



Agriculture and
Agri-Food Canada

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Canada

The National Land and Water Information Service

Agriculture & Agri-Food Canada (Pacific Agri-Food Research Centre) Cooperators Report

2006 West Region Soil Survey & Western Soil
Science Conference, Park City, Utah

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June 19, 2006





Agriculture & Agri-Food Canada (AAFC) Pacific Agri-Food Research Centre (PARC)

- 1 of 19 Research Centres comprising the Research Branch of AAFC
- 2 facilities located at Summerland and Agassiz, British Columbia.
- Soils research supports Environment Chapter of the Agricultural Policy Framework Program with goals:
 - Achieving meaningful and measurable improvements in soil, water, air quality and the industry's impact on biodiversity;
 - Researching and developing new on-farm beneficial management practices, and
 - Making environmental information available for better land use planning and management.



The Professional Personnel

- **2 main areas of focus related to soils**

1. Soil Quality

- Scott Smith (Summerland) & Elizabeth Kenney (Agassiz) - Land Resources

2. Water & Nutrients (Agassiz)

- Dr. Grant Kowalenko - Soil Biochemistry & Fertility
- Dr. Shabtai Bittman - Cropping Systems & Nutrient Management
- Dr. Tom Forge - Soil Ecology & Nematology



Contributions to British Columbia (BC) Soil Survey & Soil Survey Information by PARC

- Brief History Soil Survey in BC
 - Jointly done by AAFC Land Resource Centre & Provincial Environment & Agricultural Department employees
 - Government funding of new soil survey activity in BC discontinued ~ 1990
 - ~ 1990 Version 1 Soil Landscapes of Canada BC section jointly authored by provincial and federal soil surveyors
 - Recently main focus on making soil survey reports and data digitally available



Current Tradition Soil Survey Information Activity

- AAFC traditional soil survey activities now part of NLWIS
- National Land and Water Information Service (NLWIS)
 - This four-year project, which began in May 2005, is developing an Internet portal to provide land managers with information, data, tools and expertise to help them make sustainable land-use decisions. The first phase of the service will use web-based Geographic Information System or GIS technologies.
- PARC has 3 employees assigned to NLWIS
 - Scott Smith (Summerland) Manager of the Soils Data Outcome Project
 - Grace Frank (Summerland) GIS Specialist
 - Elizabeth Kenney (Agassiz) Land Resource Officer



Examples of Soil Survey Related Projects

- The PARC viticulture group provided soil information to owners of vineyards in the Okanagan and Similkameen Valleys.
 - The provincial soil information associated with the soils map was updated in the field by a consulting soils specialist. The soil data was mapped together with the vineyard grape variety information. A plot was given to each grower.
- Contribution to the Soil Landscapes of Canada SLC v3.0
 - the latest revision of the SLC, developed by AAFC
 - to provide information about the country's agricultural soils at the regional and national levels.
 - provides new soils information at a scale of 1:1 million for the major agricultural regions of Canada.



2005 Fraser Valley Soil Nutrient Study

- Multi-agency project lead by Orlando Schmidt, BCMAL - Abbotsford
- Collected traditional nutrient samples to determine soil N, P, K status in the Fraser Valley - Dr. Grant Kowalenko – AAFC Agassiz
- Collected pedological data - Elizabeth Kenney – AAFC Agassiz
 - in support of project and for the National Pedon Data base
 - included brief description and photos for 162 pits
 - detailed pedon descriptions of 29 representative pits (including photos)
 - soil horizons sampled (including bulk density, AWSC, soil structure and texture) 153 samples



2005 Fraser Valley Soil Nutrient Study continued

- Collect samples as part of assessment of:
 - soil bacteria & nematode biodiversity as indicators of soil fertility and health – Dr. Tom Forge – AAFC Agassiz
 - antibiotic residues and presence of anti-microbial resistant microbes – Dr's. Merv Wetzstein & Nancy Dewith – BCMAL Abbotsford



Example of Soils Research Conducted at PARC

- Farm No Till Trials - Dr. Shabtai Bittman – AAFC Agassiz
- Objectives
 - compare on farm production across a range of soil types of No Till vs. Conventional Tillage (generally plow and disk)
 - samples taken for soil NH_4 , NO_3 , Total N and soil P under corn silage production.
 - could plot sample locations on soil map for determination of soil types
 - some of the samples were analyzed for soil texture



AAFC PARC Soil Survey Collaborators

- BC Ministry of Environment (BC MoE)



- BC Ministry of Agriculture and Lands (BC MAL)





Soil Mapping – British Columbia

- BC Ministry of Environment is joint custodian with AAFC of BC soil information
- Currently, no active soil survey program in BC
- Active soil data management program
- Soil maps are available in GIS, raster and/or hard-copy formats
- Soil survey reports are available digitally
- To find soil mapping and information contact
 - **soilterrain@victoria1.gov.bc.ca**
 - visit: **<http://srmwww.gov.bc.ca/soils/>** (current)
 - or **<http://www.env.gov.bc.ca/soils/>** (future)



BC Ministry of Agriculture and Lands Soil Information Activities

- Other than the NPK study from 2005 and the proposal for another NPK study in the North Okanagan and/or Vancouver Island in 2007, not aware of any other soil survey activity in the agricultural areas of BC.
- There certainly is no "classic" pedological work being done.
- Soil nutrient information. There is little if any capture of this data, other than specific projects. At present other than a very high level discussion of the possibility of a long term project to collect some benchmark data there is no nutrient data collection by government.



BC Ministry of Agriculture and Lands Soil Information Activities continued

- Is home base for
 - The Integrated Land Management Bureau
 - provides services on behalf of the Ministry of Agriculture and Lands and other provincial ministries and agencies to clients seeking access to, and/or information about, the province's natural resources.
- The Integrated Land Management Bureau maintains
 - The Land and Resource Data Warehouse (LRDW)
 - the corporate repository for integrated land, resource and geographic data that supports a variety of business requirements for the natural resource sector, other government agencies, industry and the public.



Summary

- Active soil survey related activities in BC
 - Digital data capture of existing information by both federal and provincial agencies
 - Developing and testing new interpretations of soils information (NLWIS)
 - Research scientists at AAFC primarily conduct plot level research
 - Research plot sampling typically involve soil nutrient sampling strategies
 - Main soils-related work is on nutrient cycling, manure use, P utilization, ammonia and GHG emissions and some work on heavy metals.



Useful Web Pages for Soil Survey Information BC

- NLWIS the AAFC site: www.agr.gc.ca/nlwis-snite
- BC Ministry of Environment site: <http://srmwww.gov.bc.ca/soils/>
- BC Ministry of Agriculture & Lands land resource data warehouse
 - <http://www.lrdw.ca/>
- BC Ministry of Energy & Mines (maps)
 - <http://www.em.gov.bc.ca/Mining/Geolsurv/MapPlace/default.htm>
- Pacific Regional Society of Soil Science sells hardcopy soil survey reports
 - <http://www.prsss.ca/>
- Trafford Publishing on demand printing of BC soil survey reports
 - <http://www.trafford.com/>



Acknowledgements

- Grace Frank (AAFC Summerland) provided the details re: viticulture soils project
- Maija Finvers P. Geo. (Terrain Information Specialist BC MoE - Victoria) provided the slide re: BC Ministry of Environment activities.
- Geoff Hughes-Games PAg. (Provincial Soil Specialist/EFP Program Lead BC MAL- Abbotsford) provided details re: BC Ministry of Agriculture and Lands activities.

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