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REPORT OF THE CENTRAL SOILS LABORATORY FOR THE FISCAL
YEARS 1970-71 AND 1971-72

by

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Before its operation here at the Northern Forest Research Centre in Edmonton, the central Soils Laboratory was responsible for the Manitoba-Saskatchewan Region and was located at Winnipeg. A previous report (2) described the operation and the analytical service programme of that Laboratory and also showed the number of samples analyzed and gave relevant information for the fiscal years 1967-68, 68-69, and 69-70. Although the fiscal year is considered to be 1 April to 31 March, data in the previous report also covered the determinations carried out during April and May 1970.

The Laboratory was moved to Edmonton from Winnipeg in July 1970. The samples collected by the staff at Winnipeg and Calgary laboratories during the summer of 1970 were brought to the Edmonton laboratory. Since mid-1970, samples are received from the staff here and the Laboratory is also responsible for analysis of samples received from the sub-stations at Winnipeg and Prince Albert.

This report gives the number of samples analyzed and relevant information for the duration 1 August 1970 to 31 March 1972.

After the move to Edmonton , the first three months were

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required for carrying out several procedures essential in establishing the Laboratory. This included operations such as unpacking; the proper installation of hoods for atomic absorption spectrophotometer, the Kjeldahl unit and in the soil-grinding room; installation and calibration of instruments; analysis of standard samples for checking instrument performance; and the overall re-organization of the Laboratory to be of greater scope.

The actual analytical work started on 1 November 1970. Thus in the tables here showing the data for the fiscal year 1970-71, the analyses were performed only in the last five months of that fiscal year period.

The methods used at the Soils Laboratory are essentially the same as those given in an earlier report (1). Research is being carried out on analytical methodology to accomplish a more complex mission.

The number of determinations given in the tables do not include the number of duplicate or triplicate runs. In general, 10% of the samples were analyzed in duplicate. However, in certain cases, depending upon the nature and objectives of the analyses, all samples were analyzed in duplicate or triplicate.

A total of 26,743 determinations were carried out on 4,315 samples from 1 November 1970 through 31 March 1972.

TABLE 1

Number of analysts in the Laboratory*

Staff of the Soils Laboratory

Staff	1 November 1970 to 31 March 1971	1 April 1971 to 31 March 1972
1. Permanent staff	2	2
2. Summer students for a period of 15 weeks	0	2

Professional, support, and casual staff from other
sections who worked in the Soils Laboratory

Section	input (man/weeks)		
	1 November 1970 to 31 March 1971	1 April 1971 to 31 March 1972	Total
Engineering and maintenance	3	0	3
Fire research investigations	0	2	2
Inventory and Mensuration	0	20	20
Land Classification and Soils	51	63	114
Liaison and Development	0	12	12
Pathology	0	7	7
Silviculture	12	27	39
Tree Biology	6	2	8
University of Alberta (Grad- uate student, Soils Dept.)	0	1	1
Total	72	134	206

* The number of analysts working in the Laboratory depended on several factors, e.g. individual needs, type of samples, instrument availability, etc. For most efficient use of the facilities, the work was scheduled in such a way that 4-5 analysts were working in one particular week. However, sometimes it was possible to accommodate a large number of staff. For example, in February-March 1971 up to 10 analysts were working in the Laboratory.

TABLE 2
Total number of samples analyzed

Type of samples	1 November 1970 to 31 March 1971	1 April 1971 to 31 March 1972	Total
Soil	1,378	1,628*	3,006
Plant	600	441	1,041
Water	65	203	268
Total	2,043	2,272	4,315

* This includes 877 samples from the previous year. These 877 samples were analyzed for certain analyses before 31 March 1971 and were re-submitted after 1 April 1971 for some other analyses.

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TABLE 3 (continued)

Parameter	1 November 1970 to 31 March 1971	1 April 1971 to 31 March 1972	Total
Particle-size analysis	122	415	537
pH	817	1,158	1,975
Phosphorus, total	0	1,500	1,500
, NaHCO ₃ - extractable	6	747	753
, Bray's P1	477	400	877
Potassium, total	0	1,374	1,374
, exchangeable	478	961	1,439
Sodium, total	0	24	24
, exchangeable	1	185	186
Specific conductance	3	552	555
Sulphate, water-soluble	0	8	8
Zinc, total	0	24	24
, EDTA-extractable	0	1	1
Total	5,885	17,741	23,626

TABLE 4

Types and number of analyses performed on plant samples

Parameter	1 November 1970 to 31 March 1971	1 April 1971 to 31 March 1972	Total
Aluminum	0	20	20
Cadmium	0	60	60
Calcium	0	14	14
Chloride	0	4	4
Cobalt	0	60	60
Copper	0	24	24
Iron	0	24	24
Lead	0	60	60
Magnesium	0	14	14
Manganese	0	24	24
Nickel	0	60	60
Nitrogen	600	374	974
Phosphorus	0	264	264
Potassium	0	64	64
Sodium	0	4	4
Sulphur	0	390	390
Zinc	0	24	24
Total	600	1,484	2,084

TABLE 5

Types and number of analyses performed on water samples

Parameter	1 November 1970 to 31 March 1971	1 April 1971 to 31 March 1972	Total
Acidity, pH 4.5	29	1	30
, pH 8.3	29	1	30
Alkalinity, phenolphthalein	1	10	11
, total	11	12	23
Calcium, dissolved	0	76	76
Chlorine, dissolved	20	12	32
Color, apparent	10	1	11
, true	16	17	33
Hardness, carbonate (temporary)	5	1	6
, noncarbonate			
(permanent)	5	0	5
, total	35	15	50
Iron, dissolved	7	0	7
Magnesium, dissolved	0	8	8
Nitrogen, ammonia	13	0	13
, nitrate	40	198	238
, total (Kjeldahl)	11	0	11
pH	35	9	44
Phosphate, ortho (dissolved)	2	23	25
Potassium, dissolved	0	8	8
Residue, filterable	5	0	5
, fixed total	5	0	5
, nonfilterable	0	35	35
, total	5	0	5
SAR	2	29	31
Saturation index	4	0	4
Sodium, dissolved	7	10	17
Specific conductance	27	12	39
Stability index	10	3	13
Sulphate, dissolved	30	188	218
Total	364	669	1,033

TABLE 6

Number of analyses performed*

Type of sample	1 November 1970 to 31 March, 1971	1 April 1971 to 31 March 1972	Total
Soil	5,885	17,741	23,626
Plant	600	1,484	2,084
Water	364	669	1,033
Total	6,849	19,894	26,743

* The number of analyses performed by an analyst varied from 200 to 500 per month, depending upon factors such as type of samples, type of analyses, experience of the analyst with laboratory work, etc. On an average, about 100 analyses were performed in one man/week.

References

1. Kalra, Y.P. 1971. Methods used for soil, plant and water analysis at the Soils Laboratory of the Manitoba-Saskatchewan Region, 1967-1970. Can. For. Serv., Dept. Environ., Inf. Rept. NOR-X-11. 87 p. Edmonton.
2. Kalra, Y.P. and M.W. Ali. 1970. Operation of the Service Laboratory at the Manitoba-Saskatchewan Region. Can. For. Serv., Dept. Fish. For., Int. Rept. A-39. 52 p. Edmonton.