PACIFIC REGIONAL SOCIETY OF SOIL SCIENCE

FALL NEWSLETTER

November 3, 1989

In this issue we have reports from Y.P. Kalra of the Northern Forestry Centre in Edmonton on the First International Symposium on Soil Testing and Plant Analysis; Mike Novak (UBC Dept. of Soil Science) on Biometerological research at UBC; Theresa Duynstee (UBC Dept. of Soil Science) on the Soil and Water Conservation Society Annual Meeting; and Ron McNeil, a geography major at UBC and pedologist from Eckville, Alberta, on the International working Meeting on Soil Micromorphology and the Desert Project field trip.

Also included in this issue are announcements for the Canadian Society of Soil Science next summer in the Okanagan, the upcoming Soil Conservation Society's workshop in February, 1990, and a PRSSS evening lecture program on Organic Agriculture. This evening program will be held on Wednesday November 29 at 7:30 pm at the UBC Faculty Club. This should be a very interesting meeting and a good chance to renew acquaintances and contacts — hope to see many of you there!

Thank you to all contributors to this issue.

Bill Price and Chuck Bulmer,
Editors

ANNOUNCEMENTS

PRSSS Evening Lecture program
November 29, 1989, 7:30 pm, Music Room, UBC Faculty Club

Topic: Organic Agriculture

Five speakers have been chosen to provide both scientific and operational information of the growing field of organic agriculture. The first speaker will identify the scientific considerations involved with organic production. The second speaker will discuss possible future regulation and certification of organic products. the third and forth speakers will describe their experiences with market vegetable and orchard production using organic methods and the final speaker will discuss large-scale marketing of organic products.

This should be a very interesting evening focusing on a very timely topic. Let's make it a well attended meeting.

Canadian Soil Science Society Meetings AIC, July 22-26, 1990, Penticton, B.C.

A preliminary organizing meeting for the Canadian Soil Science Society activities at AIC 1990 was held at the Summerland Research Station on September 29, 1990.

At present the local organizing committee is structured as follows:

Field Tour - Herb Luttmerding 385-5262 (home)
Banquet - Al Dawson 764-7792 (home)
Scientific Program - D. Nielsen
- G. Nielsen — 494-7711 (work)
- D. Stevenson

Suggestions and volunteers are welcomed by the various committee members! A forest soils session is currently planned as part of the scientific program (contact R. Carter 228-3415 (work))

G. Nielsen, Chairman
Local CSSS Arrangements, AIC 1990

SOIL POLLUTION
13TH B.C. SOIL SCIENCE WORKSHOP

Sponsored by the Land Resource Science Lead Committee
February 15 and 16, 1990 University of British Columbia

The theme of the 13th B.C. Soil Science Workshop is SOIL POLLUTION — impact of contaminants on soil quality, land use and the environment.

There are growing concerns on the affects of toxic chemicals on the landscape. These are being raised by authorities in health, environment, agriculture, forestry, engineering, and geology and in the planning, legal and real estate professions. Soil specialists are increasingly examining these complex interactions — PCBs, asbestos, sewage sludge, leachates, pesticides, site remediation, legislation and regulations, and laboratory procedures. The workshop will be in four sessions.

1. Issues in waste management (Health, Agriculture, Forestry, Municipal, Mining, Environmental Impact);
2. Regulatory Activities;
3. Research and Case Studies; and,
4. Future Directions.

This notice is a call for papers and posters, particularly in the areas of soil research and case studies involving site investigation and remediation. If you or a colleague would like to present a paper or poster on this important topic, please contact:

Bob Louie, Workshop Chairman
Ministry of Environment
777 Broughton Street
Victoria, B.C. V8V 1X5
Phone (604) 356-7736
FAX (604) 356-7183 Deadline: Dec. 8, 1989

FIRST INTERNATIONAL SYMPOSIUM ON SOIL TESTING AND PLANT ANALYSIS
Fresno, California, USA, August 13-19, 1989

Y.P. Kalra, Northern Forestry Centre
Forestry Canada, 5320 - 122 Street, Edmonton, Alberta T6H 3S5

I was one of the approximately 200 persons who attended the First International Symposium on Soil Testing and Plant Analysis held in Fresno, California. About 20 countries were represented. There were seven delegates from Canada.

The objective of the Symposium was to bring together scientists from around the world for an exchange of research findings and practical information on the techniques of soil testing and plant analysis.

The program included plenary, poster, and training sessions and field trips. Six papers were presented in the plenary sessions (invited papers): History and development of soil testing (Dr. Ted Peck, University of Illinois); Advances in the use and application of plant analysis (Dr. Malcolm Sumner, University of Georgia); Advances in soil testing and plant analysis analytical technology (Dr. Bob Munter, University of Minnesota); Reliability from the laboratory (Dr. John Taylor, National Institute of Standards and Technology); Toxic elements and micronutrient analysis (Dr. Richard Burau, University of California); and Determining soil salinity from measurements of electrical conductivity (Dr. James Rhoades, U.S. Salinity Laboratory, Riverside). Poster sessions (voluntary papers) were presented in four groups: Soil testing methods and test comparisons; Plant analysis and tissue testing; Analytical technology and quality assurance; and Micronutrients, toxic elements and general fertilizer responses. A session was also held on computer software.

Training sessions were provided on 10 different topics: DRIS interpretation method; Quality control and assurance; ICP spectrometry; Flow injection analysis technique; Laboratory operations; Soil fertility assessment (computer); Sampling procedures - soil and plant; Plant analysis interpretation; Plant analysis - preparative and analysis (Kjeldahl, sulfur, etc.); and Heavy metals in soils and plants. I attended courses on laboratory operations (given by Dr. Ted Peck, University of Illinois) and plant analysis - preparative and analysis (given by Dr. J. Benton Jones, Jr., University of Georgia). Dr. Peck discussed ways to improve the quality and quantity of analyses performed in the soils laboratory. Dr. Jones discussed various digestion and analytical techniques. These courses were very interesting, informative and pertinent to the operation of our analytical services laboratory.

Three technical tours (the East Side Tour, the West Side Tour, and the Yosemite Tour), were offered. The West Side Tour included visits to the University of California's West Side Field Station research facility and a drive-by tour of the drainage problem area near Mendota. I took the East Side Tour and the Yosemite Tour. The East Side Tour began at the University of California Kearney Agricultural Centre where we viewed research projects on several crops, irrigation systems and salinity. Kearney is University of California's largest off-campus agricultural research facility. Staff from UC Davis, UC Berkeley,

and UC Riverside are permanently assigned to pursue research full time. More than 100 research projects are under way at any one time. The tour ended at the California State University, Fresno. Along the way between these two stops we saw various fruit crops, most of which were being harvested. The Yosemite Tour was interesting from the point of view of scenery and forestry. Yosemite National Park lies in central California on the western slope of the Sierra Nevada. One of the most picturesque spots was Yosemite Falls, which is the tallest fall in North America. Upper Yosemite Falls drops 1,430 feet in one staggering fall (down sheer granite cliffs) and the total drop between the crest of the Yosemite Falls to the valley floor is 2,425 feet. Tree species growing in this park include (from low to high elevations): oak, incense cedar, black oak, sugar pine, giant sequoia, red fir and Jeffery pine, lodgepole pine, quaking aspen, mountain hemlock, and whitebark pine.

Abstracts of the papers were made available at the Symposium. Full papers will be published in the first issue of the Communications in Soil Science and Plant Analysis in 1990.

The Symposium was organized by the Council on Soil Testing and Plant Analysis. The Organizing Committee is to be complimented for an excellent program. Further information on the Council can be obtained from me [Phone (403) 435-7210; FAX (403) 435-7359] or Dr. J. Benton Jones, Jr., Council on Soil Testing and Plant Analysis, Georgia University Station, P.O. Box 2007, Athens, GA 30612 -2007, USA [Phone (404) 542-0782; FAX (404) 548-4891].

July 1988 International Working Meeting on Soil Micromorphology — San Antonio, Texas and Desert Project field trip — Las Cruces, New Mexico.

The IWMSM'88 conference topic included micromorphological applications to agronomic and earth sciences and highlighted the integration of mineralogy and micromorphology within research and academia. the soil environments featured included arid lands, soil enriched in carbonates, gypsum and/or other salts, hydromorphic soils and cracking clayey soils. The latter group (Vertisol Order in the U.S.A. and F.A.O. systems) were also investigated in a one-day mid-conference tour of the south-central Texas plains. These soils have a high clay content (>40%) which is dominated by montmorillonite. Shrink-swell properties were observed at several pedons with slickensides, pressure faces and tilted wedge-shaped soil aggregates in evidence. The surface effects of shrink-swell were also apparent and exhibited the characteristic gilgai (microdepressions and microridges) relief.

I also attended a two-day post conference soil and geomorphology tour of the Desert project in Southern New Mexico. A 40 km^2 area in the basin and range setting of Las Cruces has been studied since 1957 and aided in formulating concepts of soil genesis in acid regions. Geomorphic surfaces range in age from approximately 2500 years (late Holocene) to 1.5 million years (early Pleistocene). A carbonate accumulation sequence ranging from a slightly to a strongly developed petrocalcic horizon was also featured. The inter-relationships of parent material, moisture regime topography, vegetation, and time upon pedogenesis were emphasized.

Approximately 170 participants from around the world attended the conference and about 35 partook in the Desert Project field trip. The next IWMSM conference is planned for Australia in 1992.

Ronald L. McNeil,
UBC Geography Major

Making Conservation Happen Together

Last July the Soil & Water Conservation Society held its 44th annual meeting in Edmonton. Only the second time in Canada (the first was in Toronto in 1970) the Alberta Chapter did a superb job in hosting this historical event. Of the 692 registrants, 456 were from the United States. It was very worthwhile not only to exchange ideas and information but also inspire a camaraderie for those who choose to work to sustain our soil and water resources.

The central theme was 'Making Conservation Happen Together' which allowed a diverse range of topics to be presented. The concurrent sessions hosted talks in water quality and agriculture, wind and water erosion, resource management, international issues and reclamation of disturbed lands. The Canadian content was strong, focusing mostly on Alberta which appears to have adequate economic resources for conservation. The keynote sessions introduced individuals in executive positions who stated their commitment to the environment. Along with the usual assortment of politicians, we had our beloved Senator Sparrow, an accomplished speaker, describe 'Soils at Risk'. Noel Brown, North American Director for the United Nations, illustrated the needs of sustainable development and introduced the new Canadian centre in Winnipeg. David Johnston, the Chairman for the National Round Tables on the Environment and the Economy, also had some interesting points. Water contributes to the economy in a range of 7.523 billion dollars a year. Although our abundant freshwater resources can cover Canadian soil to a depth of 2 meters, the quality is quickly being eroded through various pollution factors such as acid rain. Derek Doyle from the Department of Natural Resources in Manitoba, surpassed all other speakers with his lecture on strategies for Sustainable Development Growth Without Losing Ground.

What I really enjoyed the most was meeting others who shared my interest in soil and water conservation. When short term economic reality is the major limitation to conservation it is nice to know there are people out there with long term goals.

Theresa Duynstee
Student Rep.
B. C. Chapter, SWCS

Biometeorological Activities: 1988–89

Department of Soil Science
University of British Columbia

October 1989

FRDA Southern Interior Project

Intensive micrometeorological monitoring of the 3 clearcut sites continued during the growing season of 1989. The major objective of the study is to test the effects of various silvicultural treatments designed to improve the establishment and growth of tree seedlings in backlog areas of the Southern Interior. The experiment to determine the "edge effects", both within the atmosphere and the soil, at a boundary between a bare surface and a grassed area was repeated in greater detail in 1989. Measurements were made of the soil thermal and moisture regimes, surface energy balance components, and seedling status near such an edge. This work is the Ph.D. research of Mr. Rob Fleming. In addition, wind and temperature profile measurements were made above and within the native pine grass surface during the daytime and at night. Frost damage on clear nights appears to play a significant role in seedling survival. Mr. Ralph Adams will be reporting the results of detailed energy balance studies of the native grass surface in his M.Sc. thesis, nearing completion. *Other Personnel:* Dr. Andy Black (principle investigator), Dr. Michael Novak (co-investigator), Norm Eldridge (technician), Maureen Scott and Isobel Simpson (summer students).

Vancouver Island Deer Habitat Project

The object of this project is to determine the influence of forest cover on the microclimate of black-tailed deer on Vancouver Island. Measurements of windspeed and turbulence, temperature and humidity, and the surface radiation and energy balance components were made in old growth and second-growth forests. Reference measurements were made in clearings located close to the forest sites. Measurements of heat transfer coefficients from a realistic model deer were also made at the forest sites. The model deer was constructed from styrofoam sculpted to the shape of a deer and wrapped with high resistance wire about the torso. *Personnel:* Drs. Andy Black and Fred Bunnell (co-investigators), Dr. Jing Ming Chen (post-doctoral fellow), Bob Sagar and Xuhui Lee (Ph.D. candidates), Rick Ketler and Joseph Frimpong (technicians).

Analytical Theory Predicting Soil and Atmosphere Thermal and Moisture Regimes

The analytical theory developed in the last few years by M. Novak was tested using the 66 days of data collected at Agassiz, B.C., in the spring of 1978. Previously the theory had only been tested over 24-hour periods. It was found that although the surface energy balance components and temperature were predicted well, there were significant differences at depth. This was attributed to the aperiodic increase in temperature that occurred due to the "annual wave". To overcome this effect the theory was extended to include transient effects in an approximate manner. As well, two manuscripts are in press showing how the theory can be applied to describing local advection and the microclimate effects of desertification. A full nonlinear "mixed-layer" model has also been developed and is currently being tested with data from Agassiz and Pampa de La Joya, Peru.