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THE ECONOMICS OF GROWING
SUGAR BEET ON FARMS
IN SOUTH OTAGO

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CHAPTER 1

INTRODUCTION

In recent years farmers and agricultural scientists have become increasingly interested in the possibilities of diversifying New Zealand agricultural production. This interest has been stimulated by the decline in price of the main primary products over the last decade and the present uncertain economic outlook, particularly for dairy products and lamb. A number of proposals have been made. One which has been made frequently and has been examined seriously on several occasions is the suggestion that New Zealand should produce sugar from domestically grown beet.

In 1960 a determined effort was commenced in South Otago to investigate the feasibility of a beet sugar industry centred on Balclutha. This investigation, initiated by the Otago Development Council and Otago Federated Farmers has studied the economics of factory operations and conducted trials to determine probable yields of sugar beet on farms in the district. There has, however, been no attempt to systematically study the Farm Management implications of the crop on individual farms. This thesis is primarily concerned with this aspect of the proposal and employs Linear Programming to clarify and analyse the problem.

One of the fundamental problems in empirical Farm Management Research is the difficulty, or even the impossibility of making detailed district recommendations on the basis of a sample survey of a restricted number of farms. It is well known, but not always fully appreciated, that the financial, physical and social circumstances of farmers often differ markedly. This difficulty is accentuated when a district has a multiplicity of soil types and land contours, particularly

when this has resulted in the development of several distinct systems of farming. South Otago presents the analyst with these problems.

Another associated problem is that of estimating the changes and ramifications on the farm following the introduction of a new crop, with no commercial farming data and an extremely meagre supply of sound experimental data. An extensive experimental programme would be required to provide all the desired information. Since finance for research and the number of research workers are both limited, it was considered worthwhile - indeed essential - to make a preliminary assessment using the available data from Otago and the voluminous supply of overseas information, adjusted as far as possible for New Zealand conditions.

The outline of a research programme that would provide the necessary data to allow a confident decision on the advisability of establishing a Beet Sugar Industry is presented in Chapter 8.

Because of the analytical problems and the lack of reliable data, the detailed analyses in this study are confined to case farm situations in South Otago, which are believed to be reasonably representative of the soil type and contour described. This means that care should be taken in the interpretation of the numerical results. The appropriate adjustments must be made to the figures given and practices described here, when they do not exactly conform to any particular farm being analysed.

The key factor in the success or failure of a beet sugar industry is the attitude of the individual farmer. He is required to produce the raw material for processing and his problems and preferences as well as the price he requires should be adequately assessed before the project is taken very far. Both economic and sociological factors affect the individual farmer's decisions. Since the success of the industry will be affected by both factors, it is imperative that they be considered together.

A brief historical review of the world beet sugar industry and of the investigations that have been made in New Zealand is given in Chapter 2. Chapter 3 considers South Otago in relation to the technical requirements of sugar beet culture as far as they can be ascertained from overseas information, while the detailed results of the trial work that has been conducted in South Otago is presented in Chapter 4. Discussions of the farm survey methods used and the results, is given in Chapter 5 and the calculation of gross margins in Chapter 6.

The results of the Linear Programming analyses of three Case Farms is presented in Chapter 7. These results indicate that intensive sugar beet production either in association with wheat, or alone, could increase farm incomes substantially. The subjection of this increased income to progressive taxation would, however, detract from the apparent attractiveness of sugar beet production on individual farms.

The final chapter summarises the findings, draws some conclusions and makes recommendations for further research. The general conclusion is that the actual construction of a sugar beet factory should not commence for at least five years to give adequate time for a thorough examination of the whole subject.

Despite the problems and limitations discussed, it is hoped that this study will provide a basis on which farmers and their advisers can assess the merits of the crop and enable them to make an informed decision on whether to contract to grow sugar beet for any proposed factory. It should also give some guidance to potential investors and to those who have the responsibility of making policy decisions concerning the beet sugar industry in New Zealand.