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*Vegetable  
Crop Prod.*

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DEPARTMENT OF HORTICULTURE

BULLETIN 8

Economics and Management  
of Vegetable Production

Editor : T. M. Morrison

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PROCEEDINGS OF A SHORT COURSE ON  
ECONOMICS AND MANAGEMENT OF VEGETABLE GROWING

MAY 1969

Edited by Professor T.M. Morrison

Department of Horticulture  
Lincoln College  
Canterbury  
New Zealand

Department of Horticulture  
Bulletin No. 8 1969

1. The first part of the report is a general  
description of the project and its objectives.  
2. The second part is a detailed description of the  
methodology used in the study.

### 3. Results

#### 3.1. Data Collection

The data was collected from a sample of 100 subjects.

#### 3.2. Statistical Analysis

The results of the statistical analysis are as follows:  
1. The mean score was 75.  
2. The standard deviation was 10.  
3. The correlation coefficient was 0.8.

## PREFACE

The Vegetable and Produce Growers Federation for a number of years has been encouraging collection of costs of production of process crops. While this is valuable in maintaining a watching brief on processor pay-outs, it is only one factor in assessing the relative profitability of competing crops. The full science or art, of management must be brought to bear on the problems before any solution can be suggested.

With farmers diversifying into vegetable production and others likely to follow as processing expands into export it is opportune that a course such as this was held at this time. Some of the discussions show the pertinence of papers to problems facing the industry right now. Others show the way to the future.

The course offered a new look in education to vegetable growers. We have maintained that our greatest contribution to the established grower is to bring recent information to his notice - preferably after he has been in the industry for some time. With a recession in fresh vegetable prices, "economic" management is probably the most serious omission from growers' education. Fortunately in this department and others in the College we can present an expertise in this modern subject.

The papers do not attempt to answer all specific questions but are designed to give a base on which the individual grower can build for himself from his own experience. They also may serve to demonstrate to the grower that in horticulture we have a long way to go to fill the gaps in our "management" knowledge. It behoves all growers to help us and consequently themselves to acquire this knowledge.

Finally I must thank all lecturers at this course for they provided a stimulating four days and all growers who attended, for without a receptive audience no course can succeed.

T.M. Morrison  
Professor of Horticulture  
Lincoln College

1911

The first of the year was a very dry one, and the crops were much injured. The weather was very hot, and the crops were much injured. The weather was very hot, and the crops were much injured.

The second of the year was a very wet one, and the crops were much injured. The weather was very cold, and the crops were much injured. The weather was very cold, and the crops were much injured.

The third of the year was a very dry one, and the crops were much injured. The weather was very hot, and the crops were much injured. The weather was very hot, and the crops were much injured.

The fourth of the year was a very wet one, and the crops were much injured. The weather was very cold, and the crops were much injured. The weather was very cold, and the crops were much injured.

The fifth of the year was a very dry one, and the crops were much injured. The weather was very hot, and the crops were much injured. The weather was very hot, and the crops were much injured.

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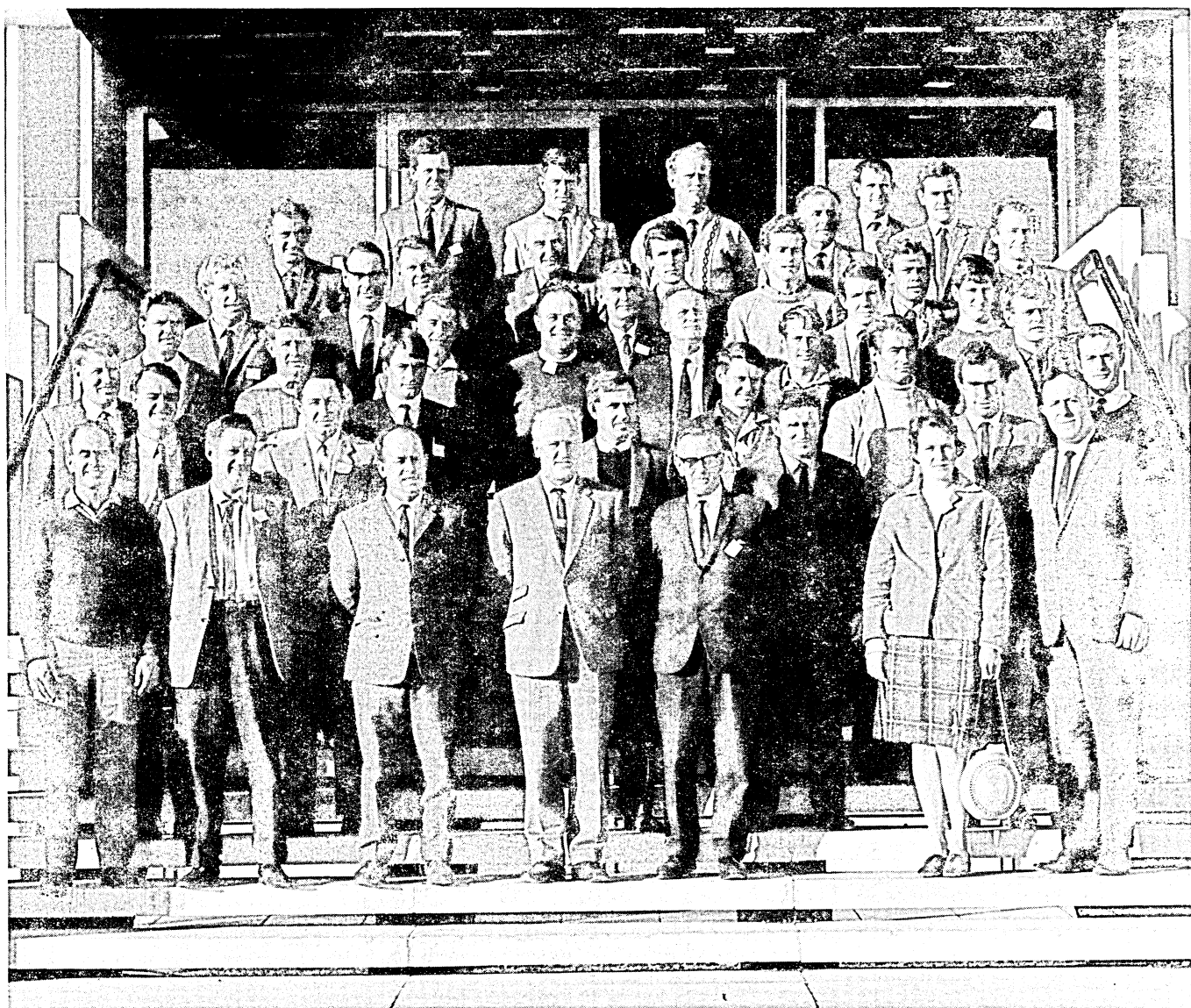


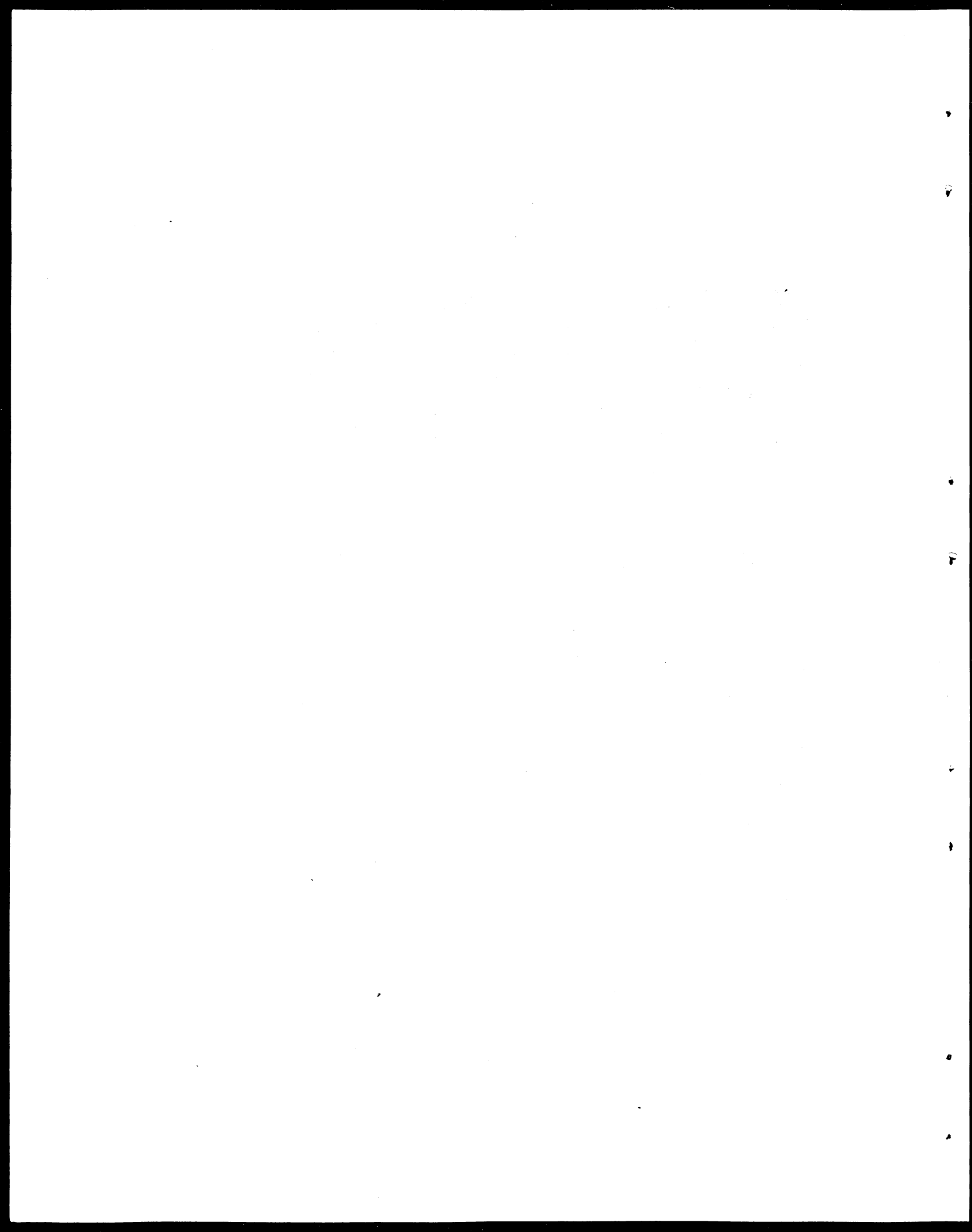
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## THE VEGETABLE INDUSTRY AND THE NATIONAL ECONOMY

Dr R.W.M. Johnson  
Agricultural Economics  
Research Unit  
Lincoln College

It is my privilege to speak first at your meetings today and I see my place as setting the scene for the lectures you will attend for the rest of the week. I take it that I am required to talk about recent economic changes at the national level and how these affect your industry. I will first of all discuss trends in national income, farming income and horticultural income, then go on briefly to mention the balance of payments problem, and then examine the place of the horticultural industry in the national picture. After this, I want to talk briefly about the National Development Conference, and examine some future trends for the country and yourselves as seen by your own Horticulture Working Party in their report to the Agriculture Targets Committee.

In recent years the national economy of New Zealand has been going through a bad patch. The rate of expansion of output has slowed down and unemployment has appeared for the first time for many years. This bad period dates from early 1966 when export prices for primary products took a downward turn. In the four years prior to 1966, the national economy went through the most sustained period of growth since the last war, and national income increased by 37 per cent between 1962 and 1966. These four years saw a marked increase in export prices and values and a consequent rapid rise in imports. When export prices steadied, as was likely to happen sooner or later, our import requirements continued to increase to levels we could not afford, and the Government introduced control measures on credit and imports from January 1967. As is well-known, wool prices fell catastrophically in 1967 and the economic position of the country worsened even as corrective measures were being taken. Eventually the devaluation of sterling by 14.50 per cent in November 1967 triggered off a corresponding adjustment on New Zealand's part, and the \$NZ was devalued by 19.45 per cent. Since that time our world trading position and our internal economy have slowly but steadily improved.

### Gross National Product (March years)

	<u>1962</u>	<u>1963</u>	<u>1964</u>	<u>1965</u>	<u>1966</u>	<u>1967</u>	<u>1968</u>
\$M	2723	2921.	3196	3487	3744	3911	4032
Per cent change		+7.3	+9.4	+9.1	+7.3	+4.5	+3.1

From 1962 to 1968, national income increased from \$2,723 million to \$4,032 million; a total increase of 48 per cent in money terms. Particularly rapid increases took place in 1964 and 1965 but since 1966 the real growth of the economy has barely kept up with inflation and the increase in population.

Volume of National Production and Employment (March years)

	1962	1963	1964	1965	1966	1967	1968
Production (1954-55 = 1,000)	1307	1349	1430	1518	1612	1679	1661
Per cent change		+3.2	+6.0	+6.1	+6.1	+4.1	-1.0
Employment (1954-55 = 1,000)	1161	1161	1192	1230	1274	1314	1315
Per cent change		+1.6	+2.6	+3.1	+3.5	+3.1	+0.1

The total volume of production measures the real output of goods and services in the country. For the years from 1964 to 1966 the annual rate of increase in the volume of goods and services produced was over 6 per cent, but in 1967 it dropped to 4 per cent and in 1968 we actually produced less goods than in 1967. At the same time the national level of employment increased fastest when the economy was most active and fell when the economy slowed down. The work force increased by as much as 3 per cent per year in the most active years, but between 1967 and 1968 the work force did not expand at all.

The level of activity of the economy is most important to the horticultural industry as such a large proportion of its output is consumed locally. It is no accident that 1964 and 1965 were extremely favourable years for local producers as these were years of buoyant consumer incomes and high demand for vegetables, fruits and other local products.

Total Farm Production (June years)

	1963	1964	1965	1966	1967	1968
Gross Farm Income (\$M.)	654	764	792	853	824	826
Per cent change	+9.9	+16.7	+3.7	+7.6	-3.4	+0.2
Volume Farm Prod'n. (1938-39 = 1,000)	178	184	189	200	207	212
Per cent change	+5.3	+3.3	+2.7	+5.8	+3.5	+2.4
Export Prices	100	113.6	111.5	110.9	104.2	101.0

As I have already indicated fluctuations in export prices for farm products have caused the recent slowing down of the New Zealand economy. Gross farm income increased from \$654 million to \$826 million over the last six years with a record \$850 million in 1965-66. The greatest increase in a single year was in 1964; but there was a 3 per cent decline in gross farm income between 1966 and 1967. A large part of this fluctuation in gross farm income has been due to export prices, for the volume of farm production has been increasing steadily at nearly 4 per cent per year since 1962.

One fortunate feature of the export price situation is that not all our export products are depressed at the same time. Butter, cheese and meat export prices have stayed remarkably constant in the last few years, and since 1967 have been boosted slightly by devaluation as well. Wool prices, on the other hand, have fallen to nearly half of their 1964 levels, and would be lower still if devaluation had not taken place.

Overseas Transactions (March years)

	1963	1964	1965	1966	1967	1968
Export Receipts (\$M.)	708.7	800.3	846.9	858.4	887.9	890.6
Per cent change	+7.4	+12.9	+5.8	+1.4	+3.4	+0.3
Import Payments (\$M.)	694.4	816.0	871.3	976.0	994.6	908.0
Per cent change	-1.8	+17.5	+6.8	+12.0	+1.9	-9.5
Balance on Current Account (\$M.)	+14.3	-15.7	-24.4	-117.6	-106.7	-17.4

Before going on to the horticultural industry's contribution to gross farm income let me say something about export prices and the balance of payments. Since 1962 the value of exports has increased every year, though in some years like 1966 and 1968, the increase has been very small. In the same period the level of overseas payments - including interest and other overseas payments like transport and insurance - have fluctuated markedly and increased by nearly 18 per cent in one year (1964), and fallen by nearly 10 per cent in another (1968). This see-sawing between export receipts and overseas payments causes our balance of payments problems. Without overseas loans, New Zealand has ranged from a \$15 million Surplus on overseas transactions in 1963 to a \$117 million Deficit in 1966. You will be reassured that this deficit has been completely worked off since 1966 and that since the second quarter of 1968 we have a credit balance on current account once again. There are signs, however, that imports were increasing very rapidly in the first quarter of this year and when data becomes available we may well find that we are operating on an export deficit on current account once again.

Horticultural Production (June years)

	1963	1964	1965	1966	1967	1968
Horticultural income \$M.	57.1	62.4	69.6	76.0	79.9	83.4
Per cent change	+2.3	+9.2	+11.5	+9.1	+5.1	+4.3
Volume of Hort. Prodn. (1938-39 = 1,000)	225	249	260	279	288	292
Per cent change	+12.5	+10.6	+4.4	+7.3	+3.2	+1.4
Unit Prices	100	99.0	105.7	107.4	109.9	112.9

Turning now to the horticultural industry, national statistics collect together vegetable production with orchards, poultry keeping and bee-keeping. Even so, we know that vegetable production is the greatest proportion of horticultural production defined in this way.

You will be surprised to learn that the horticultural industry produced over \$80 million worth of goods in 1967-68 and this amounts to over 10 per cent of gross farm output in New Zealand. The value of output was only \$40 million in the early 1950's so that the money value of horticultural output has doubled in the last 15 years. Progress was particularly rapid in the years from 1963 to 1966 when the value of output increased by 33 per cent in 3 years.



Some of this increase has been due to higher prices for horticultural products and it can be estimated that prices received by producers rose by 13 per cent between 1963 and 1968. Over the same period the value of production increased by 45 per cent, so that the quantity of production actually increased by 32 per cent from 1963 to 1968. (Annual average rate of increase is therefore 5.4 per cent.)

There are some further points we can make about the contribution of the horticultural industry to the national economy.

Horticulture is becoming a more important part of the farming sector in New Zealand. In the 1950's only 7 per cent of gross farm income was contributed by horticulture: today it is over 10 per cent.

It follows that horticulture is expanding more rapidly than the farm sector as a whole. Since 1951, the volume of horticultural production has expanded by 4 per cent per year compared with 3 per cent for all farming. Most of this increase has been in the 1960's.

Compared with the rest of farming, horticultural prices are more stable. Your prices for products tend to rise with the general level of activity of the economy and are insulated from overseas trends. Thus agriculture as a whole is receiving prices at present much in line with what they received (in the aggregate) in 1962-63, while horticulture's prices are up by 13 per cent.

All sectors of agriculture (including horticulture) are subject to a rise in prices of things they buy. Over the period from 1963 to 1968, this price level has increased in general terms by 11 per cent (according to the Economic Service of the New Zealand Meat and Wool Boards) so that many farmers now have to produce much more to maintain the same income position as in 1963. Horticulture, apparently, is in a more favourable position than this, and is about holding its own in terms of prices.

Finally, horticulture makes a small but growing contribution to national exports. Ten years ago horticulture contributed 1 per cent of total goods exported - now it is  $1\frac{1}{2}$  per cent - it could rise to over 2 per cent in the decade ahead.

Turning now to the National Development Conference, it should be emphasised that this Conference was organised in 1968 to bring together all sections of the community to prepare a joint plan of action for the national economy in the 1970's. In the course of its work, an Agriculture Committee was set up (based on the former Agricultural Production Council) to advise on what farming could contribute in the decade ahead, and this Committee in turn delegated responsibility for horticultural products to a Horticulture Working Party. The following remarks are intended to be a broad summary of the proposals put forward to the Second Plenary Session of the Conference in the last few weeks.

At the national level the Conference has set a target rate of growth of national income of 4.5 per cent per year. This can be compared with the 4.4 per cent we achieved in the rather spectacular years from 1963 to 1968.

In order to pay for the increased level of imports and other overseas payments expected in the 1970's, the Conference Committees have estimated that exports will need to increase at least by  $6\frac{1}{2}$  per cent per year, and possibly by 8 per cent per year if unfavourable export prices are received. These rates of increase are considerably higher than the 4.4 per cent required by the Agricultural Development Conference in 1964.

Break-down of Projected Increased Export Earnings

Increase in Agriculture	\$471 million	55.3 per cent
Manufacturing	182	21.3
Forestry	61	7.2
Other Services	59	6.9
Tourism	53	6.2
Fisheries	16	1.9
Minerals	10	1.2
	<hr/>	<hr/>
	\$852 million	100.0 per cent

Some sectors of the economy will contribute more than others to this export target. The pastoral industries will provide the greatest bulk of exports, but will probably grow at the slowest rate. Horticulture's share of these extra exports will be greater than in the past but nevertheless still remain small absolutely. Other relatively small contributions will come from forestry, fishing and manufacturing, but it should be noted that the rate of expansion of forestry and manufacturing exports is expected to be quite rapid.

Growth Rates and Projected Exports for Agriculture

	<u>1967-68</u>	<u>1972-73</u>	<u>1978-79</u>	<u>1967-73</u>	<u>1967-79</u>
	£M	\$M	\$M	%	%
Pastoral	645	889	1,075	6.6	4.8
Grains and Seeds	5	14	20	22.8	13.4
Horticulture	10	20	36	14.9	12.4
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TOTAL AGRICULTURE	660	923	1,131	6.9	5.1
Total exports					
goods and services	838	1,260	1,690	8.5	6.6
Percentage					
agricultural	79	73	67	-	-

Taking the agricultural sector alone, the rate of expansion of exports is expected to be 6.9 per cent per year up to 1973 and 5.1 per cent per year up to 1979. Horticulture's share of these exports will rise quite considerably and will require a rate of expansion of 12-15 per cent per year.

The Horticulture Working Party Report to the Agriculture Targets Committee believes that greater exports are likely for apples and pears, fresh vegetables, canned and processed vegetables and possibly in chinese gooseberries. In terms of money values, present exports of horticultural products are worth \$10 $\frac{1}{2}$  million; by 1973 this is expected to rise to about \$20 million, and by 1979

to \$36 million. As the Working Party stresses, all sorts of interesting possibilities have opened up in recent years, especially in fresh vegetables and berry fruits, and the next few years will tell if the markets exist to absorb the greatly increased production the industry is capable of.

To my mind, the Development Conference has tended to ignore the interesting possibilities of expansion of horticulture within New Zealand. Over the last 5 years, I have estimated that internal consumption of horticultural products has been increasing much faster than exports. For example, the main value of consumption appears to be increasing at about 8 per cent per year whereas exports have only increased to around 5 per cent per year.

This hypothesis of mine requires further investigation, but if the calculations are roughly correct, it indicates that New Zealanders are spending a greater proportion of their income on horticultural products than they used to. In other words, you people produce goods which are in greater and greater demand every year in the local market and the expansion of exports could well be in competition with production for local consumption. Against this, the industry does tend to be separated into rather distinct parts, such as orcharding, fresh vegetables, processing crops and so on and expansion can take place in one of these without affecting the others. Furthermore, areas at present devoted to arable farming are quite suited for a number of the traditional horticultural crops and can be utilised if there are sufficient incentives.

These views stand out in sharp comparison with the 1950's. In those years the volume of production was static and the number of horticultural producers on the decline. The 1960's have been a period of rapid change, however. The industry has been growing at a rate well above the average and has been mainly serving the New Zealand internal market rather than exporting. Now the emphasis could be changing to more export orientated production in certain lines as I have already mentioned. What other developments can be expected in the decade ahead?

In line with the National Development Conference we can expect national income to grow by about 4 per cent per year and income per head by a little more than 2 per cent per year. Of this increase in income, we can expect consumers to spend increasing amounts on certain classes of horticultural products. It seems to me that the products that will be required will be clean packaged fresh vegetables, frozen and pre-packed vegetables and fruit, and the few export lines already mentioned. Canned vegetable and fruit lines are not likely to increase.

The consumer will be prepared to pay considerably higher prices for convenience and quality. This trend to higher quality and convenience will be reinforced by the increasing urbanisation of the community and the slow decline of the importance of the backyard garden.

A large proportion of this higher value at retail level will be absorbed by processing and packaging costs. Going by the recent past, however, a part of this increased demand will come to growers as higher returns. Growers will also achieve higher returns by more packaging and preparation work on their holdings. This may have serious labour implications for some people.

Costs of production will continue to rise. It seems likely that growers will best meet these costs by increasing specialisation and the adoption of new techniques of efficient growing and harvesting of crops. For export crops there is unlikely to be any prospect of higher prices to compensate for increased costs, but for internal demand, both costs and returns are likely to rise about equally.

In short, the prospect ahead is quite exciting for the industry and a number of possibilities could eventuate. Your prosperity is more likely to be cut back by fluctuations in the national economy caused by the difficulty of selling pastoral products on world markets rather than through problems of your own. Nevertheless, increased exports of horticultural products will themselves require better merchandising and selling than ever given to them before.

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### DISCUSSION

Q. The present return for washed and unpackaged carrots is no higher than it was formerly for dirty unpackaged carrots. How can we go on supplying these in the future?

Johnson: Only the innovator of any technique receives any financial advantage, those following receive less but if you put dirty carrots on the market now you would get little for them.

Q. We found just this with celery but brandnames proved important to the housewife to ensure her of consistent quality.

Q. Advantage in packaging is that demands are increased and this may account for your increase in vegetable sales.

Q. Superstores prefer the farmer to package the vegetables but growers are concerned with lower returns. Growers were assured by these stores that they would receive 3c premium lb for packaged vegetables. This has not come about, but packaged vegetables are competitive with, for instance, processed.

Q. Quality packaging with brandnames will always prove more successful than doubtful quality in opaque bags as some of those following the innovator have found.

Q. Since you have pointed a gloomy picture of the wild fluctuation in export returns compared with the relatively stable home horticultural market, would you advise the industry to remain a 'local' one?

Johnson: No. Horticultural exports at present are only 12 per cent of the total produced while in vegetables perhaps 2 per cent is exported, so most of the industry is insulated from it.

Q. But our export returns are tied to the internal price in the importing country.

Johnson: Absolutely. I have been struck with the way horticultural sales are tied to national income. The best thing that could happen to your industry would be a rise in Australia's national income.

Q. We are not as insulated from overseas prices as we once were and this change is rapid. Thus in processed peas, our exports to Australia

sold at about half the price of those produced in Australia and in onions with an optimistic export building up we now have 30,000 tons to sell while our local consumption is but 15,000 tons, we have 9,000 tons of onions we cannot sell. The Federation is concerned that onion growers will switch to other vegetables with consequent over-production.

- Q. Somebody will have to decide where the extra production required by the NDC is to come from and growers will have to be rewarded for it. An increase of even 30 per cent in pea returns would still leave our product competitive since Australian growers are paid 50 per cent more at present than the New Zealand grower while his costs are climbing faster than ours. Our processed peas will never affect the local market in Australia since we only supply 3 per cent of their total consumption.

- Q. New Zealand is supplying all Australia's dehydrated peas.

Johnson: My interpretation of the industry as a largely local one is my own. It may not agree with the NDC but it is debatable; but even if we export all that the NDC hopes for this will still only be 15-20 per cent of the total produced by the horticultural industry. This increase in exports will occur in specific horticultural industries e.g. apples and pears, processed vegetables.

- Q. Can insulation from export fluctuations be helped by a grower's export organisation?

Johnson: First it must be politically acceptable and secondly this country is against control of any sort e.g. woolgrowers have rejected controlled marketing. I cannot see how it could handle the multitude of horticultural products; the Apple and Pear Board is selling a narrow range of products, so is the Dairy Board. But it would be possible to set up such an organisation for a few select lines.

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