

SASKATCHEWAN SOIL TESTING LABORATORY

1984-1985 REPORT

D.J. TOMASIEWICZ, DIRECTOR

Sample Volume

The number of samples handled by the Saskatchewan Soil Testing Laboratory since the beginning of the current operating year (01 July 1984 to 30 June 1985) is lower than the corresponding volumes for the three previous years (Table 1). However, even this reduced volume is greater than that experienced by the Laboratory in any of its 15 years of operation prior to 1981-82. Samples from almost 13,000 farm fields were processed since July 1984, along with almost 11,000 samples from other sources.

The reduction in sample volume is largely attributed to the mid-October snowfall, which over much of the province put an end to field operations including soil sampling. Until that time, the rate of sample submissions was similar to the rates in the highest volume fall seasons of 1981 and 1983. The widespread summer drought in 1984 also reduced soil testing activity in seriously affected areas, due to reduced stubble cropping and fertilization intentions for 1985. In 1983-84 almost 60% of the farm samples came from the Brown and Dark Brown Soil Zones, compared to less than 40% in the fall of 1984.

A high level of interest in soil testing in the spring of 1985 is anticipated due to the shortened Fall 1984 sampling season and improved levels of soil moisture in many areas.

Table 1: Numbers of Samples Received by the Saskatchewan Soil Testing Laboratory, by years; 01 July 1982 to 31 January 1985.

Source of Samples	1982-83		1983-84		1984-85	
	-----July 1 to June 30-----		-----July 1 to Jan. 31		-----	
	-----Number of Samples-----					
Soil Samples						
Farm						
Complete (to 24")	43,080	(14,360)*	55,791	(18,597)	32,910	(10,970)
N-Only (to 24")	3,228	(1,076)	918	(306)	1,845	(615)
0-6" Complete	--		1,399	(1,399)	1,198	(1,198)
Industry, Gov't	7,002		10,088		4,980	
Dept. of Soil Sc.	4,852		5,100		3,294	
University	2,866		2,918		634	
Gardens	188		234		170	
Plant Samples	2,133		4,207		1,533	
Water Samples	278		220		243	
Total Samples	63,627		80,875		46,807	
(Total No. of Farm Fields)		(15,436)		(20,302)		(12,783)

* Number of fields is indicated in brackets ().

General Operation

D.J. Tomasiewicz was appointed Director of the Laboratory in August 1984, succeeding Dr. E.H. Halstead who returned to full-time research and teaching with the Department of Soil Science. J.G. Fradette was appointed as Agronomist in September 1984.

Newly designed Field Information Sheets and Soil Test Report forms were put into use for the fall of 1984. A new leaflet entitled "Understanding Your Saskatchewan Soil Testing Laboratory Soil Test Reports" (Leaflet #2; January 1985) has been printed and is available through the Laboratory.

Since the summer of 1984, the in-house computing system has been used for all routine computing and report printing.

Laboratory turnaround time (from receipt of samples to mailing of the report) for the routine farm fertility tests was again maintained at approximately one week or less during the spring and fall seasons.

Saskatchewan Agriculture has agreed to provide salary support to cover the cost of three of the senior positions at the Laboratory. This became effective starting in 1984-85. As the Laboratory otherwise operates largely on a fee-for-service basis, the salary support will help to stabilize the operations of the Laboratory and maintain and improve its service to producers, particularly in years such as this when sample volumes are reduced.

The farm soil fertility test packages offered in 1984-85 are as follows:

	<u>Test</u>	<u>Depths Used</u>	<u>Price (\$/field)</u>
1.	Complete - N,P,K,S, pH/cond.	0-6", 6-12", 12-24"	24
2.	Nitrogen Only - N	0-6", 6-12", 12-24"	15
3.	0-6" Complete - N,P,k,S, pH/cond.	0-6"	24

Changes in the farm test packages offered or their prices for 1985-86 are not currently anticipated.

Nitrate-N Levels - Fall 1984

Direct comparison of soil test nitrate-N results from the Fall of 1984 with results from other years is difficult because the average date of fall sampling in 1984 was earlier. Also, a new data summarizing program was used which incorporated several improvements, but may result in summary data not directly comparable to that from previous years.

For the Brown and Dark Brown Zones, a slightly higher proportion of the fallowed soils submitted in 1984 had relatively low nitrate-N levels (Table 2). This may be due to drier soil conditions, less tillage of fallow, and the earlier average fall sampling date in 1984. Therefore, it cannot be concluded from these data that the level of soil nitrogen available to 1985 crops seeded on fallow will be significantly lower than in previous years.

The dry 1984 season has resulted in significantly higher levels of nitrate-N remaining in many stubble fields of the drought-affected areas (generally, the Brown and Dark Brown Soil Zones and parts of the Thin Black Zone, Table 2). Within farm units of drought-affected areas, it was observed that soil nitrate levels were much higher in stubble fields which were cropped in 1983 and N-fertilized for the 1984 crop, in comparison to stubble fields which were fallowed in 1983 and produced a greater yield in 1984 without N fertilization. Therefore, if the data from first-year stubble fields were not considered, the percentages of other stubble fields in such areas testing high in N would be much greater than indicated by the tabulated data.

Table 2: Percentage of fields submitted in two selected nitrate-N test ranges; Fall 1982, 1983, and 1984.

	More than 45 lb/Ac (0-24")			More than 60 lb/Ac (0-24")		
	1982	1983	1984	1982	1983	1984
-----% of fields-----						
SUMMERFALLOW						
Brown	68	64	55	40	33	28
Dark Brown	79	79	72	52	51	45
Thin Black	85	81	85	66	67	63
Thick Black	84*	90*	90*	61*	78*	74*
Gray Black	75*	57	79*	45*	43	58*
Gray	59*	60*	65*	31*	45*	39*
STUBBLE						
Brown	17	15	32	10	8	18
Dark Brown	25	24	37	14	13	23
Thin Black	26	30	32	14	17	21
Thick Black	30	32	26	17	18	14
Gray Black	15	14	8	8	8	3
Gray	12	14	9	5	7	4

*based on fewer than 300 fields; other data based on 300 to 3000 fields.

NOTE: All data is from samples taken in the Fall of the indicated year only.

As in other years, a significant proportion of stubble fields on Thick Black Soils have considerable amount of residual N, whereas high soil N levels are relatively uncommon in the Gray-Black and Gray Zones. The apparent slight reductions in the percentages of stubble fields high in residual N in the Thick Black to Gray Zones likely is due more to the earlier average sampling date and changes in methods used to summarize the data, than to any real change which should affect fertilization practices for 1985.

A large shift in the average distribution of nitrate-N with depth was observed to occur during the fall sampling season, apparently associated with the late September general rainfall. The average ratio of 0-24" NO₃-N to 0-6" NO₃-N was 3.5 for all fields sampled in the September through November period, but only 2.1 for fields sampled in September.