AN EXAMINATION
INTO THE SIGNIFICANCE OF
A
FARM INPUT COMPARATIVE EVALUATION SERVICE
FOR
NEW ZEALAND

by

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INTRODUCTION

1.1 Preface

The problem of choosing the most productive input per $ to combine with other farm inputs is becoming increasingly magnified with the greater dependence of primary industry on secondary industry for its inputs. Tweeten [1] suggests that in the United States, while the aggregate farm input level has remained nearly constant since the late 1920's, use of purchased inputs has increased approximately 70% since 1929. Breimyer [2] quotes Loomis and Barton, who estimate that as recently as 1940 about 66% of the total inputs into agriculture were land and farm-resident labour; however in 1961 only 37% of the inputs belonged to these classes, showing that non-farm inputs have doubled their proportionate share.

It is suggested that the farmer does not have adequate information at the present time to help him in his decision making as to the most productive inputs to purchase, particularly when the goods produced by the non-farm sector of the economy consist of a few goods which are slightly differentiated in design. The presence of a large number of slightly differentiated goods is associated with specialization and scale in secondary industry.

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1 L.G. Tweeten, "Determining Factor Shares : Discussion", Chap.9 in Farmers in the Market Economy (Ames: Iowa State University Press, 1964), 217.

2 H.F. Breimyer, "The Changing Institutional Organization", Chap.7 in Farmers in the Market Economy (Ames: Iowa State University Press, 1964), 157.

1.2 Objectives of the Study

The Molony Report [3] says, "It was represented to us that the farmer, the small shopkeeper, the boarding-house proprietor, and others in like case, purchase supplies and equipment for business use on so limited a scale, and with so limited a business experience, as to make their problems closely comparable with those of the domestic consumer: and, therefore, that our study should embrace the special difficulties which such groups were said to experience. With that view, we did not agree. The problems experienced by the small business may differ from those encountered by the larger concerns, but only in degree; they all form part of the pattern of commercial relationship arising between those who have elected to buy and sell as a matter of business. As such, they must clearly be set apart from the problems of the purchaser who shops purely in a private capacity. Hence our restriction to goods acquired 'for private use or consumption' ".

Given the trend towards more capital-intensive farming methods, the assumption that a farmer has a complete awareness of the effectiveness of various inputs is unfounded.

The increasing proportion of non-farm inputs used in the farm production process, together with the increasing sophistication of these manufactured inputs, suggests that extension is required in the field of input selection.

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3 Great Britain Board of Trade, Final Report of the Committee on Consumer Protection (London: H.M.S.O. 1962), 1.

It is a feature of agriculture that research should be provided by Government because of the atomistic structure of the industry where no one farmer can support a research project. In addition, as one aspect of providing for the welfare of the nation, Government has undertaken the responsibility of providing research funds so that the cost of agricultural production may continue to decrease in real terms.

To enable research results to be applied on farms it is necessary for the Government to develop an extension service as an individual farm is too small to employ an agricultural adviser. Government has also accepted it as a responsibility in most countries to provide extension services to enable those who stay in agriculture to attain a reasonable standard of living, and in some cases to move redundant labour out of agriculture as rapidly as possible.

In recent years farmers have cooperated on a local basis to provide their own extension services through the Farm Improvement Club Movement. This Movement has also been a cooperative supply group for certain inputs for farmer members.

A further stage in this Farm Improvement Club Movement would be for farmers to cooperate to enable the comparative testing of certain farm inputs to be carried out. Evidence suggests that a sum of $100,000 - $150,000 p.a. could be available to enable comparative testing of farm inputs to be undertaken.

The objectives of this study are: -

I. To ascertain the adequacy and reliability of commercial information available to the farmer with the present institutional arrangements and the existing legislation.

II. To classify the type of items on which farmers feel they have insufficient information.

III. To suggest an institutional framework to either carry out comparative tests or to make information more readily available to the farmer.

IV. To check the range and price of inputs available to farmers in New Zealand compared with those available to farmers in other developed countries.

1.3 Statement of the Problem

The New Zealand Industrial Production Statistics [4] indicate that the total value of the goods purchased from secondary industry by farmers is in the vicinity of $28m. The Inter-Industry Study of the New Zealand Economy 1959-60 [5] produces an estimate of $21m. Details as to how the estimate was derived are shown in Appendix A.

In addition to inputs manufactured by New Zealand industry, $32m. worth of farm inputs were imported into New Zealand in 1959-60 [6].

This means the total value of the inputs moving from secondary industry into primary industry is approximately $60m. annually.

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4 N.Z. Dept. of Statistics, N.Z. Industrial Production 1965-66 (Wellington: Government Printer), 149 - 232.

5 N.Z. Dept. of Statistics, Inter-Industry Study of the N.Z. Economy 1959-60 (Wellington: Government Printer), Part 1, Table 1.1.

6 Ibid.

The figure of $28m. obtained above represents 1.2% of the value of factory production in New Zealand, and the figure of $60m. represents 7.8% of the gross farming income (excluding Horticulture, Poultry and Bees), for the year 1964-65. $60m. represents half the cost of the first three stages of the new iron and steel industry, N.Z.Steel Ltd.

As a percentage $60m. is not a large figure. However it must be remembered that labour is an important complementary input with these manufactured inputs. Combining labour with a low quality input can have both a high apparent cost and a high opportunity cost, if the input does not do its particular job adequately.

An example of the cost of labour associated with the use of manufactured inputs is that of fencing. Pearse and Humphries [7] estimate that the 40m. chains of fencing in New Zealand would have a replacement value of about $400m. During 1963-64 7.25m. fence posts were used on farm land, representing in terms of fencing (at 3.5 posts and $10 per chain), an annual expenditure of approximately $20m. A $14m. wage bill (2m. chains of fencing at $7 per chain) could mean a substantial national loss if the labour was combined with inefficient inputs. $34m. represents a large quantity of resources to be invested nationally, and even a quite small reduction in cost and/or efficiency of use of fencing materials could mean a substantial national saving.

At the present time most farm inputs come under some form of test at the factory level on a quality control basis, or are required by legislation to reach some minimum level of performance. The Standards Association has also developed Standards for some farm inputs to protect the farmer against the purchase of inferior quality goods.

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7 H.C.H. Pearse and K.R. Humphries, "Reducing Fencing Costs on Hill Country", Massey Sheepfarming Annual 1966 (Palmerston North,N.Z.) 225.

Tests are also carried out by Government Departments, but trade-names are not published. These tests, carried out by Government Departments in the course of their research activities, only inform the farmer that there are certain faulty goods coming on to, or available on the market, but there is no indication of the particular brands involved.

It is normal policy of Government Departments throughout the world to maintain a position of impartiality in business and commerce by not promoting any particular brand. Since this impartiality is a feature of Government policy it would seem that the test results, stored up in Government Departments would never be available to the public unless pressure were put on the Government to release this information for use by a comparative testing organisation.

1.4 Procedure

The following is the procedure used:

A. A review of literature was undertaken to -

I. Review the techniques used in consumer protection at the present time.

II. Compare the differences between industrial and agricultural organisation.

III. Determine the value of cooperatives in agriculture, with particular reference to supply cooperatives: the role of supply cooperatives in selective buying, and the recent development of the cooperative trading group in New Zealand.

IV. Review overseas attempts to set up a farm input testing service.

V. Review the attempts in New Zealand to implement a testing service and the present situation in regard to testing.

B. A survey was undertaken -

The survey was designed to obtain greater insight into the need for an input testing unit by farmers. The review of literature showed a genuine interest in input testing amongst farmers, but the documentation of the items which should be tested, and the organisational features of a testing service were unavailable. The survey used to obtain greater insight into the need for farm input testing took the form of a mail survey, using a two-page, pre-tested questionnaire.

The farmers included in the survey consisted of 952 farmers who had already been contacted by telephone in the course of a telephone survey. A further 176 farmers, who belonged to the Manawatu Farm Improvement Club were also contacted.

The data was processed by a computer.

C. Survey results were tested for significance -

The purpose of a significance test is to provide a means of deciding whether differences in observed data are due to chance variations resulting from sampling.

By setting up a null hypothesis and calculating the probability (p) with which the observed event could have occurred due to sampling, a reasonably objective basis for deciding on the acceptance or rejection of differences is available.

The levels of significance chosen for this study, together with a description of these levels, are shown below: -

$p < 5\%$: the difference is significant.

$10\% > p > 5\%$: the difference may be significant.

$p > 10\%$: the difference is non-significant (N.S.).

Both t-tests and chi-square tests were used to analyse results. The t-test tested whether certain sample means for respondents and non-respondents could have come from the same population [8], while the chi-square test was applied to examine: -

(i) A hypothesis specifying the frequency with which observations fell into certain classifications [9].

(ii) Contingency tables for the presence or absence of an association between two criteria of classification [10].

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8 A.L. Edwards, Statistical Methods for the Behavioural Sciences (New York : Rinehart, 1960), 252 - 255.

9 G.W. Snedecor, Statistical Methods (Ames : Iowa State University Press, 1956), 24.

10 Ibid., 225-227.

In tables where it was felt the criteria were obviously associated, no chi-square test was carried out.