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**HORTICULTURE AND THE  
NEW ZEALAND ECONOMY  
- SOME SUGGESTED DEVELOPMENTS  
IN HORTICULTURAL ECONOMICS**

by  
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OCTOBER 1977

Discussion Paper No. 55  
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### Preface

Dr. A.N. Rae, Reader in Horticultural Management presented the following paper to an International Symposium on Horticultural Economics at Budapest, Hungary in September 1977. Although the paper is critical of certain European policies, particularly the Common Agricultural Policy of the European Economic Community it was well received by the participants.

It is important that a New Zealand point of view be expressed and heard at as many international forums as possible. Being a small country with little direct influence on the course of world affairs we must take every opportunity of pointing out the deficiencies of protective policies and (if possible) suggesting alternatives which are capable of accommodating both New Zealand and European aspirations.

I hope you enjoy reading the paper.

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## HORTICULTURE AND THE NEW ZEALAND ECONOMY - SOME SUGGESTED DEVELOPMENTS IN HORTICULTURAL ECONOMICS

### 1. INTRODUCTION

Many countries, such as those of West Europe and North America, have been forced to confront the problem of reallocating resources from agricultural to non-agricultural employment as development has proceeded in those countries. Low price and income demand elasticities ensure that a smaller and smaller proportion of an ever-increasing national income is earned by resources employed in agriculture, and hence the familiar 'low income' farm problem arises. Most usually, these countries have attempted to solve such problems through price support and trade restriction.

By contrast, agricultural trading nations such as New Zealand face more elastic demands for their exports, and the need to shift resources out of agriculture does not necessarily arise. Instead, we find that the protectionist policies adopted by the industrial countries tend to transfer the agricultural problems of those countries to agricultural exporting nations such as New Zealand by reducing the scope for, and gains from, international trade.

### 2. AGRICULTURE, TRADE AND THE NEW ZEALAND ECONOMY

Table 1 shows that for six of the eight years commencing 1969-70, New Zealand's balance of payments has shown a deficit on current account. This deficit reached a peak of almost \$1400 million in 1974-75, compared with total export earnings in the same year of \$1600 million. Since about 1973, rising oil prices and other factors leading to rapid international inflation resulted in a sharp increase in both the cost of New Zealand's imports, and international freight costs. The volume of imports also increased rapidly during 1973 and 1974, in response to the high export earnings of that time. Even though the volume of imports was greatly reduced from 1975 to 1976, higher import prices

Table 1. Balance of Payments (Current account - \$NZ million)

| March year         | Exports<br>(fob) | Imports<br>(fob) <sup>b</sup> | Net invisibles | Balance |
|--------------------|------------------|-------------------------------|----------------|---------|
| 1969-70            | 1108.6           | - 827.1                       | -251.8         | 29.6    |
| 70-71              | 1097.3           | -1042.0                       | -253.5         | - 198.2 |
| 71-72              | 1299.4           | -1070.2                       | -242.1         | - 12.9  |
| 72-73              | 1659.7           | -1222.4                       | -275.9         | 161.4   |
| 73-74              | 1834.3           | -1582.7                       | -365.6         | - 114.0 |
| 74-75              | 1621.8           | -2576.6                       | -414.9         | -1369.7 |
| 75-76 <sup>a</sup> | 2038.2           | -2579.1                       | -476.2         | -1017.1 |
| 76-77 <sup>a</sup> | 2994.0           | -3128.0                       | -727.0         | - 861.0 |

a Provisional.

b Free on board in overseas exporting country.

Source: N.Z. Department of Statistics.

kept total import payments constant over those years, and increases in both prices and volume further increased import payments for the year ending March, 1977.

At the same time as the volume of imports was increasing, the volume of exports was falling. This was due primarily to the effect of high domestic inflation (about 15 per cent per year) on the real value of farmers' export-based incomes and consequently investment plans and also to drought years resulting in reduced yields. This also coincided with a fall in export prices during 1974 and early 1975, to produce a decline in export earnings from 1973-74 to 1974-75 of 12 per cent, at the same time as import payments increased by 63 per cent. Since then, the terms of trade have shown no long-term change, and the improvement in the balance of payments deficit has been due to increased export volumes and a reduced volume of imports.

Since New Zealand has little control over the level of net invisible payments, and since the level of imports has been reduced to a level beyond which further reductions would lead to problems of unemployment, preferred solutions to New Zealand's balance of payments problem include a significant increase in export earnings.

The commodity composition of New Zealand's exports is indicated in

Table 2. The three major commodity groups of meat, dairy and wool, normally contribute around 65-70 per cent of total export earnings. These, plus other agricultural products, account for over 80 per cent of export receipts. Thus, not only is New Zealand dependent on increased export earnings for higher future living standards, but it is inevitable that much of this increase must be provided by the agricultural sector. Also note from Table 2 that horticultural exports have increased at the same average rate as total exports of about 17 per cent per year, and comprise around 2-2½ per cent of total export earnings.

Table 2. Value of Exports (f.o.b.\$NZ million)

| June year                      | Meat  | Dairy | Wool  | Horticultural | Other <sup>b</sup> | Total  | Horticulture as % total exports |
|--------------------------------|-------|-------|-------|---------------|--------------------|--------|---------------------------------|
| 1969-70                        | 368.9 | 188.1 | 204.2 | 21.7          | 281.7              | 1064.5 | 2.0                             |
| 70-71                          | 390.8 | 198.7 | 187.9 | 21.4          | 309.4              | 1108.1 | 1.9                             |
| 71-72                          | 399.0 | 329.9 | 228.6 | 23.2          | 366.0              | 1346.6 | 1.7                             |
| 72-73                          | 540.9 | 307.3 | 424.0 | 31.0          | 455.7              | 1758.7 | 1.8                             |
| 73-74                          | 534.1 | 304.5 | 361.6 | 36.3          | 510.0              | 1746.2 | 2.1                             |
| 74-75                          | 442.2 | 276.5 | 261.7 | 41.7          | 536.4              | 1558.0 | 2.6                             |
| 75-76 <sup>a</sup>             | 590.6 | 369.1 | 455.7 | 48.8          | 782.6              | 2246.8 | 2.2                             |
| 76-77 <sup>a</sup>             | 754.8 | 445.4 | 645.3 | 64.6          | 1153.7             | 3063.3 | 2.1                             |
| Average annual growth rate (%) | 17.3  |       |       |               |                    | 17.9   |                                 |

a Provisional.

b Includes principally hides and skins, tallow, casein, forest products, and other manufactured exports.

Given New Zealand's vulnerability to variations in her export receipts, an indication of her reliance on markets which have adopted an agricultural protectionist stand is relevant. About one in every two dollars of total export receipts were earned on what are now EEC markets (principally the UK) in 1970. Since then, New Zealand has diverted trade away from the UK, given that country's decision to enter the EEC. Even so, one third of New Zealand's export income was still earned within the EEC in 1975-76, which

explains New Zealand's deep concern over future trading arrangements with that region. A similar situation exists for apples, New Zealand's major horticultural export, as 75 per cent of apple exports (by volume) were sold in the EEC during the early 1970's, this proportion being reduced to nearer 50 per cent by 1976. At the same time, the apple trade with Scandinavia, North America, South-east Asia and the Pacific region has shown a steady increase.

### 3. SCOPE FOR EXPANSION OF HORTICULTURAL EXPORTS

New Zealand's major horticultural exports over the period 1969-77 are shown in Table 3. Apples are the major single commodity, accounting for 35-45 per cent of the value of horticultural exports. Both the volume and value of kiwifruit exports have increased rapidly, fresh potatoes and onions have returned increasing earnings over the last few years, while the export of processed fruit and vegetables has shown only limited growth in recent years apart from a large increase in 1976-77.

It can be shown that considerable potential exists for the expansion of horticultural exports from New Zealand. The quantity of apples available for export in 1982-83 is projected to be about 140 000 tonnes [14], or almost double the existing level, with around 60 per cent of this output being of the preferred Granny Smith and Red Delicious varieties. By projecting recent f.o.b. prices, this export quantity is valued at around \$48 million (in 1982-83 prices).

Production of kiwifruit, the other major single export commodity, has also been projected to increase rapidly in the near future. Between 1968 and 1973, the area planted in kiwifruit increased by 440 per cent to 720 ha. Since over 80 per cent of total plantings in 1973 were no more than five years old and largely non-bearing, substantial increases in production are foreseen. Total production could increase to 14 000 tonnes by 1978 and perhaps 23 000 tonnes by 1983 [13], as compared to total production of 4400 tonnes in 1975. From this total output, export sales are conservatively

Table 3.    New Zealand Horticultural Exports - Past and Future Potential (\$ million f.o.b.)

| June year             | <u>Apples</u>                        |       | <u>Kiwifruit</u>                     |       | Fresh<br>potatoes<br>and onions | Processed<br>fruit and<br>vegetables | Other <sup>b)</sup> | Total<br>export<br>earnings |
|-----------------------|--------------------------------------|-------|--------------------------------------|-------|---------------------------------|--------------------------------------|---------------------|-----------------------------|
|                       | volume<br>( <sup>'</sup> 000 tonnes) | value | volume<br>( <sup>'</sup> 000 tonnes) | value |                                 |                                      |                     |                             |
| 1969-70               | 54.6                                 | 8.9   | 0.5                                  | 0.3   | 1.3                             | 6.0                                  | 4.2                 | 21.7                        |
| 70-71                 | 52.1                                 | 8.6   | 0.7                                  | 0.4   | 1.5                             | 8.2                                  | 1.7                 | 21.4                        |
| 71-72                 | 58.1                                 | 10.4  | 1.0                                  | 0.7   | 1.5                             | 4.9                                  | 5.1                 | 23.2                        |
| 72-73                 | 66.8                                 | 12.9  | 0.7                                  | 0.5   | 2.4                             | 7.9                                  | 6.0                 | 31.0                        |
| 73-74                 | 66.3                                 | 12.8  | 1.8                                  | 1.6   | 3.6                             | 7.7                                  | 9.6                 | 36.3                        |
| 74-75                 | 79.6                                 | 18.1  | 3.1                                  | 2.9   | 2.3                             | 6.8                                  | 10.8                | 41.7                        |
| 75-76 <sup>a)</sup>   | 71.6                                 | 19.2  | 3.5                                  | 4.4   | 5.8                             | 7.7                                  | 11.7                | 48.8                        |
| 76-77 <sup>a)</sup>   | 57.0                                 | 15.5  | 6.1                                  | 10.0  | 11.9                            | 16.1                                 | 9.6                 | 64.6                        |
| Projection<br>1982-83 | 140                                  | 48    | 16                                   | 30    | 50                              |                                      |                     | 128                         |

a Provisional.

b Includes fresh vegetables other than potatoes and onions, seeds and ornamentals.

Source: 1969-70 - 1976-77 N.Z. Department of Statistics.

1982-83 - author's projection based partly on total production projections made by  
N.Z. Ministry of Agriculture and Fisheries.

estimated to be around 16 000 tonnes in 1982-83. The future behaviour of kiwifruit prices is even more difficult to predict than with apples, since up till now New Zealand has faced little international competition. However countries in Europe and North America have shown interest in producing this fruit which, although seasonally complementary with southern hemisphere fruit could eventually compete more and more with the New Zealand product if those countries can successfully develop long-term storage. Even if actual prices show only moderate increases on recent levels total export earnings from kiwifruit could reach \$30 million in 1982-83.

The potential for increased export earnings from all horticultural exports other than apples and kiwifruit is crudely estimated by simply projecting past values according to a time trend, as lack of suitable data prevented an improved analysis being made.

Results are summarised in the final row of Table 3. It appears that total horticultural export receipts could increase to \$128 million by 1982-83, an increase of almost 100 per cent over 1976-77 earnings. Apples could still contribute around 40 per cent of that total, and the potential growth of the kiwifruit industry is such that it could earn around 25 per cent of total horticultural export earnings in 1982-83. Hence considerable potential exists for New Zealand's horticultural industries to contribute to an improvement in New Zealand's economic situation over the next half dozen years.

#### 4. REQUIREMENTS FOR FUTURE RESEARCH IF GROWTH POTENTIAL IS TO BE REALISED

##### 4.1 The Effects of Protectionism

The Common Agricultural Policy (CAP) of the European Economic Community constitutes a threat to New Zealand's ability to realise its potential horticultural foreign exchange earnings. At present, about half by volume of all exports of apples, the single most important commodity, are affected directly by that policy. A common external tariff exists, as do minimum import (reference) prices which require a variable levy to be paid should

import prices fall below the minimum reference prices. Of even greater concern to New Zealand is the safeguard clause, which enables the EEC to impose quotas, additional levies, or to ban third-country imports completely, should EEC markets be seriously depressed. The EEC also subsidises apple exports, even in those years when the volume of the EEC crop is below average [1, p.15] to certain countries in South America, Africa, Scandinavia and the Middle East. This poses a threat to New Zealand's competitiveness, especially in the developing markets of the Middle East, and does not assist her task of redirecting exports away from Europe.

Underlying these trade barriers and distortions, lies the EEC's scheme of price support by market intervention for her domestic producers. This scheme reflects the major objective of the CAP's price and incomes policy, which is to establish prices at a level that will enable European producers to earn incomes that are socially and politically acceptable. It is recognised by many economists [7, 9, 10] that such a scheme is difficult to justify on economic grounds when a structural over-supply problem exists in the apple industries of certain EEC countries. While it is recognised that efforts are being made to withdraw resources from those industries, the potential for excess supply still exists, and could lead to further tightening of barriers to trade with third countries, and a continuation of the export restitutions. For example, two principal EEC farm organisations, COPA and COGECA, have called for a general raising of reference prices and their extension to cover all EEC horticultural products influenced by third country production. They also suggested that measures should be taken to make EEC imports complementary to EEC production and that quantitative restrictions and the safeguards clause should be used in good time where necessary [2].

Neither of these signs augur well for the growth of New Zealand's kiwifruit export trade to EEC countries. Production of this fruit is increasing in France for example, and could reach significant levels in the next decade. It is not impossible that the CAP would then be extended to protect EEC kiwifruit producers from New Zealand competition, despite the complementary nature of northern and southern hemisphere production.

Domestic welfare problems notwithstanding, the principle of comparative advantage must be allowed to influence the direction and volume of international horticultural trade. If not, costs will be imposed upon consumers and taxpayers in the protectionist countries, as well as on those trading nations whose comparative advantage would allow them, in the absence of trade restriction, to realise gains from trade. It is therefore disturbing to note that schemes are being proposed from within the EEC that seem to imply that 'self sufficiency', rather than comparative advantage, should be the basis of trade. One such plan [12] proposes that international reference prices be determined for a range of commodities and that individual countries be required to intervene in the market when prices fall to the reference level. This could involve the determination of self-sufficiency 'norms', with the cost of surplus disposal being borne by individual governments in proportion to the extent to which their total production exceeds the agreed level of self-sufficiency. Hence countries that expand output when world output exceeds demand at the reference prices would be penalised, even when comparative advantage indicates that such countries should expand output.

I believe that horticultural economists have much to do in devising and evaluating, from the points of view of both exporters and importers, alternative strategies aimed at overcoming the problems of structural surpluses in various horticultural commodities both within the EEC and without. It is suggested that such alternatives might include a gradual reduction in the extent of price support, an improvement in rural education opportunities, measures to facilitate labour mobility such as subsidisation of relocation costs, and direct income grants to low-income producers who for a variety of reasons could not be expected to increase their incomes through migration or change of vocation. In other words, I believe we need to pay closer attention to policies that attempt to solve income problems by removing the obstacles to resource reallocation, rather than removing the effect but not the cause of low incomes through price support schemes. In the shorter term we could also be exploring the feasibility, both economic and political, of policies that provide controlled access to importing countries for additional supplies from low cost third-country suppliers, within the framework of existing protective policies.

Policies arising from such research should allow the pattern of international trade to reflect comparative advantages more so than is evident at present, to the long-term gain of all trading countries. This is also relevant given the likelihood of Mediterranean countries joining the EEC, as foreseen by Wolf [16] at the second Horticultural Economics Symposium.

#### 4.2 Marketing Institutions

The rapid growth of the New Zealand kiwifruit industry in recent years has highlighted another problem area in which horticultural (or agricultural) economists know too few of the answers. Up to the present, export of this product has been undertaken by 10-15 private firms, who have freedom of entry into the kiwifruit export industry. No government regulations have existed up till now governing the activities of such exporters, the only regulations being those that set minimum quality standards for export fruit.

This uncontrolled, private enterprise approach has probably resulted in certain benefits, as well as costs, compared to a more centrally-planned approach. Exporters have competed vigorously with one another for available supplies with consequent effects on grower prices. A few of these firms, in particular, have adopted sophisticated approaches to market development and promotion, and the successful growth of this industry to date is widely recognised as being due, in large part, to their marketing expertise. On the other hand, there is some evidence of irrational distribution of supplies between markets, perhaps due to inexperienced exporters quitting their supplies on already well-supplied markets to save the trouble of developing new markets, or perhaps because they lack the knowledge to maintain fruit quality in store. Too, there have been charges that New Zealand exporters, by competing one with another on a given market, have reduced prices below what might have been achieved through better supply allocation.

Thus the organisation of kiwifruit export marketing differs fundamentally from that of apple exports, the latter being handled solely by a marketing board. Since the above problems could become more severe as kiwifruit export supplies increase in the future, the question arises as to whether any form of co-operation or state intervention is likely to lead to greater

foreign exchange earnings in the future, than a continuation of the present system. This is a subject in which too little research appears to have been conducted. Some agricultural economists [5, 6, 15] have been downright critical of the ability of state marketing boards to increase earnings through market expansion or cost reductions. Very little evidence has been presented to either support or refute their views, however, and Bateman [4] has recently rebuked economists for making recommendations without such evidence. We do, however, have a little more evidence as to the ability of producer boards to increase earnings from given demands by practising various forms of price discrimination and market intervention [3, 8].

Does the available evidence suggest that marketing boards are better at taking produce off markets than in putting produce into markets? Does it suggest that marketing boards show their real value in situations of over supply? Does it suggest that private enterprise should be relied on to develop and establish markets, to be followed by a marketing board to handle the increased supplies encouraged by the success of the private exporting firms? Or would a marketing board, exposed to the rigours of international competition, have been just as vigorous and innovative a marketing organisation as were the private firms, had such been in existence? I believe that these are important questions, about which we can make few, if any, definite recommendations.

Other alternatives no doubt also exist. New Zealand kiwifruit producers have been debating the merits of establishing a marketing authority whose principal function would be to license exporting firms, with the power to refuse the issue of licences to certain firms for various reasons. Some kiwifruit producers have formed themselves into a co-operative, whose main functions are the assembly, grading, packaging and storage of kiwifruit. So far, members of the co-operative have nominated their chosen exporter, but the co-operative could also enter the export field itself should this be considered desirable. Again, this points to another type of marketing institution whose potential performance as an exporter of a high value, perishable product should be researched. The prevalence of co-operatives, both private and state, in European horticulture suggest that we are perhaps

in a better position to obtain data and therefore judge the relative merits of co-operatives than we are for the state marketing boards.

#### 4.3 The Economist's Contribution to Horticultural Research

A strategy aimed at increasing the value of horticultural exports would likely include efforts to increase the efficiency of production, so that New Zealand can maintain its comparative advantage in the face of rapidly escalating transport costs. For example, the overseas marketing costs incurred in selling New Zealand's pipfruit exports in 1976 amounted to just over 60 per cent of the average c.i.f. return, whereas ten years earlier it was less than 50 per cent. At the same time, however, the widespread implementation of New Zealand research [11] into semi-intensive production techniques has increased yields<sup>1</sup> per bearing hectare and hence assisted in maintaining grower incomes. Such a strategy would also likely include research efforts aimed at identifying new crops for export, and determining their most profitable production techniques. Many of today's markets are characterised by high consumer incomes and the production of 'luxury' products aimed at high-income market segments could be an attractive proposition. Thus in New Zealand there is widespread interest in the cultivation of crops such as avocado pears and other subtropical fruits, as well as a range of nut crops.

One would hope that the horticultural economist would become more involved in evaluating the results of technical research, which so often in the past has been evaluated only in terms of technical efficiency and arbitrary significance levels. There are now signs, both in New Zealand and elsewhere, that physical scientists are realising that economists possess skills that should be a necessary input to a well managed multi-disciplinary research effort, if scientific findings are to be assessed in the light of the current economic and market situations. I hope that the future will see

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<sup>1</sup> A sample survey included in [14] estimated that in 1974-75, the N.Z. average apple yield was 41 tonnes per hectare. Another survey [13] showed that the average apple planting density had increased from 360 trees/ha in 1968 to 413/ha in 1973.

the formation of systems-oriented research teams, involving horticultural scientists, horticultural production economists and market research analysts. I suspect that this could involve a 'selling effort' on the part of the economists, however.

## 5. SUMMARY

New Zealand is a country which depends largely upon the export of land-based products for her standard of living. Increasing freight costs and the import policies of her trading partners, as well as the increasing cost of necessary imports, are threatening New Zealand's standard of living. While the New Zealand horticulture industry provides only around  $2\frac{1}{2}$  per cent of total export earnings, its growth potential is such that its export earnings (f.o.b.) could double over the next six years to reach \$NZ130 million.

Three problems were identified in realising this potential. One concerned the possibility of trading partners maintaining or increasing protection of their domestic horticultural industries, by reducing access to their markets for imports from cost-efficient third-country suppliers. The second involved the possible weakness of existing marketing arrangements. The third was that New Zealand's comparative production advantage could be eroded by rising freight costs unless efforts are continually made to determine most-profitable production technology.

Hence the developments in horticultural economics that I would like to see taking place would include a greater involvement of horticultural economists in determining the costs of horticultural protection and the evaluation of alternative strategies to solve the structural problems that exist in many countries. They also include attempts to evaluate, more successfully than in the past, the merits of alternative marketing institutions such as producer co-operatives and state marketing boards vis-a-vis the private trader. The third area in which I believe horticultural economists should increase their efforts involves placing greater emphasis on integrated systems approaches to the evaluation of horticultural production

techniques, in order to maintain comparative advantages in international trade in the face of ever-increasing transport costs, and to ensure, as far as is possible, that horticultural exports exhibit the product characteristics that are desired in the world's market places.

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