



EDITORIAL

In preparing this issue, articles were solicited from a wide variety of sources. Prospective contributors were asked to write about what they do, what they enjoy about being a soil scientist, and to suggest improvements that would permit them to be more effective. The resulting submissions are hopefully thought-provoking and will encourage other members to contribute their ideas. The deadline for the next issue is tentatively set for September 1st. Anyone interested in, soliciting articles about their area of interest or from their geographical area is encouraged to contact us. The editors will be happy to deputise you.

Good news for the newsletter is the acquisition of Helen Fyles as an editor. This doubles the size of the editorial staff. For those of you who don't know her, Helen is an alumna of UBC Soil Science and a recent M.Sc. graduate from the Dept. of Soil Science at the University of Alberta. She is presently working on a research project in the Faculty of Forestry at UBC, studying the effect of slashburning on nitrogen dynamics in forest soils.

Lastly for those who haven't paid this year's dues, the cost is a bargain at \$5.

Bill Price

OPEN LETTER WRITTEN ON BEHALF OF THE SOCIETY

Mr. Jim Bullen, Director
Integrated Resources Branch
B.C. Ministry of Forest and Lands
1450 Government Street
Victoria, B.C. V8W 3E7

May 26, 1987

Dear Mr. Bullen:

It is with some interest that the Pacific Regional Soil Science Society has noted the recent creation of the Integrated Resources Branch within the Ministry of Forests and Lands. We, among others, have recognized the complexities of the management of our forested land base in British Columbia, and we are encouraged by the Ministry's recent initiative.

As you can tell from the name of our society, we are interested in soils and soil management and we are concerned about the long-term productivity of B.C. soils. Forest soils too often do not receive due consideration in forestry and integrated resource management. There is no denying the importance of issues such as fish-forestry interactions, wildlife habitat quality and quantity, domestic watershed concerns, forest recreation needs, environmental impacts of forestry practices, and forest productivity, but we feel that there must be some recognition that most, if not all, of the decisions related to these issues affect soils directly. The success of integrated resource management plans and programs is very often dependent upon soils considerations.

We respectfully request that:

- 1.) within the terms of reference for the Integrated Resources Branch, forest and range soils be identified as 'resources';
- 2.) soil conservation and the maintenance or enhancement of soil productivity be included in the Branch's objectives; and
- 3.) the Integrated Resources Branch attempts to elevate, within the Ministry of Forests and Lands, the profile of the issue of forest and range soil degradation, and promotes the increased allocation of research funds to studies of the prevention and/or rehabilitation of soil degradation.

The Ministry has, through the development and implementation of the biogeoclimatic ecosystem classification system, the research work undertaken by the regional research pedologists, and sponsorship of and participation in B.C. Soil Science Workshops, taken a lead role in responsible management of our forest and range soil resources in B.C. With ever-increasing demands on our forest and range resources and on the funds and personnel to manage these resources, there is some concern that this lead role will be difficult to maintain, that soils-related issues will be deemed lower priority than other, perhaps more topical, integrated resource issues. We encourage your Branch to create a higher profile for soils and soil management issues, to support the efforts of the Ministry's regional research pedologists and Research Branch, and to foster a responsible land management ethic throughout the forestry community.

Thank you for your attention and consideration. We wish you success with the new Integrated Resources Branch.

Sincerely,

Dan Lousier

J. Daniel Lousier, Ph.D., P.Ag.
President

THE DEPARTMENT OF SOIL SCIENCE, THE UNIVERSITY OF BRITISH COLUMBIA:
A PERSPECTIVE

By: Dr. L.M. Lavkulich, Chairman, Soil Science Dept., U.B.C.

The Department of Soil Science was established by the University of British Columbia in the academic year 1954-55.

In the President's report of 1954-55 the following statement appeared:

"The Department of Soil Science was also established this year. Its program of teaching and research is intended to satisfy the needs of teaching and research in Forestry, Geology, Geography, Biology as well as Agriculture."

Dr. D.G. Laird was professor and Head for the first year; he was succeeded by Dr. C.A. Rowles, who was Head until he retired in 1980. When the Department was formed there were three faculty positions, two Professors and one part-time lecturer. Today there are ten full-time faculty members.

Over the years the Department has made every effort to fulfill the mandate given to it by the University. This is expressed by having jointly listed courses in Biology, Geography and Forestry and the offering of a course in Quaternary and Applied Geomorphology.

Where do we go from here? Historically, the graduates of the Department went largely into some sort of soil survey, usually into federal or provincial units and, to a lesser extent, into the private sector. Times have changed and soil survey, as we knew it, is not very active. At the B.Sc. (Agr.) level most of the opportunities are in areas related to forestry and in the general area of land degradation. In my opinion, the working professional level for soil scientists is the graduate with a M.Sc. I believe there will continue to be a demand for M.Sc. graduates in the general area of solving problems associated with land degradation. A more limited demand will be in the area of land reclamation, as we move towards identifying issues and proposing solutions, rather than the current cosmetic approach to land reclamation. I also believe that more of the Department's graduates will go to the private sector, either as specialist employees or private consultants.

From my conversations with recent graduates (both B.Sc. (Agr.) and M.Sc.) they tell me that they are expected to be versatile in their jobs and to be able to handle divergent requests. One area that appears to need more emphasis is communications skills, both oral and writing.

I believe the future looks bright for our students now that federal and provincial agencies are taking soil conservation in the broadest sense more seriously and are putting money into soil conservation schemes.

I also believe that there are exciting times ahead at the Ph.D. level in the areas of soil biology, biometeorology, soil chemistry, land evaluation and soil physics. I do not see the same for soil classification, soil mineralogy or even soil fertility. Soil biology should be a rapidly growing field in

that so little research has been conducted in this area in Canada and, indeed, North America. This area, along with soil biochemistry and chemistry are also exciting in that there is continuing concern being expressed over the additions of pesticides to the soil system. Biometeorology is a growing area of interest as agriculture and forestry become more intensive and as forestry becomes more interested in forest site management. As with the others I have cited, land evaluation, from remote sensing to digital terrain models, is a truly high technology area! Soil physics in my estimation has fallen behind some of the other disciplines in Soil Science. With the need for better information on irrigation, drainage, ponding and compaction, this area should expand.

Over the past few years, the demand for soil scientists in British Columbia has not been great. We have exported some of our best graduates. I am an optimist and feel that we have "bottomed-out" and are moving toward a brighter future.

LAND RESOURCE PROGRAMS IN BRITISH COLUMBIA

Dave Moon, Vancouver, B.C.

Land resource programs have been reduced in recent years and they also appear to have lost both status and credibility. This is probably the result of more than just government restraint. The situation is acutely demonstrated by the land resource inventory and research programs in agriculture. Nearly all of the agricultural land in British Columbia has been surveyed and there is a perception, among some government and funding agencies that we know all we need to know about soils, their influence on crop production, and the maintenance of soil quality. It is, therefore, time to stop doing inventory and research and time to start applying what we already know. Suggestions that we need more inventory or research are viewed with skepticism. I do not agree with this view but it is understandable. It is firmly rooted in our own past claims and performance.

How did we get here?

During the period of major survey programs in B.C., one of the selling features of a soil survey program was that, unlike vegetation or land use, soils were relatively permanent and unchanging. We believed, and told our client, that soil surveys were to be a one time investment. The general purpose survey, which was based on a "natural" taxonomy, would answer a wide array of questions for a large number of users. Furthermore, the most significant cost in data gathering was getting to the collection site, not the

actual collection of data on site. It was most cost effective, therefore, to collect as much information as possible at each site. The computer, God's gift to rational man, would solve the problem of storing, retrieving and managing this mountain of data and would place it at the finger tips of anyone who wanted to use it. We would be able to conduct one-time surveys that would collect and store the information necessary to answer a wide range of land resource related questions at the scale of the survey.

The belief was, perhaps, understandable. Hans Jenny had, in 1941, formulated the underlying mechanism of soil formation and, as Jack Major realized in 1954, ecosystem formation and function as well. Jenny and Major had given us the foundation of our discipline, the basic ecological truth on which our subsequent work would rest. Soils and vegetation, they told us, are a function of climate, relief, parent material, organisms, and time. A change in any one of these factors would produce a different system. We now had a model which, together with the concepts of vegetation succession (Clements, 1916) and zonality (Dokuchaiev, 1894), explained the world as we saw it. The world at last made sense. The assumptions were too pure, too elegant to require testing. To suggest that we needed to do so was tant amount to heresy. Inventory (soil, biophysical, and ecological) had ceased to be an application of science and had become an act of faith.

And computers? They had landed men on the moon, they were drawing maps, they could, the gurus of the newest religion told us, do virtually anything. Perhaps we can be forgiven for believing the new disciples. We did not understand the litany of relational data base management systems, recursive algorithms, concatenation, and user friendly system interfaces. But surely, if we could understand the function of the ecosystem, they could store and retrieve it. Besides the acronym GIGO (Garbage In, Garbage Out) could not possibly apply to us.

How did we do?

Was the faith justified? Have the computers delivered?

All significant agricultural lands and most forested lands have been inventoried at scales ranging from 1:15 000 to 1:250 000. The big impetus for inventory came from the Canada Land Inventory program, the B.C. Land Inventory program, and later, the Agriculture Land Reserve act. Despite our belief in the inherent superiority of inventories based on "natural taxonomies", we made sure that first we answered the question of land capability for forestry and agriculture. We did that job and we did it well. Why then should anyone doubt our claims about the one-time, general purpose land resource inventory with data at our fingertips? Unfortunately, when asked other questions today, we discover, that not only is key land information missing but, that information on soil, vegetation, and landform is rarely enough to answer more than a small part of many of the questions we are asked today.

Although not yet tested, where the scale is appropriate and the data is available, survey reliability for small and intermediate scale inventories is probably appropriate to regional planning or evaluation. However, studies on recent SIL 2 (semi-detailed, 1:20 K) inventories indicate that, while adequate for regional planning, the error rates on individual delineations are significant for both thematic information and for ground location accuracy.

As with the reconnaissance level inventories, the primary objective of these SIL 2 inventories was well met. However, the levels of thematic error and ground location accuracy preclude the reliable interpretation of individual map delineations for agriculture capability subclass ratings or other more detailed interpretations. In addition, these recently completed SIL 2 inventories also show significant data gaps for many applications.

And the computers? They are still drawing maps. CanSIS has been operationally producing interpretive maps for 8 or 10 years and CAPAMP for two or three years. But, the data bases are still not clean, the soils community still does not have ready access to either the CanSIS or B.C.SIS data bases, and CanSIS and B.C.SIS are still unable to exchange data.

In summary, we did what we were asked to do. We answered questions related to land capability for agriculture and forestry. We answered a number of other general questions on a regional basis as well, and we have made great strides in computer applications. We did not, however, deliver the promised one-time only survey with our data at the fingertips of whoever wanted it. We already know that we cannot predict soil erosion, even from our most recent data bases, even on a regional basis. We also know that our expectations of accuracy and precision for semi-detailed surveys were not met.

Where do we go from here?

Land resource inventories have, in the past, concentrated on land capability. It is clear that simple capability ratings are inadequate for rational resource allocation and planning and that questions of suitability and feasibility also need to be addressed. Where we go from here will depend on our clients' needs, their understanding of how we can best serve them, and their willingness to pay for our product. But first we must convince our clients, without destroying our credibility, that we were overly optimistic in the past and that we do not possess all of the knowledge needed to answer today's questions.

More in another issue.

AN UPDATE ON SOIL CONSERVATION IN SASK.

Gary Bank, Watrous, Saskatchewan

It comes as a surprise when I consider how time has passed since I moved to Saskatchewan. I've already managed to somehow survive three winters. I seem to remember saying that I'd never move out of B.C. Though the political climate of B.C. may be troublesome, the weather is quite tolerable. The day I moved into Watrous, a somewhat thriving community of 2000, I couldn't even see the elevators on account of the blowing snow.

In Sask. it's the blowing soil and not the blowing snow that is usually the cause for concern. Wind erosion, water erosion, salinization and the depletion of organic matter are all soil degradation problems that are threatening the physical and economic viability of prairie agriculture.

In August of 1984 the federal government and the prairie provinces reached tentative agreements necessary to initiate soil conservation programs. It turned out that the agreements were different for each province. On account of these differences I'll limit my comments to the situation in Sask. only.

The Sask. agreement was for a five year period with \$8,000,000 in funding being provided through an ERDA (economic regional development agreement). The PFRA (Prairie Farm Rehabilitation Administration), which is a branch of Ag. Can., was chosen to carry out the new soil conservation program. The objective of the program was to provide technical, material, and financial assistance to farm groups in order to promote on-farm improvements in soil conservation practices.

After only two and one-half years the four soil conservationists in Sask. are now working with twenty-five soil conservation groups, which formed on their own initiative. It's this sort of response that makes one suggest that the program has been very successful.

The soil degradation problems we are faced with and their solutions are very interesting, and often quite unique, however, they are too numerous to discuss in a letter such as this.

It seems that this soil conservation program has only just begun but already the end of this ERDA agreement is just around the corner. The agreement ends on March 31, 1989. One can only hope that all this concern about soil conservation that is evident in the media, and talked about by our politicians, will result in some sort of a national soil conservation program.

It's sort of paradoxical that during tough economic times such as these, the issue of soil conservation comes more clearly into focus. That reminds me of sitting in the coffee room with Dr. Rowles one day talking about tough economic times and job prospects. He said that during such times a person in soils need not worry about work since in the thirties a great many soils jobs were created in order to fight the degradation problems of those days. Tough times are what many people and especially the farmers face now. Perhaps the soil conservation issue will rise to obtain the same sort of attention it demanded during the thirties.

Peace River Soil Conservation Projects

Three soil conservation projects have started in the Peace River region this spring, funded by the Agri-Food Regional Development Agreement (ARDA).

The projects include conservation tillage demonstrations, soil loss measurements, and the development of a watershed management plan.

1. Economic Evaluation of Three Tillage Systems

The objective of this research and demonstration project is to record soil losses and yield responses from three tillage systems; conventional, a reduced form of conventional, and zero-tillage. By estimating the field scale costs of each tillage system, economic values can be placed on the relative differences of soil losses arising from each tillage system. The project is expected to run from 4 to 10 years.

This project is being supervised by Rob Kline, Soil Specialist, B.C. Ministry of Agriculture and Fisheries, and Laurens van Vliet of Agriculture Canada. The farm co-operator is Frank Breault of Breault Farms. The research site has been located on the SW 1/4 of Section 2, Tp. 78, R. 15, near South Dawson.

2. Peace River Soil Conservation Association Project

An Association of producers has formed near Dawson Creek to evaluate zero-tillage through farm-scale demonstrations. This project also includes the development of a watershed management plan for Saskatoon Creek. The Association held its first annual conservation tillage conference on April 15, 1987. The conference was very well attended, and plans are being made for next years conference.

The Peace River Soil Conservation Association has acquired a yielder conservation drill which will seed 1,000 acres this spring. The Association has hired Sandra Burton, recent U.B.C. graduate student, to supervise field operations, conduct soil studies, and develop a watershed management plan of Saskatoon Creek.

3. Clayhurst Conservation Tillage Demonstration

Brad Esau at Clayhurst has received assistance from ARDA to carry out conservation tillage on his farm. He has purchased a Haybuster 107 drill. Zero-till sites will also be set up on his farm. These sites will be located on the NW 1/4 of Section 14, Tp. 83, R. 14. Future tours and field days including this site will be announced.

R. Kline, P.Ag.
Soil Specialist, Prince George

B.C. VEGETATION WORKING GROUP -- 1987 ANNUAL MEETING

The B.C. Vegetation Working Group held their annual meeting recently (April 14-16) at the Cowichan Lake Research Station. The two topics at the meeting were Rare and Endangered Plants and Ecosystems, and Vegetation Succession. Several of the presentations were given by well known scientists from Washington and Alaska -- Les Viereck, Paul Alaback, Roger del Morel, David Murray, John Gamon, and Mark Sheehan. The meeting was very informative, interesting, and fun! Two field trips were part of the program -- one to see a rare plant, Eruthronium revolutum, at Honeymoon Bay, and the other to Mount Tzuhalam to see a few rare plants and the abundant spring flowers of the "Saanich" vegetation. The workshop session addressed the need for legislation to protect threatened and endangered plants in B.C. Public acceptance, type of legislation, and criteria for designating threatened and endangered species were the topics for the discussion groups.

Another newsletter of the B.C. Vegetation Working Group is due out in May -- more information on the meeting will be included. Contact Del Meidinger to receive the newsletter and information on future meetings. The topics for the 1988 meetings are Vegetation of Specialized Habitats (wetlands, alpine, limestone, etc.), and vegetation-wildlife interactions.

Summary by: Del Meidinger
Research Branch, B.C. Forests Service
1450 Government Street
Victoria, B.C. V8W 3E7
ph. 387-6688

ELEVENTH ANNUAL BRITISH COLUMBIA MINE RECLAMATION SYMPOSIUM

Summary by: Coleen Hackinen
Vancouver

The 11th Annual B.C. Mine Reclamation Symposium was held in Campbell River (April 8-10) this year and was attended by more than 160 people, including representatives from industry, government and U.B.C.

The symposium began with a day tour of the Westmin mine, and set the pace for the rest of the conference which focussed on acid mine drainage in British Columbia. Presentations were given which outlined the extent of the problem, techniques for predicting the likelihood of acid generation, the consequences of uncontrolled acid release, and control strategies for acid generating mines.

A one hour session entitled, "Resloping: State-of-the-Art and Where Do We Go From Here?", provided lively discussion of this on-going controversy between industry and ministry representatives.

All in all, this year's symposium was productive, informative and a great success.

EROSION CONTROL - YOU'RE GAMBLING WITHOUT IT

Review of Conference XVIII
International Erosion Control Association
February 26 & 27, 1987
Reno, Nevada
Summary by: William Carr,
North Vancouver

The International Erosion Control Association (IECA) began in 1972 as an erosion control contractor's work group. At the first conference, total attendance was approximately 35 people. Since that time, the membership has expanded considerably and includes a wide range of interests, eg. erosion contractors, equipment suppliers, utility companies, highway departments, federal and state parks and forestry departments, mining companies, the Environmental Protection Agency, and numerous universities. Attendance at Conference XVII exceeded 325 people.

I began attending IECA conferences in 1977 and have seen the programs develop from contractors, equipment suppliers, and product salesmen to one of the most comprehensive and informative programs of any conference I've attended. With three concurrent sessions, careful planning was needed to hear most of the presentations relevant to my work.

The keynote speaker was Bland Z. Richardson (USDA Forest Service, Washington, D.C.) whose talk was titled "Research and Its Application on Surface Disturbance in the West." Technical sessions over the two days included:

- A. Erosion control in the Lake Tahoe Basin
- B. Management practice
- C&J. Problems facing hydraulic mulching contractors
- D. Combining watershed stability measures
- E. Economics of erosion control
- F. Seeds and insects
- G. Major sedimentation problems
- H. Streams and gullies
- I. Case studies in resource management
- K. Reversing desertification
- L. Urban/wildland interactions

Speakers were from across the U.S., and included two presentations from China. The talks were consistently of high quality and almost always focused on practical solutions to erosion problems. The proceedings of this conference and those of the past would serve as excellent references for the erosion control practitioner. These can be ordered from the IECA P.O. Box 195 Pinole, California 94564-0195 U.S.A.

The 1988 conference is scheduled for February 4-5 at the Fairmont Hotel in New Orleans. The call for papers closes May 29. More information regarding the 1988 conference is available from Ben Northcutt @303-979-2313 or the IECA office @415-223-2134.

The 1989 conference is planned for Vancouver, B.C. and the B.C. Chapter of the Canadian Land Reclamation Association will be asked to provide assistance. This should help link the IECA and CLRA organizations which have so much in common.

NEWS

A recently approved agreement between CIDA and the Government of Malaysia will result in a 5 year program, bringing Malaysian professionals of various backgrounds to Vancouver, where they will receive training in the application of Geographical Information Systems to land evaluation. The program will be conducted by Agriculture Canada in cooperation with UBC.

◆ You are invited to participate in a forest fertilization workshop: ◆

Improving Forest Fertilization Decision- Making in British Columbia

◆
March 2, 3, 1988
Airport Inn
Vancouver, B.C.
◆

Co-Sponsored by: B.C. Ministry of Forests and Lands; Canadian Forestry Service

◆ *Workshop Objectives:*

- (1) To review the currently available information base used to support and rank investments in forest fertilization.
- (2) To review strategic wood supply needs and the opportunities for meeting some of these needs through fertilization.

◆ *Workshop Session Topics:*

- I. An overview of the need and the potential for forest fertilization - keynote address
- II. **Forest nutrition**
 1. Forester's guide to forest nutrition
 2. An overview of forest nutrition problems in B.C.
 3. Mechanisms of response to fertilization
- III. **Forest fertilization: An economic investment**
 1. Management objectives
 2. Economic analysis
- IV. **Forest fertilization: A biological investment**
 1. Fertilizer formulations and application
 2. Species and stand response to fertilization
 3. Methods of measuring tree and stand response
 4. Response models
 5. Evaluation of stand characteristics
 6. Evaluation of site characteristics/conditions
 7. Post-application evaluation
 8. Effects of fertilization on wood quality
 9. Environmental impacts of forest fertilization
- V. **The Scandinavian perspective** - guest speaker
- VI. **Status and outlook**
 1. Coastal B.C. forest fertilization research
 2. Interior B.C. forest fertilization research
 3. PNW forest fertilization research
 4. Research: Strategic needs
 5. Management: Strategic needs
- VII. **Meeting fiber needs through forest fertilization: Case studies**
 1. Coastal T.S.A. case study
 2. Northern Interior T.S.A. case study
 3. Southern Interior T.S.A. case study

◆ All the oral presentations will be invited. There will be an opportunity for contributed poster presentations and commercial displays. Further details will be provided in our next announcement (October 31, 1987). To be placed on the mailing list for further information, please send your name, full mailing address, and telephone number to: Dr. J. Daniel Lousier, P.Ag., Research Branch, Ministry of Forests and Lands, 1450 Government St., Victoria, B.C., V8W 3E7.

UPCOMING MEETINGS

- June 7-11, 1987. Canada Land Reclamation Assoc. Annual Meeting "Everything Up-To-Date in Reclamation", Sudbury, Ontario. Contact: Dr. P.J. Beckett, Biology Dept., Laurentian University, Sudbury, Ontario P3E 2C6
- July 6-10, 1987. International Symposium on the Measurement of Soil and Plant Water Status, Logan, Utah. Contact: R.J. Hanks, Dept. Soil Science and Biometeorology, Utah State Univ., UT 84322-4840
- July 20-24, 1987. Plant-Soil Interactions at Low pH. Grande Prairie Regional College, Grande Prairie, Alberta. Contact: Val Smyth, Faculty of Extension, University of Alberta, 238 Corbett Hall, Edmonton, Alberta T6G 2G4
- August 2-5, 1987. Soil Conservation Soc. of America 42nd Annual Meeting, Billings, Montana. Contact: Larry Davis, SCSA, 7515 Ankeny Rd., Ankeny, Iowa 50021
- August 3-7, 1987. Erosion and Sedimentation on the Pacific Rim, Corvallis, Oregon. Contact: Conference Assistant, College of Forestry, Oregon State University, Corvallis, Oregon 97331
- August 16-19, 1987. 33rd Annual Meeting, Canadian Society of Soil Science, "Land Management in a Changing World", Ottawa, Ontario. Contact: CSSS' 87 Conference, Commons Building, Carleton University, Ottawa, Ontario K1S 5B7
- August 23-27, 1987. AIC Annual Conference "Water a Global Challenge", London, Ontario. Contact: Dick Heard, Centralia College, Huron Park, Ontario, NOM 1YO
- December 5-6, 1987. Workshop on Perspectives on the Contamination of Groundwater from Agriculture, New Orleans, Louisiana. Contact: Soil Science Society of America, 677 South Segeo Rd., Madison Wisc 53711
- March 2-3, 1988. Improving Forest Fertilization Decision - Making in British Columbia. See this issue for further details
- June 19-25, 1988. 8th International Meeting on Soil Micromorphology, Texas. Contact: L.P. Wilding, Dept. Soil and Crop Science, Texas A & M University, College Station, Texas 77843
- July 24-28, 1988. 7th North American Forest Soils Conference, Vancouver, B.C. Contact: Dr. G.F. Weetman, Dept. of Forest Sciences, UBC, Vancouver, B.C. V6T 1W5
- August 1988. 10th International Soil Zoology, Colloquium, India. Contact: Dr. G.K. Veeresh, Dept. of Entomology, University of Agricultural Sciences, Hebbal, Bangalore 560 024, India.