward farmers for conservation practices that cost farmers money (i.e. wetland development).

The second US presentation gave an overview of the US Natural Resource Conservation Service programs that is considered a coordination model for federal activities. It listed primary conservation programs linked to stewardship and rewarding behaviour as a means to encourage future participation. The presentation described the technical guides and the toolkits to the programs. It mentioned the priority needs to increase BMPs and referred to the cost involved. It described the potentials for enhancing future conservation practices.

Answering the questions raised after the Canadian presentation, a clarification was made on the relationship between known practices and emerging technologies in areas such as manure digesters, methane production and nutrient management plans (NMPs).

A large part of the discussion focused on BMPs. There are confidentiality restrictions on obtaining more and better economic information on their impact on the individual farm level. The participants observed that any policy that promotes production might be counterproductive to conservation programs. Research on economic systems and practices on the farm level and the interpretation of general statistics on BMPs was mentioned as a potential area of collaboration. Another area is sharing information on which practices are being used and why. There is an expectation that the new US conservation bill will reward those who use good practices on the land and the public will be able to see the beneficial results as direct measure of funds spent. The participants agreed that the lens through which programs are viewed still carry stereotypes, focussing on the individual farm unit instead of broadening to a larger unit – i.e. a watershed, farming "district", etc. Canadian efforts on "third party delivery" to increase capacity of farm groups to deliver programs and the role of facilitators hired by producer groups

were described. It was noted that this movement is still away from extension but technical specialists can help farmers with specific issues. The importance of reaching attracting children to conservation programs to keep the parents honest and to different demographical groups to change behaviour and of experimenting with different options was mentioned. In Mexico farm level knowledge on water quality and availability is improving since President Fox has identified them as major issues. The world water forum will be held in Mexico in 2006. This might be a good forum to showcase joint North American work on water and agriculture issues or projects.

4. What can governments do to help reduce the impacts of agriculture on water quality?

The Canadian presentation outlined the relationship between public expectation and government responsibilities in Canadian water policy and agriculture related water quality issues. It referred to the shared jurisdictional federal-provincial approach and common objectives in addressing water related issues in the APF. It described several environmental agricultural programs, including EFP, GreenCover, NAHARP and NLWIS. The presentation was concluded by listing common trilateral goals, such as the exploration of economic and policy instruments for water quality management; sharing experiences with multi-stakeholder partnerships aimed at improving water quality; sharing experiences in the development of scientific knowledge and decision support systems; and examining opportunities for collaboration to improve knowledge and improve management of shared water resources.

The US presentation gave a general characterization of agricultural pollution and an overview of policy instruments to deal with the problems, including technology-based programs, performance based policies and instruments; it referred to several options for designing policies. It also discussed how to measure damages and what agri-environmental indicators are used. It emphasized the role of education and research, and underlined the importance of adaptive management: a combination of assessment and adjustment.

The discussion focused on two major topics: the role of market based incentives and the watershed approach. The participants discussed the US experience with market based incentives to promote agriculture conservation policies where point sources regulation to reduce emissions is used to encourage farmers to put in place practices to reduce non-point source emissions (regulatory on point side, voluntary on non-point side). It was noted that while water quality trading is at its infancy, but this is a potential opportunity for the use of market-based incentives.

The participants discussed the feasibility of developing watershed indexes. They agreed that such indices could be useful for tracking what is happening in the watershed, but less so for inducing economic incentives. A watershed index would reflect the summary of many landowners' activities; it would be difficult to provide signals to individual activities. The watershed index is probably an effective way to track programs, but it is probably not a good way to provide feedback to individual producers and ranchers. The

example of the New York City watershed program was given. Farmers and forest landowners worked together to supply fresh water to the NYC watershed, so that the city did not have to build a new water treatment plant. It was a tremendously successful project, but there was no individual attribution. Watershed indices could be a good area for collaboration.

5. What can our farmer organizations do to help reduce the impacts of agriculture on water quality?

A representative of a Canadian producers association and a rancher representing a watershed group in Alberta gave a presentation on how to build stewardship. The producers' organization, Cows and Fish, developed a program for community-based action. Its process elements, its broad partnership and its results were illustrated by the work done at the Waldron Ranch Riparian Pasture. The rancher, leader of the Beaver Creek Watershed Group provided information on the watershed, its recent problems and the partnering that led to the formation of the watershed group. He analysed the results of the project and referred to the challenges the group will face.

The US farmer, shared his experiences of the 1985 Farm Bill and his expectations from the current Farm Bill and CSP. In his view, producers have a duty to use technology to farm as effectively and sustainability as possible. However, one of the challenges of public policy is to ensure that policy rewards stewardship. The 1985 Farm Bill provided a negative example of how not to implement policies in practice: it tried to tell farmers how to do things instead of providing incentives, and did not change behavior or ethics. There has to be economic reasons for the farmers to change practice. The Conservation Stewardship Program is meant to reward the good stewards for past and present achievement. A conservation approach vs. a commodity approach will hopefully result in a win-win for both producers and public. The producer that is doing everything right will get more than financial results – pride, recognition, increased competitiveness, and something that is marketable. As a good example, Australia's LandCare program, a non-regulatory way to induce responsibility and raise awareness for conservation was reviewed.

The participants observed that the ranchers' watershed group is in fact the application of the Australian LandCare model. The discussion focused on how such models could work everywhere and how it is possible to maintain them for the long term. It was pointed out that the existence of watershed groups involving farmers, local communities, and other stakeholders is very important to address evolving issues

As an invited guest speaker, Sgnr. Roberto Pieretti, President of the Confederation of American Associations for the Production of Sustainable Agriculture (CAAPAS) presented the no-till experience in Argentina and its linkage to water, soil and agro-environmental improvement. The speaker, referring to the growing demand for food as an ongoing driver, pointed out that most of the attempt to match the demand for intensification has been through conventional tillage and this has come with a significant

environmental cost. He gave examples for on-site and off-site negative impacts. The speaker suggested that environmental improvements can result from less use of large machinery and stopping the use of fire in agriculture. The solution is no-till practice based on strong farmer involvement. He introduced CAAPAS, a continental umbrella organization and a permanent discussion forum that was founded 11 years ago on the realization that they had to undertake immediate paradigm changes to yield positive results. CAAPAS promotes a conciliatory approach which addresses and balances short and mid/long-term needs. It promotes interaction with farmers from other countries and latitudes. It helps share experience in: soil management, crop residues to prevent erosion and increase soil organic matter, crop rotation, IPM (significantly reducing the use of agricultural chemicals), water management, crop residues to increase infiltration, and improve water use efficiency.

CAAPAS helped farmers achieve getting "more by the same" or even "more by less", and it is resulting in cleaner and more environmentally friendly agriculture; helped reducing the annual use of pesticides; wildlife is returning to the crops.
In conclusion the speaker pointed out that the main barriers to broad no-till adoption are cultural prejudices and no-till and other conservation practices work on both small and large-scale farms, because the principles are universal.

Conclusions

The sixth, and final, workshop topic was a discussion with the Deputy Ministers after they had been briefed on the workshop discussions. The briefing notes were based on a summary presented to all workshop participants.

6. What can our three countries do together to help reduce the impacts of agriculture on water quality?

The Deputy Ministers acknowledged the great sense of shared views and shared desire to find solutions. They assured the participants that they were determined to foster collaborative processes and encouraged the participants to identify a few important and manageable immediate areas for cooperation. As a result, the following specific opportunities for follow-up were identified:

Potential areas of cooperation emerging from the meeting include:

Research and Information:

- Coordination of research results from north-south activities
- Joint research initiatives using a watershed-based approach

Examples

- Coordination of U.S. water quality research in the Great Plains region with Canadian Prairies research
- Develop a nutrient management model to be used at the farm level (i.e. a PC based program to be used by farmers) to help them determine the best mix of practices to reduce their overall impacts. This would allow them to do their own benefit/cost analyses of BMPs. Development of this model would complement Canada's larger scale modeling effort. Field officers would supply technical guidance in use of model

Policy Instruments:

- Exploring alternative methods and approaches in the area of economic incentives, education, research and performance based standards.

Examples:

- Conduct an inventory and comparative analysis of environmental indicators for water quality. Especially important to find indicators that can be used to reflect complex systems
- Future joint symposium on research to evaluate the effectiveness of conservation practices on water quality.

Program Delivery:

- Examining each other's approaches and reviewing the types of practices to ensure they are aligned with sustainable management and garner the greatest opportunities for behavior change.
- Explore capacity building opportunities with community-based models.

Examples:

- Comparison between countries of on-farm/ranch conservation (environmental) planning processes and their supporting technical tools. It is likely each country has certain strengths in its processes that could be shared with the other countries. For example, there could be a tri-lateral workshop regarding on-farm conservation (environmental) planning where the countries would share in-depth information about their respective processes, technical tools, and effectiveness/outcome evaluation methodologies. A desired outcome of the workshop could be to look for opportunities to achieve mutual enhancement of these critical on-farm, producer-led processes. Such a workshop should involve farmers and ranchers, technical service providers, and agency representatives who have expertise and experience with successful conservation (environmental) planning and joint meetings on re-tooling the extension effort in water quality to emphasize urban and rural/agricultural water quality issues
- Each country can alternately host Tri-National Water Quality Meetings.
- Identify a watershed that borders both Canada and the U.S. and potentially the U.S. and Mexico, where we could work together on the ground to implement BMPs, share common tools and indicators, and explore opportunities for cross-boundary on the ground partnerships such as community-based watershed work,

e.g. landcare groups, watershed councils, and/or cows and fish citizen and stakeholder participatory mechanisms

- Inventory and compare BMPs between countries to learn what has been successfully adopted for use and could have broader applicability for transfer across borders from one country to another.

Follow-up activities

The deputies agreed that, as the next step, designated persons from AAFC and USDA would draft a follow-up letter that indicates next steps and assignments.

Attachment: Participants List

List of Participants and Contact Information for Tri-lateral Workshop Participants

Name	Presentation	Organization	Title	E-mail	Phone
C A N A D A					
Samy Watson	Opening remarks Session F: "What can our three countries do together to help reduce the impacts of agriculture on water quality?" Tour	AAFC	Deputy Minister		
Bruce Archibald	Tour/Observer	AAFC	Assistant Deputy Minister		
Carl Neggers	Chair of Workshop	AAFC	Director General, Prairie Farm Rehabilitation Administration	neggersc@agr.gc.ca	(306) 780-5081
Alan J. Cessna	Session A: “How do we measure and monitor the impacts of agriculture on water quality?”	AAFC	Research Scientist, Environmental Health Section, Innovation Team, Research Branch	cessnaa@agr.gc.ca	(306) 975-5768
Bruce Junkins	Session A: “How do we measure and monitor the impacts of agriculture on water quality?”	AAFC	Project Leader, Integrated Model Development and Analysis	junkibr@agr.gc.ca	(613) 759-1757
Rick Butts	Session B: “What are the impacts of agriculture on water quality?”	AAFC	Science Director, Water and Nutrients, Environmental Health National Program	butts@agr.gc.ca	(504) 452-4802
Glen Shaw	Session C: “What are the on-farm practices that we use to reduce the impacts of agriculture on water quality?”	AAFC	Program Lead for the National Farm Stewardship Program (NFSP)	shawga@agr.gc.ca	(306) 975-4130
Michele Brenning	Session D: “What can Governments do to help reduce the impacts of agriculture on water quality?”	AAFC	Director, Environment Bureau	brenningm@agr.gc.ca	(613) 759-7308

Norine Ambrose	Session E: “What can our Farmer Organizations do to help reduce the impacts on agriculture on water quality?”	Cows & Fish	Program Manager, Alberta Riparian Habitat Management Program	nambrose@telusplanet.net	(403) 381-5538
Dixon Hammond	Session E: “What can our Farmer Organizations do to help reduce the impacts of agriculture on water quality?”	Cairnstone Feedyards	Private Rancher	lxbarranch@hotmail.com	(403) 627-2801
Doug McKell	Observer	Soil Conservation Council of Canada	Executive Director	info@soilcc.ca	(306) 695-3709
Tim J. Marta	Organizer/Observer	AAFC	Senior Environmental Policy Analyst, Environment Team	martati@agr.gc.ca	(613) 759-6076
Louise Bissonnette	Organizer/Observer	AAFC	Environmental Policy Analyst, Environment Team	bissonnettel@agr.gc.ca	(613) 759-7304
Patricia Story	Observer/Rapporteur	AAFC	Environmental Policy Analyst	storyp@agr.gc.ca	(613) 715-5142
Patrick Cherneski	Observer/Rapporteur	AAFC	Senior Policy Analyst	cherneskip@agr.gc.ca	(306) 780-3133
Peggy Burleigh	Administrative Assistance	AAFC	Administrative Assistant, Environment Team	burleighp@agr.gc.ca	(613) 759-7312
UNITED STATES					
Jim Moseley	Opening remarks Session F: "What can our three countries do together to help reduce the impacts of agriculture on water quality?" Tour	USDA	Deputy Secretary of Agriculture		
Shiela Trolinger	Tour/Observer	USDA	Executive Assistant		
Jean-Mari Peltier	Session A: “Water Quality Monitoring: The Role of the Clean Water Act.”	US EPA	Counselor to the Administrator for Agricultural Policy at the U.S.	peltier.jean-mari@epa.gov	(202) 564-7960

Michael P. O'Neill	Session B: "What are the impacts of agriculture on water quality?"	USDA	Cooperative State Research, Education, and Extension Service	moneill@reeusda.gov	(202) 205-5952
Tom Christensen	Session C: "What are the on-farm practices that we use to reduce the impacts of agriculture on water quality?"	Natural Resources Conservation Service (NRCS) USDA	Director, Animal Husbandry and Clean Water Programs Division	thomas.christensen@ usda.gov	(202) 720-1845
Marc Ribaudo	Session D: "What can Governments do to help reduce the impacts of agriculture on water quality?"	USDA	Agricultural Economist Resource and Environmental Policy Branch, Economic Research Service	mribaudo@ers.usda.gov	(202) 694-5488
William J. Richards	Session E: "Farm Practices in the U.S."	Agri-Business Consultants, Inc	President	wjr1066@aol.com	(740) 474-3602
Kenneth Hinga	Observer/Rapporteur	USDA	Foreign Relations Advisor	kenneth.hinga@fas.usda. gov	(202) 720-9836
Adela Backiel	Observer/Participant	USDA	Director of Sustainable Development	adela.backel@usda.gov	(202) 720-2456
M E X I C O					
Lisette Lòpez-González	Observer/Participant	SAGARPA	Minister for Agricultural Affairs Embassy of Mexico in Canada	mexagri@storm.ca	(613) 563-0733
INTERNATIONAL ORGANIZATIONS					
Timothy Whitehouse	Observer	Commission for Environmental Cooperation	Head, Environmental Law and Policy Program	twhitehouse@ccemtl.org	(514) 350-4334
Gertjan Beekman	Observer	Inter-American Institute for Cooperation on Agriculture	Program Coordinator	beekman@iica.org.br	(55-61) 248-5477

Roberto Peiretti	Invited Keynote Speaker Session E: “CAAPAS and the No-Till Experience in Argentina”	American Confederation of Farmers Associations for Sustainable Agriculture (CAAPAS)	President	sdrob@idi.com.ar	(54-341) 426-0745
László Pintér	Facilitator	International Institute for Sustainable Development	Director, Measurement & Indicators	lpinter@iisd.ca	(204) 958-7715
Peter Hardi	Facilitator & Background papers	International Institute for Sustainable Development	Senior Fellow	phardi@iisd.ca	(204) 958-7731