Changing Patterns in Enrollment: The Canadian Faculties of Agriculture 1990

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Enrollment in faculties of agriculture in Canada has been influenced by major world events during the last 40 years. Following record high enrollment in undergraduate programs during the period 1946 through 1951 as a result of a large influx of World War II veterans, enrollment returned to prewar levels during the mid to late 1950's. Modest upward trends were observed throughout the 1960's and into the early 1970's. Most faculties experienced a major increase in enrollment that commenced with the significant increases in world grain prices commencing in 1973. Rapid growth continued throughout the 1970's as an increasing proportion of women entered programs in agricultural science and as an increasing number of students became interested in the management of environmental and natural resources in addition to the traditional programs in production agriculture.

The combination of low commodity prices and exceedingly high interest rates in the early 1980's had many negative effects on agriculture including undergraduate student enrollment. At the same time however, shortages of highly trained professionals, particularly at the PhD level, were being observed in Canadian faculties of agriculture and a general alarm was sounded which ultimately resulted in an increasing enrollment of graduate students. Undergraduate student declines continued through the 1980's with some faculties beginning to show modest increases in 1990.

Regular Data Collection

Data has been collected on a regular basis at the undergraduate level since 1978 and at the graduate level since 1980. The accompanying tables provide a complete statistical picture throughout these periods. Previous articles in the NACTA Journal provide specific data for any particular year. This report provides a commentary on the general trends observed throughout the 1980 and 1990 period.

Table 1. Enrollment Summary for Faculties of Agriculture in Canada 1980 - 1990.

Level	Number of Full Time Students				
	1980	1984	1988	1990	Change
Undergraduate	5768	4895	4221	4417	-23%
M.Sc.	980	1182	1329	1349	+38%
Ph.D.	350	488	642	728	+108%
Total	7098	6565	6192	6494	-9%

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An overview of total registration at the graduate and undergraduate levels is provided by Table 1 and the number of graduates from undergraduate and graduate programs by Table 2. Undergraduate enrollment declined 23% during this period whereas MSc and PhD enrollment increased by 38% and 108% respectively. Graduate student enrollment represented less than 20% of the total number of students registered at Canadian faculties of agriculture in 1980. By 1990, the proportion of graduate students had increased to approximately one third of the total. During this period, the total number of students at all levels declined by 9%.

A similar picture emerges from the data (table 2) showing the number of graduates at each level. There have been significant increases in the number of MSc and PhD graduates and a corresponding decline of 19% in undergraduates. The faculties of agriculture in Canada graduated almost as many students in 1990 as they did in 1980. However, in 1990 the MSc and PhD students represented more than 33% of the total graduates as contrasted with 20% in 1980.

Table 2. Number of Graduates for Faculties of Agriculture in Canada 1980 - 1990.

	1980	1984	1988	1990	Change
Undergraduate	1230	1076	1078	999	-19%
M.Sc.	249	285	359	413	+66%
Ph.D.	58	55	109	102	+76%
Total	1537	1416	1546	1514	-1%

The proportion of female students continues to increase and reached an all time record high in 1990 at 47% of the undergraduate population. The proportion of female students was at a very low level throughout the 1950 to 1970 period and began to increase in the 1970's reaching approximately 30% in 1980. At the graduate level approximately 36% of the total students enrolled in 1990 were female and, in the same year, approximately 35% of the graduates at the masters and PhD level were women. Only 19% of the MSc. graduates in 1990 were classified as visa (international) students; the corresponding figure for PhD graduates in 1990 was 20%.

Table 3 illustrates the undergraduate enrollment by university and the general decline experienced by all institutions with the exception of the University of Saskatchewan and the Nova Scotia Agricultural College. A major portion of the increase at NSAC is as a result of the development of the third and fourth year curriculum that occurred in 1984. The largest decline in undergraduates occurred at the University of Guelph in the agricultural science program where there

Table 3. Undergraduate Enrollment in Faculties of Agriculture In Canada 1978 - 1990.[1]

	Number of Full Time Students				
University	1978	1981	1984	1987	1990
U.B.C.	398	393	379	345	332
Alberta	533	340	503	500	412
Saskatchewan	488	511	590	549	560
Manitoba	688	560	585	506	452
Guelph (Agr)[2]	1534	1394	1171	880	761
Macdonald (Agr)	493	532	578	400	367
Laval	968	803	775	888	749
N.S.A.C.[3]	197	181	314	306	336
Total	5299	4714	4895	4374	3969
% Female	25%	36%	40%	40%	47%

[1] Enrollment declined 25% from 1978 to 1990 in Canada.

[2] The major decline is at Guelph where there were 50% fewer students in 1990 as compared to 1978.

[3] The increase at N.S.A.C. in 1984 reflects the development of the third and fourth year curriculum.

are now less than half the number of students registered as compared with 10 years ago.

Table 4 provides similar data for the number of graduates at the bachelor's level during the 12 year period 1978_1980. Three institutions show an increase, namely Saskatchewan, Macdonald and NSAC. The actual number of graduates at the bachelor's level declined by 9% during this period; the proportion of female graduates increased from 26% to 41%.

In Table 5 there is an opportunity to look at undergraduate enrollment on a discipline basis. Notable declines have occurred in Engineering, Animal Science and Plant Science. During the same period, increases have occurred in Food Science and in Agricultural Economics. The "other" category also increased significantly during this period reflecting diversification of the curriculum at various faculties. Programs in resource development, environmental management, and in selected fields in applied biology have been initiated by various faculties depending on institutional capabilities.

Table 4. Number of Graduates - B.Sc. Level Faculties of Agriculture in Canada 1978 - 1990

University	1978	1984	1986	1988	1990	Change
U.B.C.	90	74	80	91	63	- 30%
Alberta	122	64	114	109	99	- 19%
Saskatchewan	94	104	129	111	114	+ 21%
Manitoba	121	124	101	108	93	- 23%
Guelph	341	383	300	242	233	- 32%
Macdonald	157	183	205	176	175	+ 11%
Laval	169	139	154	185	168	- 0 -
N.S.A.C.	0	5*	53	56	54	na
Total	1094	1076	1136	1078	999	- 9%
% Female	26%	38%	39%	39%	41%	

* first year of graduation

Table 5. Graduates by Area of Specialization Faculties of Agriculture in Canada 1978-1990

	1978	1982	1987	1990	Change
Animal Science	275	282	195	169	- 39%
Plant Science	251	203	184	181	- 28%
Agr. Economics	168	192	159	177	+ 5%
Food Science	139	99	106	168	+ 21%
Engineering	83	118	88	41	- 51%
Other	178	255	323	263	+ 48%
Total	1094	1149	1055	999	- 9%

Summary

In summary it is evident that the 1980's marked a significant period of change for faculties of agriculture in Canada with the following developments:

+ declining enrollment at the undergraduate level
+ increasing enrollment at the graduate level
+ increasing proportion of female students at both the graduate and undergraduate levels
+ diversification of the curriculum, particularly at the undergraduate level, in an effort to offset the enrollment declines in traditional disciplines
+ an overall reduction in total number of students enrolled of 9%

Faculties are taking various steps to adapt to these changes and the next ten years will provide an interesting comparison.
