



NEWSLETTER
Number 5 - November 1984

EDITORIAL

In this issue of the Newsletter we have been able to expand our capacity to four pages (at the same postage rate). We would like to thank Dave Moon for his contribution on microcomputers, which we felt should be of interest to all of our readers. Use of the Newsletter for articles of this nature and size is encouraged. The Newsletter represents an excellent forum for expressing opinions, views, problems, and related discussion, as well as informing the members of interesting books, articles, project reports, and other societies' meetings. This issue also contains a list of members-to-date and titles of recently completed theses at the University of British Columbia. Although our cumulative membership has grown to 123 (including 10 students), only 103 have actually paid up for 1984 - those outstanding will receive no further mailings. Dues for 1985 are due January 1, 1985. At \$5 per year we feel this Society offers a lot for the money. We encourage any contributions; thank you for your support. Our next issue will contain details on the next Annual General Meeting which is tentatively scheduled for February 21-22, 1985.

SEND FEES/CONTRIBUTIONS TO: Mike Curran or Paul Sanborn
Pacific Regional Society of Soil Science
c/o Dept. of Soil Science
University of British Columbia
Room 248 - 2357 Main Mall
Vancouver, B.C. V6T 2A2

NEWS

The Soil Survey Course outlined by Keith Valentine at the Land Resource Science Lead Committee Workshop (February 16, 1984) is now under way at U.B.C. The half-year course on field methods in soil science includes instruction on quantitative sampling, soil description and mapping, field measurement of various properties, and applications to agriculture and forestry. This field-oriented course fills an important gap in the soil science curriculum.

Dr. John Omueti of the Department of Agronomy, University of Ibadan, Nigeria, recently spent three months at U.B.C., working with Dr. Lavkulich on the amorphous materials and mineralogy of B.C. Podzolic soils. Dr. Omueti hopes to return for a further six to eight months next year to continue his research.

Three B.C. soil scientists recently accepted positions as Soil and Water Conservationists with PFRA in Alberta and Saskatchewan. Our congratulations and best wishes go to Gary Bank, Craig Wood, and John Heinonen.

Don Olds, (4th year Soil Science, U.B.C.) was awarded the C.A. Rowles Award for his standing in 3rd Year Soils. Congratulations!

MEETINGS

- Nov. 12-24, 1984: Canadian Seed Technology Workshop, Olds College, Olds, Alberta.
- Nov. 25-30, 1984: American Society of Agronomy, Crop Science Society of America, Soil Science Society of America joint annual meetings, Las Vegas Hilton Hotel and Las Vegas Convention Center, Las Vegas, Nevada.

MEETINGS (continued)

Page 2

- Nov. 29, 1984: Alberta Chapter, Soil Conservation Society of America, Land Use Seminar. Contact: L. Marciak (Edmonton): 427-5359 or 464-6849
Al Fedkenheur (Calgary): 290-7355.
- Dec. 10-11, 1984: Canadian Agricultural Outlook Conference, Government Conference Centre, Ottawa.
Contact: Dr. Brian Perkins or Dr. Stewart Borland, Development Policy Directorate, Sir John Carling Bldg., 930 Carling Ave., Ottawa, ON K1A 0C5
- Dec. 10-11, 1984: ASAE Conference on Erosion and Soil Productivity, New Orleans, Louisiana. Contact: R.A. Briggs, ASA, 677 South Segoe Road, Madison, WI 53711, USA.
- Feb. 10-11, 1985: Alberta Soil Science Workshop: Land and Water Management, Lethbridge Lodge, Lethbridge, AB. Contact: B. Paterson, Alberta Agriculture, Agriculture Centre, Lethbridge, AB T1J 4B1.
- Feb. 21-22, 1985: PRSSS Workshop: The Role of Soil Analyses in Resource Management. U.B.C., Vancouver, B.C. Contact: Dr. T.M. Ballard, Dept. of Soil Science, Room 248, 2357 Main Mall, Vancouver, B.C. V6T 2A2. Phone: 228-2300.
- March 4-8, 1985: 4th International Symposium on Remote Sensing for Soil Survey, Wageningen, The Netherlands. Contact: Dr. M.A. Mulders, Dept. of Soil Science and Geology, Agricultural University, P.O. Box 37, 6700 AA, Wageningen, The Netherlands.
- May 8-11, 1985: IUFRO Symposium: Improving Mountain Logging: Planning, Techniques, and Hardware. Contact: E.A. Saunder, Secretary, Mountain Logging Symposium, Forest Engineering Research Institute of Canada, 201-2112 W. Broadway, Vancouver, B.C. V6K 2L8.

NEW BOOKS

- Flora of Alberta, 2nd ed. E.H. Moss, revised by John G. Pacter, University of Toronto Press, Toronto, 1983. 687 pp. \$45. ISBN 0-8020-2508-0
- The Nature and Properties of Soils, 9th ed., Nyle C. Brady. 750 pp. 1984. MacMillan Publishing Company, New York, N.Y. 10022.
- Soils and Geomorphology, Peter Birkeland. Oxford University Press, 200 Madison Ave., New York, N.Y. 10016. 372 pp. (U.S. \$37.50 - hardcover, \$22.95 - paperback.) [Revised edition of Pedology, Weathering, and Geomorphological Research (1974)].
- No-Tillage Agriculture: Principles and Practices. Edited by R.E. Phillips and S.H. Phillips. Van Nostrand Reinhold Co., New York, N.Y. 10020 (U.S. \$34.50.)
- Soil Nutrient Bioavailability: A Mechanistic Approach. S.A. Barber. John Wiley & Sons, 22 Worcester Rd., Rexdale, Ontario M9W 1L1. (U.S. \$39.95)
- Chemical Mobility and Reactivity in Soil Systems. SSSA-ASA. 262 pp. (Paperback).
- Organic Farming: Current Technology and Its Role in a Sustainable Agriculture. ASA-CSSA-SSSA. 192 pp. (Paperback)
- (Both available for U.S. \$12.00 each + \$0.75 per book for handling from: American Society of Agronomy, 677 South Segoe Rd., Madison, Wisc. 53711.)

(Name of thesis supervisor given in brackets after title.)

B.Sc.

- Robert F. Anderson. The use of the Flour Pellet Method to Determine the Drop Size Distribution and Kinetic Energy of Rain in Vancouver. (M.D. Novak)
- Eric Bremer. A Comparison of Bray P₁ and Olsen Methods for Measuring Available Soil Phosphorus for Corn in the Kamloops Region. (A.A. Bomke)
- Colette L. Cloutier. A Comparison of Soil Variability Between Pure and Complex Mapping Units. (H.E. Schreier)
- Michael Rutherford. An Examination of the Physical Properties of Ladner Series Soils under Turf Production, Pasture and Crop production. (J. de Vries)

M.Sc.

- Gary Michael Bank. Soil Variability and the Use of Conventional and Innovative Methods for Assessing Soil Fertility. (H.E. Schreier)
- Mensah Bonsu. Hydrologic Behaviour of Some Structurally Degraded Organic Soils. (J. de Vries)
- Michael Curran. Soil Testing for Phosphorus Availability to Some Conifers in British Columbia. (T.M. Ballard)
- Michael Jacob Goldstein. Agriculture and Energy Transmission Facilities. (A. Black)
- A.J. Hobbs. Effects of Air-photo Scale in Early Detection of Mountain Pine Beetle Infestation. (P.A. Murtha)
- Alexander Inselberg. Western Hemlock Foliar Nutrients and Terminal Growth in Relation to Three Contrasting Forest Floors Within a Stand. (T.M. Ballard)
- Kenney, Elizabeth Anne. Selected Metals in Earthworms, Lettuce, and Soil Amended with Sewage Sludge. (A. Carter)
- Murphy, Kevin J. Land Use Trends and the Influence of Orchard Management on the Soils in Creston, B.C. (L.M. Lavkulich)
- Pravakar B. Shah. Agricultural Land Evaluation in the Kailali District in Nepal: Using Resource Inventory Data as a Basis for National Land Use Planning. (H.E. Schreier)
- John T. Standish. Resistance to Water Uptake: A Comparison of Ponderosa Pine and Douglas-fir Seedlings and an Investigation Into the Effects of Planting. (T.M. Ballard)
- Robert J. Stathers. A Study of Soil Temperature and Seedling Survival in A Forest Clearcut. (T.A. Black)

Ph.D.

- Ntk M. Majid. Some Aspects of Boron, Copper, and Iron Nutrition of Lodgepole Pine and Douglas-fir. (T.M. Ballard)

U.B.C. SOIL-RELATED FORESTRY THESES COMPLETED

B.S.F.

- Sally Aitken. Effects of Nitrogen Fertilization on Stomatal Characteristics on Douglas-fir. (P. Jolliffe)
- Bruce Alexander. A Comparison of Indoor Potted vs. Soil-Based Field Tsuga heterophylla Seed Orchards. (O. Sziklai)
- Jeffrey Andrews. A Comparison of the Soil Solution Chemistry of Two Undisturbed Watersheds in Southwestern British Columbia. (M.C. Feller)
- James Ballantyne. The Effect of Storage Time on Foliar Nutrient Concentrations in Douglas-fir Foliage Samples. (T.M. Ballard)

B.S.F. (continued)

- Bruce Blackwell. Relationships Between the Codes and Indices of the Canadian Forest Fire Weather Index and Slashburning-Induced Reduction of the Forest Floor. (M.C. Feller)
- Ann Draffehn. Soil Erosion and the Use of Shrubs in Erosion Control. (T.M. Ballard)
- Kevin Giles. An Examination of the Effects of Slashburning at Cypress Bowl in the Mountain Hemlock Biogeoclimatic Zone. (T.M. Ballard)
- Margo Glover. Effects of Nitrogen Fertilizers on the Number and Distribution of Soil Fauna Found Under a Douglas-fir Stand at Shawnigan Lake, B.C. (L.M. Lavkulich)
- Robert Hayes. Foliar Analysis of Western Redcedar on the SICH Site: Implications for Management (T.M. Ballard)
- Victor Hegan. Preliminary Correlations Between Slashburning-Induced Nutrient Losses to the Atmosphere and the Codes and Indices of the Canadian Forest Fire Weather Index. (M.C. Feller)
- Donald Hudson. The Initial Effects of Clearcutting and Slashburning on Forest Floor Meso and Macrofauna in a Southwestern British Columbia Forest. (M.C. Feller)
- Cameron Leitch. Foliar Analysis of Five Progeny of the Tamihi Progeny Study. (T.M. Ballard)
- Scott MacDougall. A Study of Phosphorus Availability in Malaysian Plantings of Pinus caribaea Mor. var. Hondurensis Barr. and Golf. (T.M. Ballard)
- Mark Runge. The Effect of Phosphate Fertilization on the "Active" Iron Status of Lodgepole Pine Seedlings. (T.M. Ballard)
- Charles van Hemmen. The Effects of Cold Temperatures on the Root Growth of Lodgepole Pine Seedlings. (T.A. Black)
- Brian de Gusseme. The Short Term Growth Response of Juvenile Lodgepole Pine to Thinning and Ammonium Nitrate in the MacKenzie T.S.A. (T.M. Ballard)
- Tricia LePage. An Examination of the Foliar Nutrient Status of Seedlings Grown on Disturbed Soils on a Root Rot Control Site. (T.M. Ballard)
- Vivian Scalet. Physical Properties of Peat Moss Available to Forest Nurseries in British Columbia. (T.M. Ballard)
- M.F.
- Judith A. Dickinson. An Ecological Investigation of Western Redcedar Sites on Western Vancouver Island. (J.A. McLean)
- M.Sc.
- Michael A. Brady. Natural Revegetation of Mining Disturbances in the Klondike Area, Yukon Territory. (J.V. Thirgood)
- C.J. Lloyd. Reclamation in Highland Valley: The Classification of Disturbed Areas for Evaluation and Planning. (J.V. Thirgood)
- Roger J.J. Roy. Ordination and Classification of Immature Forest Ecosystems in the Cowichan Lake Area, Vancouver Island. (K. Klinka)

THE GROWING USE OF MICROCOMPUTERS IN LAND RESOURCE APPLICATIONS
(or Do we need a microcomputer users interest group?)

D.E. Moon

Land Resource Research Institute
Agriculture Canada

INTRODUCTION

The rapid development of microcomputer technology and its distribution at relatively low cost has brought us to a critical point in the area of data management for land resource applications. A number of significant developments that have already occurred are outlined below.

- 1)The concept of the centralized data management service is becoming less pervasive and the responsibility for data management is moving closer to those who collect the data,
- 2)Consultants now have access to relatively powerful data management and analytical procedures,
- 3)Land resource specialists with little or no computer experience can quickly develop expertise in data management applications and can design their own applications, and
- 4)Data management procedures can be easily developed and implemented on individual projects.

These developments offer a number of distinct advantages to individual projects and organizations. They offer greater access to data, shorter turnaround time for data input and analysis, control over the project priorities, more flexibility, and significantly reduced costs.

POSSIBLE IMPACTS

As with most technological advances there are both positive and negative aspects to the advent of the microcomputer. We are already faced with a number of alternatives. Some may be considered desirable and some may not.

Desirable ?

- 1)high level compatibility of data and data structure with micros.
- 2)expanding library of exchangeable applications procedures.
- 3)a level of compatibility between national, regional, and project data bases

Undesirable ?

- incompatible data and data structure at the micro level.
- duplication of design and programming effort for many systems.
- numerous independent data bases and interpretive procedures.

THE CURRENT SITUATION

We are at a point in time when it may still be possible to attain a reasonable level of compatibility. It is unlikely that this will last for much longer. Having mastered a technique or program most of us are unwilling to change unless forced to by directive or circumstance. To do so requires an investment of time and effort which has already been made once and is currently yielding a significant return. We are even less likely to scrap expensive hardware when what we have is able to do the job required. If we want to be able to exchange software applications, then we should identify areas of potential compatibility before the investment is too great.

Two examples should serve to make the point:

- 1) The British Columbia Ministry of Forests has committed itself to a large number of Wang personal computers. It already has a number of Apple personal computers in regional offices. The two machines are incompatible and software exchange is largely impossible. To compound the problem the British Columbia Ministry of Environment is committed to Dec Professional microcomputers which are incompatible with both of the Ministry of Forests machines.
- 2) The Land Resource Research Institute of Agriculture Canada proposes to develop a demonstration of microcomputer applications for a Nova Scotia survey. A similar project is being conducted in British Columbia by the same agency. Compatibility in data, data structure, and software could be insured with some effort. The exchangeability of procedures could be insured with minimal effort, by agreeing to a common software package. I am not suggesting that the Nova Scotia survey should adopt or adapt the procedures developed for the British Columbia survey, but there is bound to be a great deal of duplicated effort that could be minimized.

IMMEDIATE CONCERNS

The investment in time and money required to develop independent data base applications is large. It should be possible to develop a set of programs that can be used by a large number of organizations rather than each having to develop its own. This could lead to a standard data analysis and report format that could readily be applied or modified by any survey organization choosing to do so (It could be used in much the same way that the CanSIS and B.C. data manuals are used; while few projects use the entire data form or even the form itself the manuals provide a convenient basis for describing how and what data are going to be collected).

If the use of microcomputers in land resource inventory is to be optimized then the procedures installed should be flexible enough to avoid producing a multitude of different systems. They should be readily available to all organizations involved in land resource programs, easily modified to meet different project requirements, and should be cost effective enough to encourage their use by all organizations. The procedures must be as transportable as possible so that a library of application programs for a wide range of uses can be developed.

SO WHAT ?

The key to developing a library of exchangeable software lies in the concept of transportability. There are two kinds of transportability:

- 1) the ability to take a disk program from one machine, put into another and have the program run, and
- 2) the ability to transfer a series of procedures from one machine to another by doing a minimum of program modification. This can be done by using software which has a number of versions each designed to run on a particular machine. While the programs are different, they each use the same commands and syntax. The same sequence of key strokes will produce the same result on each machine.

The first form of transportability is guaranteed only between computers which are the same model. It is in part possible between a limited range of models such as the IBM-PC and its look-alikes but it is impossible to establish between all machines. The second form of transportability is possible between a wide range of machines if they can use the same software packages and it is possible on an even wider range of machines if an operating system such as UNIX is imposed on the hardware.

DECISIONS REQUIRED

If a high degree of transportability is to be obtained there are two areas of immediate concern: hardware and software. The two are intimately linked because the hardware used influences software portability.

The problem of hardware standardization is probably unresolvable. However, if a set of minimum hardware specifications can be agreed upon, the numerous commercial software packages designed to run on a wide range of machines offer a viable solution to software transportability. For example, d-Base II can run on machines ranging from an Apple II-C to an IBM-PC, provided they have a minimum memory capacity and at least one disk drive. Thus procedures developed using d-Base II on the IBM-PC while not disk transportable can be duplicated with minimum effort on the Apple II-C.

It is unlikely that software which will run on all possible machines can be found, or that it would be adequate to do the job if it could. The use of a limited range of operating systems (eg. MS-DOS, XENIX(UNIX), and CPM-86) and the choice of both machines and application packages which run under these systems would allow for a large measure of transportability between most machines being used. There is of course a trade off between the degree of transportability and the number of machines used. The establishment of such standards would also provide guidance to those planning to purchase systems.

I believe that we are on the threshold of a major advance in data handling for land resource inventory and evaluation. I also believe that we are duplicating the mistakes of the centralized information systems such as CanSIS and B.C.SIS that went before us. If it is possible to sacrifice some short term development economies and to set aside personal and agency vested interest it should be possible to develop a library of application software tailored to the needs of our discipline. If it is possible and the goal is worthwhile, then the following points must be addressed and resolved in the very near future.

- 1) Data management problems (eg. file structure, volume, retrievals, etc.) common to land resource projects,
- 2) The range and application of hardware, operating systems, and software currently being used in the area of land resource inventory and interpretation,
- 3) The minimum hardware configuration necessary to meet these needs and what operating systems we are willing to work within,
- 4) The identification of specific software that will run on the specified operating systems and that can be used to develop specific applications,
- 5) The identification of areas of interest and expertise available for the development of various applications as well as who is currently working on, planning to work on, or willing to work on what, and
- 6) Mechanisms for coordinating the development and distribution of applications to all interested groups.

Some kind of forum needs to be established to discuss these issues. If you are interested in an official working group or an unofficial interest group please contact me at :

Agriculture Canada Research Station
6660 N.W. Marine Drive
Vancouver, B.C.
V6T 1X2

Tell me what your area of interest is (eg. vegies, dirt, survey, lab analysis, etc.), the kind of system you are running (and its configuration), the commercial software packages you are using, and the kinds of applications you are using. I would also like to hear your opinions on the need for transportability. I will let you know what the response was, who is doing what, and whether or not anybody else shares these concerns.

LIST OF MEMBERS OF PACIFIC REGIONAL SOCIETY OF SOIL SCIENCE 1984

Ballard, Tim	Lindeburgh, Scott
Bank, Gary	Louie, Robert H.
Beaton, J.D.	Lousier, J.D.
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Bertrand, Ronald A.	Luttmerding, Herbert A.
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Cross, Christine	Neilsen, Gery
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Goldin, Alan	Slaco, Ric
Heinonen, John	Slavinski, Howard
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Herman, W.A.	Smith, Scott
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Jones, Carol E. Ms.	Ulansky, Sherry
Keng, John C.W.	Van Ryswyk, A.L.
Kenk, E.	Van Vliet, L.
Kennedy, Carol A.	Vold, Terje
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Kowalenko, C. Grant	Wiens, J.H.
Kurne, Roxanna	Williams, Duncan
Krumlik, George	Williams, Ms. Heather L.
Laird, D.G.	Wittnben, U.
Lavkulich, Les	Yole, David
	Zweck von Zweckenburg, Elizabeth