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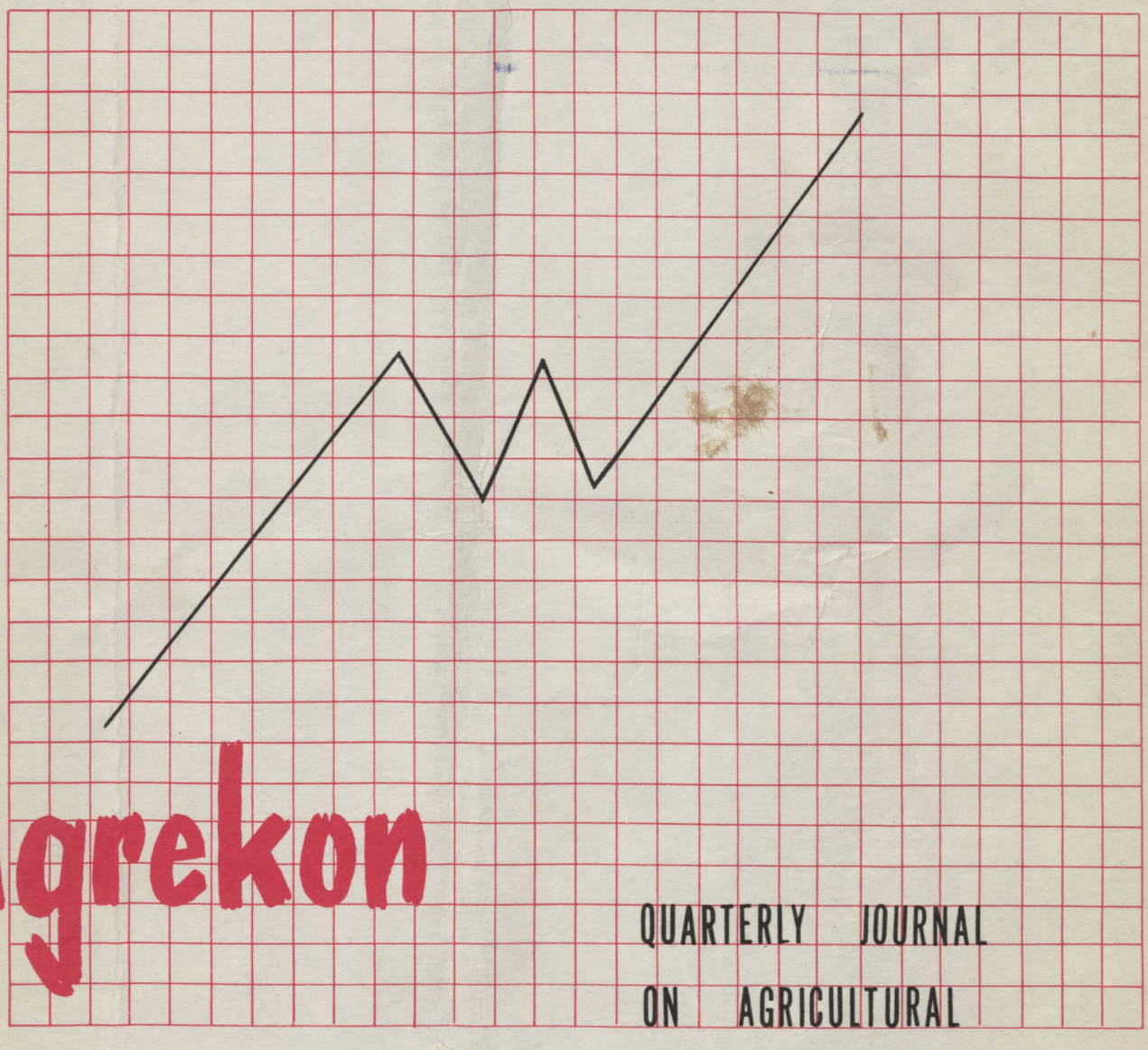

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OCCUPATIONS, INCOMES AND VIEWS OF AGRICULTURAL ECONOMICS GRADUATES FROM THE UNIVERSITY OF NATAL

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INTRODUCTION

From 1950 to 1975 the University of Natal had 970 graduates with the B.Sc.(Agric) degree of which 95 or 9,8 per cent qualified in the agricultural economics option. The proportion of agricultural economics graduates increased from 3 per cent in the first 5-year period to nearly 16 per cent in the last 5-year period. A total of 19 have qualified for the M.Sc.(Agric.) degree and 3 have obtained Ph.D's.

This analysis of the occupations and views of agricultural graduates of the University of Natal, was made from questionnaires that were completed in 1974 by all graduates from the Department. Including seven who took higher degrees after taking the first degree, either in another department or in another university, 98 had qualified in the Department by the end of 1974. One had died and 97 questionnaires were received of which 92, including 1973 graduates, gave their incomes in 1974.

Originally, most agricultural economists were employed in the government service and the primary aim in designing a curriculum was to qualify a man for such service. Other majors had a greater appeal for undergraduates in the first few years, but, particularly since about 1960, the need for more agricultural economists has come to be felt not only in the government sector, but by other bodies, particularly farmer organisations, individual farmers and private firms. It is estimated that nearly half of all 98 graduates up to the end of 1974 worked for a government service in their first appointment, but only 15 had remained in government work by that time, 6 in South Africa, 8 in Rhodesia and 1 in Canada.

A young economist is able to gain experience by working with the Government which he will not get in other places, and what he learns will be of value to him when he leaves. What is more, outside employers obviously value the services of a man who has been working for the Government, for they are invariably willing to pay more than the Government pays in order to attract him. The standard of professional training which an economist offers is obviously of value to them. Many ambitious young men do not find that the kind of work offered by the Government, plus the lower pay, give them sufficient satisfaction to want to stay. The decentralization of agricultural economics services to the Regions of the Department of Agricultural Economics and Marketing may now be offering a greater inducement for young economists to continue with the Department. They are able to work in closer contact with farmers, and to collaborate more with research and extension men in the field, giving their work greater relevance to farm reality.

OCCUPATIONS AND INCOMES OF GRADUATES, 1974

Of 92 graduates from the Department of Agricultural Economics who had graduated from 1950 to 1973, 76 were working in positions that were associated with their discipline. Information about these graduates, with ages and incomes in mid-1974, is given in the Table 1.

At an average age of 32 the average income of all graduates was R9 654 in 1974. A total of 22 had completed an M.Sc.(Agric.) degree or its equivalent and 5 had doctorates. More than half were in professional posts, i.e. in salaried positions with a government service, private organisation or educational institution doing research, teaching or advisory work. One-third were in managerial positions in farms or businesses, some holding high executive positions in large companies. The 11 who were self-employed, included 9 farmers and 2 private consultants, and this group earned the highest average income.

Referring to place of employment in the table, the average earnings of those in the government service were the lowest, and in relation to age those in farming appeared to be doing the best.

Government salaries are obviously lower than in other places of employment, but graduates who leave the government service have gained valuable experience. Such experience is also valued by private enterprises who offer higher incomes than the Government in order to induce agricultural economists to give up the security and other benefits offered by the Government service. The Public Service, besides offering generous undergraduate bursaries, assists young economists

TABLE 1 - Statuses in 1974 of graduates of the Department of Agricultural Economics, University of Natal, 1950-1973

	Number	Average no. of years since graduation	Average age (years)	Average income (R)
All graduates	76	8,0	31,7	9 654
Highest qualifications				
B.Sc.(Agric.)	49	6,1	30,0	9 616
M.Sc.(Agric.) or equiv.	22	9,7	33,0	10 644
Doctor's degree	5	20,0	42,4	12 534
Type of employment				
Professional	41	9,2	33,1	8 709
Managerial	24	5,4	28,5	8 708
Self-employed	11	9,6	33,4	15 241
Place of employment				
Government	12	7,6	31,9	7 206
Private organisation	35	8,5	32,2	9 322
Farming	21	5,3	28,4	10 973
University	8	13,9	37,8	11 317

to proceed to post-graduate study, and a recent graduate with a bachelor's degree has much to gain by starting in Government Service, even if he does not make it his ultimate career.

Details of the multiple regression analysis are presented in the appendix, and the results are presented in the following three tables. Estimates are made of the incomes earned by graduates in different categories. In Table 2, for example, an estimate is made of the mean incomes that may be expected in different categories of graduates with different qualifications.

TABLE 2 - Regression estimates of incomes earned by graduates in Agricultural Economics, University of Natal, 8 years after graduating with the first degree in three categories of employment, 1974 (R)

Degree	Professional	Managerial	Self-employed
B.Sc.(Agric.)	8 024	8 903	14 592
Master's degree	9 329	10 208	15 879
Doctor's degree	8 394	9 273	14 963

The self-employed group averages much greater earnings than the managerial and professional groups. Those in managerial positions earn better than those in professional occupations. The holders of doctorates do not show up as well as holders of master's qualifications, but the sample of those holding doctor's degrees is small. What is clear, however, in the tables is that an M.Sc.(Agric.) earns R1 305 per annum more than a B.Sc.(Agric.), eight years after completing his first degree.

TABLE 3 - Regression estimates of incomes earned by graduates in Agricultural Economics, University of Natal, at age of 31,7 years in different places of employment, 1974 (R)

Degree	Govern-ment	Private organi-sation	Farming	University
B.Sc.(Agric.)	6 798	8 676	11 464	8 667
Master's degree	8 212	10 090	12 818	10 081
Doctor's degree	8 236	10 114	12 901	10 105

In Table 3 the farming group shows up the best, with private organisation and university about equal in earning power, for equivalent qualifications. Lowest incomes are earned by those working for the government. As in Table 2, the earnings of the holders of doctor's degrees do not show up any better than the incomes of those with master's degrees, hardly significant, because of the small number in the doctorate category. Moreover, those in universities who have doctorates are older than the average and have been working longer. Average incomes have probably levelled off, and estimates made at the mean may be biased on the low side.

TABLE 4 - Regression estimates of incomes earned by graduates in Agricultural Economics, University of Natal, 8 years after graduating with the first degree, in various fields of employment, 1974 (R)

	Govern-ment	Private organi-sation	Farming	University
Professional	7 357	8 563	-	10 016
Managerial	-	9 511	9 225	-
Self-employed	-	15 151	14 865	-

In Table 4 it may be seen that at estimated annual incomes of approximately R15 000, self-employed graduates in private non-farm organisations and in farming, are doing the best, followed by those in professional posts at Universities whose average incomes are R10 000. Those in managerial posts in private organisations and in farming, do better than those doing professional work for private organisations or the Government, the government group again showing the poorest income of all.

SUGGESTIONS OF GRADUATES FOR THE IMPROVEMENT OF TRAINING

Of the 97 questionnaires returned from graduates up to the end of 1974, 49 made suggestions on undergraduate or post-graduate training. A total of 78 suggestions were made and

these were classified into groups shown below, with the frequencies of the suggestions:

		Frequency
1.	More business administration, applied farm management, practical problems and case studies	31
2.	More accounting and income tax	11
3.	More mathematics, statistics, computer science and programming	6
4.	Better communication skills	6
5.	More technical courses	3
6.	More specialization	3
7.	Practical farm and professional or business experience	3
8.	More economic theory	1
9.	Other	14
	Total	78

The most important category is more business administration, applied farm management, practical problems and case studies. Graduates here obviously express a felt need in the light of their experience after leaving university. The need has in part been met by the greater specialization that the agricultural economics option has been offering over the last few years. The faculty also, in 1976, introduced a curriculum for a three-year degree in agricultural management.

The need for the three-year degree has been felt in various ways. Farmers have stated that the four-year agricultural degree trains a man in the science of agriculture, rather than to be a farmer. If farmers wish to send their sons to university to study agriculture to go farming, they wish the training to be in the business side of farming. Consequently, some farmers' sons choose the B.Com degree in preference to the B.Sc.(Agric.) degree. The Cedara College of Agriculture cannot accept all the students who apply for the two-year diploma course, and some of the top students at a college of agriculture should rather go to a university, where a three-year degree may meet their needs. Finally, the government subsidy to universities and faculties of agriculture, in particular, has come to be based on student numbers. Registrations over the last few years have shown a decline, and it has become important to increase the number in the faculty of agriculture.

More accounting and income tax tie in closely with the first group of suggestions and the two together with a total frequency of 42, account for more than half of the suggestions.

Six of the suggestions are for more mathematics and statistics, computer science and programming and their applications. Graduates who themselves have aptitudes in these directions are inclined to favour such courses, and we have at times allowed concessions to students to do more mathematics in the place of other prescribed courses.

Equal in importance to the more mathematics group is the group relating to better communication skills. There are variations here. More emphasis is suggested on group studies and group projects, alternatively more seminar type of work and freedom to work on one's own at a thesis. Better training in language, English and Afrikaans, with public speaking, and opportunities for expression of ideas, oral and written, linked with concise literary ability, are also suggested.

The inclusion of more technical courses has been proposed by three graduates who have been doing extension work, and/or farming. Of particular importance would be livestock nutrition.

The most specialization suggestions are along the lines of selecting from a wider range of options in order that curricula may be tailored towards future expected careers.

Under practical experience is visualized the doing of vacation work on farms or in firms or organisations, in the same way that veterinary science or engineering students are required to work during their vacations. This used to be a compulsory part of the B.Sc.(Agric.) degree, but later became optional. It is no longer insisted upon, partly because some students gained such little experience that was worth-while for their subsequent careers. A prescribed amount of practical work has been made part of the proposed three-year management degree.

Only one former graduate suggested the inclusion of more economic theory in the degree, while one view, classified into the "other" category was that the theory is too advanced for practical application.

A miscellany of 14 other suggestions was offered. The prescribing of more journal articles in the final year was one, and, better orientation and student advisory service in the early part of the course was another. Refreshing courses for graduates, a part-time M.Sc. or post-graduate diploma or M.B.A. in agriculture were other ideas put forward. Greater emphasis on the analysis and interpretation of trends in the economy and of economic influences, and studies of the world market in certain commodities and a course in transportation economics, were other suggestions. A particularly relevant proposal was the inclusion of a study of Black-labour management with particular reference to the social customs and religious beliefs of Nguni Blacks, requiring preliminary research.

The suggestions made above clearly point towards the desirability of more farm and business management in an applied sense, coupled with accounting and case studies. It is hoped that the three-year bachelor of agricultural management degree will meet this need. To put all the suggestions into effect, would require a greater degree of versatility than a small staff of three possesses. They do give a lead, and as the Department grows it will no doubt be possible to implement more of them, some having been put into effect since the graduates that made the suggestions left the faculty.

APPENDIX

THE STATISTICAL MODELS

Three multiple regression models were run with the following variates:

Y = income
x_1 = years since graduating with first degree
x_2 = age
x_3 = 1, for B.Sc. (Agric.)
x_4 = 1, for hons. or M.degree
If $x_3 = x_4$ = 0, for doctor's degree (dummy variate)
x_5 = 1, for professional
x_6 = 1, for managerial
If $x_5 = x_6$ = 0, for self-employed (dummy variate)
x_7 = 1, for Government
x_8 = 1, for private organisation (non-farm)
x_9 = 1, for farming
If $x_7 = x_8 = x_9$ = 0, for university (dummy variate)

The equations with the t-values for each coefficient shown, are given below:

$$Y = 13\,063 + 236x_1 - 370x_3 + 935x_4 - 6\,568x_5 - 5\,689x_6$$
$$(2,13) \quad (0,14) \quad (0,37) \quad (4,16) \quad (3,25)$$
$$R = 0,537 \quad \ldots\ldots (1)$$

$$Y = 2\,799 + 231x_2 - 1\,438x_3 - 24x_4 - 1\,869x_7 + 9x_8 + 2\,797x_9$$
$$(2,39) \quad (0,45) \quad (0,01) \quad (0,67) \quad (0,0036) \quad (1,05)$$
$$R = 0,412 \quad \ldots\ldots (2)$$

$$Y = 14\,704 + 231x_2 - 6\,588x_5 - 5\,640x_6 - 2\,659x_7 - 1\,453x_8 - 1\,739x_9$$
$$(2,32) \quad (2,89) \quad (3,02) \quad (1,20) \quad (0,72) \quad (0,63)$$
$$R = 0,541 \quad \ldots\ldots (3)$$

The equations do not represent good fits judged by the relatively low R-values of 0,537, 0,412 and 0,541. They do, however, represent a finite population that cannot be improved by any sampling procedure. While some of the t-values are low, they are, nevertheless, meaningful. Number of years since graduation and age are both significantly related to income. In equation 1 the coefficient for x_1 shows that after the effects of all the other variates have been eliminated, 1 extra year after graduation earns R236 extra in income. In equation 2 the residual effect of an extra year in age means a R231 increase in income, the same figure as in equation 3 for a year extra since graduation.

The low t-values for x_3 and x_4 in equation 1, indicate that average incomes of holders of doctor's degrees do not differ significantly from those holding B.Sc.(Agric.) alone, or the master's degree. A B.Sc.(Agric.) at the average of 8 years since graduation earns R370 less than a doctorate, but an M.Sc.(Agric.) R935 more than a doctorate. There are only 5 in the population with doctor's degrees and little importance should be attached to this finding. Graduates in professional and managerial positions on the average earn R6 568 and R5 689 less than those who are self-employed, and the t-values are significant here.

In equation 2, a B.Sc.(Agric.) is shown to earn R1 438 less than the holder of a doctorate and an M.Sc.(Agric.) R24 less. At the same age of 31 an economist working for the Government earns R1 869 less than another working for a university. In a private organisation the average income is R9 better than at a university, but in farming the average earnings are R2 797 higher.

In equation 3 those in professional and managerial positions, respectively earn R6 588 and R5 640 less than the self-employed, at an average of 8 years since graduation. Those working in the Government, a private organisation or farming, all earn less than those working at universities although the differences are not significant in the cases of private organisations and farming.

REFERENCE

BEHRMANN, H.I. (1976). The Department of Agricultural Economics, University of Natal, 1948 to 1975.