Harvest

A QUARTERLY BULLETIN ISSUED IN THE INTERESTS OF GROWERS BY J. WATTIE CANNERIES LIMITED

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J. WATTIE CANNERIES LTD.

HASTINGS, GISBORNE

& AUCKLAND

OUR COVER

Sowing Seed: Pea season away to a good start.

FOREWORD

IT WAS rather ironical that the last edition of Harvest contained a foreword on the beauties of spring and the renewed hope that was associated with it. Before mailing was completed, flood conditions had ruined many farmers' hopes, and for a time things looked rather serious. Some market suppliers in parts of Hawke's Bay were indeed heavy losers, with little hope of making good their losses this season.

Factory suppliers were a little more fortunate, as the rain came early enough in the season that it was possible to have a second chance. The main loss was in peas, but fortunately seed was available, and all losses have now been restored. Tomato and bean growers had not planted their crops at the time, and they were able to carry on after conditions had settled down. Tomato plants were late, but planting will all be completed in full within two weeks of normal planting time.

It seems that things are never so bad that they could not be worse, and given good conditions from now on, everything in the garden should be lovely. Nature always has the upper hand, but if she deals us a heavy blow at times, she usually has a way of making the loss good later, provided we have the courage and tenacity to carry on. A grower without faith and courage to carry on should not be on the land. However, to a man just becoming established, a knock the first year or so can spell doom; since with land, building and equipment costs so high to-day, it is becoming more and more difficult for a man of small means to become established.

Growing for a processing firm has helped many growers get under way, and will continue to do so. We are always very pleased to assist in every way we can, and it is often regretted that at the moment there are more would-be growers than we can accommodate. In a way it's a good omen and indicates progress.

The Management wish to extend to all our grower friends sincere wishes for a Happy Christmas. We trust that the New Year just ahead will prove a rewarding one, and that your efforts on the land will bring you the prosperity you deserve.

Yours sincerely,

Bob June

Hastings Field Supervisor.

CROP TOPICS

Inspecting Broad Beans for maturity.

The time of the year has come when we can make a reasonable evaluation of the prospects of our various crops for the forthcoming season. Up until recently it has been a most difficult season, with cold nights, a long cool, windy period during early October, and to top it all, flood conditions in mid-October.

It is indeed fortunate that the flood conditions came so early in the season. Certainly it has delayed pea and tomato planting and has reduced asparagus yields, but had it been later when most of the peas and tomatoes were planted, it would have been much more serious. As it is, we have been able to replant any lost peas, and other crops will also be planted in full, although a little later than usual.

Crop forecasts are important in many ways and to many people. Materials for the factory such as machinery, containers, labels, cartons, sugar and many other items must be on hand when required. Our merchants want some assurance of how supplies will be coming forward. However, we can only estimate crops as we see them at the moment. Many things can bring about an increase or a decrease, and very often these changes can come about right up to or during harvesting operations. These are, after all, only estimates.

ASPARAGUS

Although this crop is still being harvested, the results to date have been disappointing. The chances of gaining lost ground in the latter part of the season seldom materialise, because as soil and air temperatures rise, and days grow longer, it is natural for a plant to tend to produce seed. This is just what happens to asparagus. The best quality is obtained in the early part of the year, with the peak period around the 20th October. After this date it tends to become open and seedy soon after it emerges. If a reasonable cut is not obtained by the end of October, we cannot hope to gain lost ground.

Asparagus started off with very promising prospects, but the weather became cold, cloudy and windy. Odd fine days kept our hopes high, but night temperatures remained low, with several ground frosts well into November. As well as these conditions, heavy rain in mid-October made the soil sodden, and as temperatures remained cool, many crowns were damaged by rot, reducing their production for the rest of the year. The rain came just as peak production was expected.

We have always considered asparagus one of the safest horticultural crops, but this year has been the exception. Fortunately we very seldom get a spring like the one just experienced. It is unusual to find even weeds retarded in their growth, but this year weeds that germinated quite early have put on very little growth. This is an indication of conditions. Asparagus is extremely sensitive to soil and air temperature and humidity, and conditions suitable to growth were just not forthcoming.

In spite of poor asparagus production, our output has been reasonably maintained by the fact that we had greater areas in production. So, though it's little consolation to our growers, at least the consumer will be well supplied.

BROAD BEANS

This crop has done well this season and is the one crop that thrived on the heavy downpour in October. There is no doubt that this crop requires plenty of moisture, and only areas actually under water for some time were adversely affected.

Broad beans are being produced for freezing and canning. The green-seeded variety is needed for the frozen trade, and our quota will be reached quite easily. Harvesting of these commenced in early November. Crops varied greatly between different properties. Some set pods near the bottom of the plant only, while others, planted at the same time, grew taller and set pods well up the stem. Apart from an obvious improvement where there was adequate shelter, we have not been able to ascertain the cause of such a marked variation.

The white-seeded variety of broad beans has been grown exclusively for canning. It has taken much longer to mature than the green-seeded type, but should yield our desired requirements. The future of broad beans for canning hangs on the outcome of this crop. Pods are not large, but tend to be of a tighter nature, making for greater weight in a given bulk. Apart from the odd poor crop, prospects of good returns for growers are bright.

PEAS

Prospects for a good pea crop seem reasonably assured. Fortunately, flood conditions occurred early enough for the planned planting to be done in full, as the areas that were flooded have been replanted. The area in peas is an all-time record, being approximately 3,700 acres between the two districts.

In Gisborne, nearly seven inches of rain stopped planting for a month, but the full area was planted by the third week in November. Cold and wet conditions have made growth slow, and crops will be later than usual. Conditions have also made weed control difficult, but improvement in conditions since the rain has enabled good weed control to be gained eventually, with satisfactory results. Crops in the main, given good conditions from now on, should be satisfactory. The actual loss of crop due to rain was only about fifty acres.

In Hastings, nearly 350 acres had to be replanted. This, plus the loss in time due to wet conditions, has made planting very late. The last areas should be sown by the end of the first week in December, which is three weeks later than anticipated. Fortunately the first 1,000 acres, planted on early well-drained ground, have not suffered any loss, so early deliveries will not be affected in any way, except being a few days late in harvesting, due to slow growing conditions. Given reasonable conditions in the latter part of the season, the average yield should be satisfactory and far in excess of that of last year.

TOMATOES

The planting of this crop has been later and spread over a long period than usual. Planting was held up due to flooding of a Napier nursery supplying plants both in Gisborne and Hawke's Bay. However, with the cool nights and poor growing conditions, this could be all to the good, as early plantings have been slow in getting under way. So, given a reasonable ripening season, we have every reason to suppose that tomatoes will be in good supply. We are requiring as big a percentage of tomatoes suitable for canning whole, as possible. We hope the weather conditions will improve as the season goes on, to give us quality as well as quantity.

PEARS

Last year we had a record pear pack, nearly 25 per cent. higher than we have ever had before. Hawke's Bay produced an all-time record crop of pears as a whole. We seldom get two exceptionally heavy crops in a row, and this is borne out this

year. The pear crop is well down on last year, with some crops showing less than half a crop. However, there are exceptions, as usual, so that the over-all picture is reasonably bright, and the crop is expected to nearly equal that of two years ago. It should be sufficient to give us our normal output.

PEACHES

There is no doubt about the peach crop. It is exceptionally heavy and consistent. Given reasonable growing conditions and good weather at harvesting time, we will have several hundred tons more peaches than we have ever had before.

The Young's cling variety which we harvest in January are the exception. They have dropped heavily. However, there are only a few hundred trees of this variety, so that they do not affect the issue. The only other point which is a sobering one is the increase this year of silver blight and blast among peaches. These diseases seem to come and go, but this year have struck some orchards heavily. In view of the heavy crop, growers are advised to thin heavily.

OTHER CROPS

All other crops should be in good supply as far as can be seen at the present time. Taking things all round, then, the season's prospects look bright, especially as our two biggest lines—peas and peaches—are reasonably assured.

SWEET CORN

Our Gisborne Field Supervisor advises that sweet corn planting was delayed for two weeks beyond the usual planting time, due partly to wet conditions, and also because soil temperatures were too low to ensure good germination of the seed. Planting will now be carried on until early December. Although the area is less than last year, we trust the crop will be a good one.

GREEN BEANS

Planting has been delayed in both Hastings and Gisborne districts. This is necessary to fit into the scheme of things with the pea crop being so late. With the reduced area, it will be possible to handle the crop in a shorter time. The late planted beans will therefore be no later than usual, as we want the season to terminate in March.

No beans have been planted at time of writing, but the soil has at last warmed up sufficiently to get them away to a good start.

BEETROOT

This is a comparatively new line for us, having grown a small quantity for the first time last year. Like everything else, it is maturing later than anticipated, but is looking well. One area failed to germinate because of wet and cold conditions, but the balance of the crop is up to expectations.

PEAR PRICES
Remain the Same

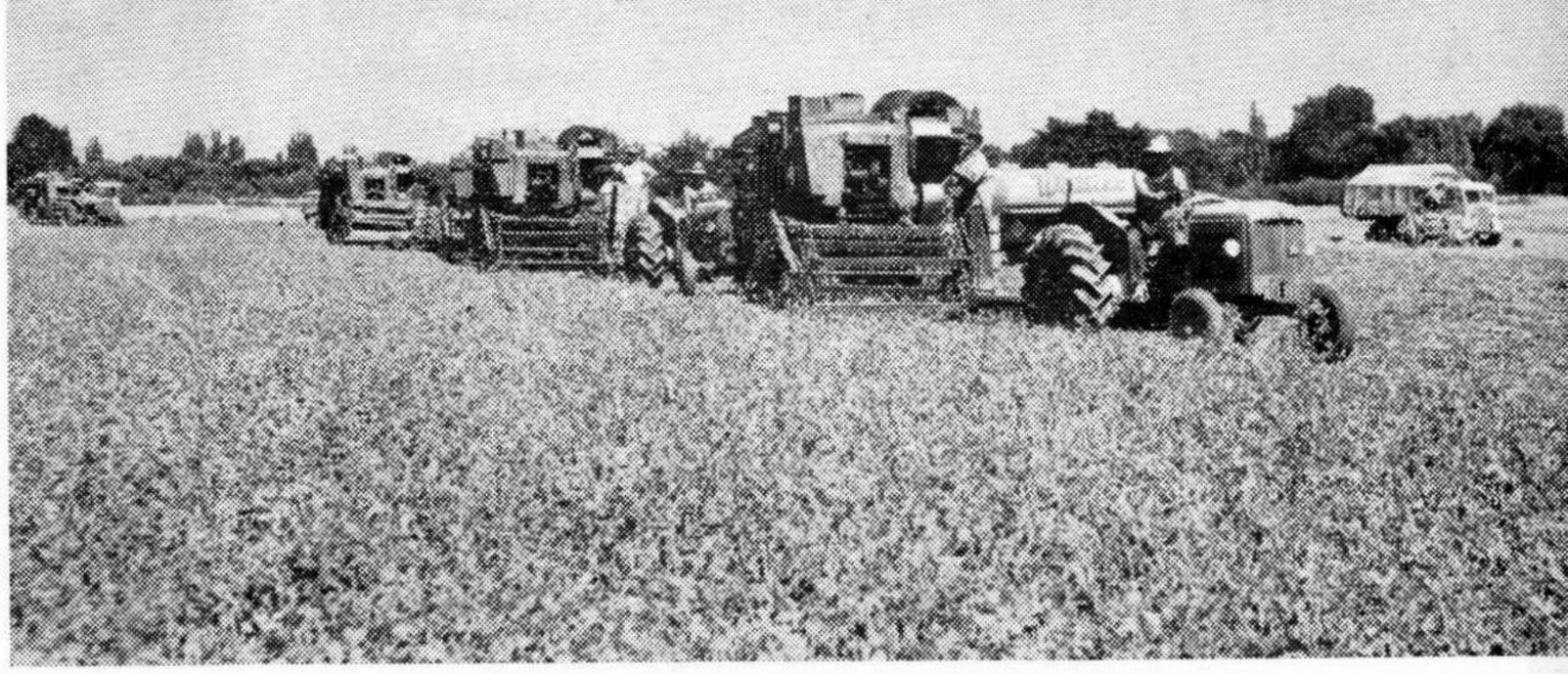
Last year pear growers were given a considerable increase in their returns for pears inasmuch as they could be picked and placed directly into our dump cases in the orchard. They had previously to be graded to eliminate sizes under two and a half inches in diameter. With no need to double handle pears, production costs were considerably reduced and a much greater quantity could be handled in a given time.

The co-operation by growers last season in careful picking to size was appreciated. In spite of the fact that pears under two and a half inches in diameter were received for the first time, factory ~~money~~ recovery was satistory. We are therefore receiving pears under the same conditions again. There will be no need to grade them. The price for $2\frac{1}{2}$-inch and larger will be 4d. per lb.; sizes $2\frac{1}{4}$ to $2\frac{1}{2}$-inch 3d. per lb.

Pears will not be accepted below $2\frac{1}{4}$in. in diameter. With the lighter crop this year this should be no problem. Grade must be equal to the commercial standard in the New Zealand Packing Regulations. There is some hail-marked fruit about, but it is anticipated that this will be acceptable by the time the pears are fully grown. We will need all the pears we can get this year.

Forecasting Crops : Peas and Sweetcorn

HEAT UNIT SYSTEM



Some of Wattie's Mobile Pea Harvesters.

One of the greatest problems in processing crops such as peas and sweet corn is to make the most economical use of equipment and labour. These crops are influenced very greatly by weather conditions, resulting at times in rush harvesting periods and at others by insufficient supplies to keep the factory going. There is no pattern which emerges from year to year, and a means of controlling or forecasting harvesting periods has long been sought. A system known as the "heat unit" system was devised many years ago, and has proved satisfactory enough for many processing firms to adopt.

Research on predicting harvesting maturities has been going on for many years, constantly searching for a satisfactory method. The number of days between planting and harvesting, or between flower formation and harvesting, are not reliable. Plant growth is influenced by temperature, moisture, fertility, soil type, light intensity, the slope of the land, length of day and many other factors. Any one of these factors may be a controlling influence on a crop. In the heat unit system only temperature is taken into account, so that it still leaves a lot to be desired.

Research on heat summation goes back about forty-five years, but it was not until 1927 that the Green Giant Company, in the state of Minnesota, U.S.A., found, after considerable work on their own account, that planting schedules could be planned to make for a more even flow of raw material at harvest time. In 1936 the method was adopted by most of their food processing factories. The Green Giant Company made the information they had gained available to the industry, and since then many processing firms in many parts of the world have used it. Some have found the system reasonably satisfactory and have retained it. Others have not persevered with it.

METHOD OF DETERMINING UNITS

For every plant specie there is a minimum temperature below which growth will not develop. There is also a maximum temperature at which growth will cease, even when other factors such as moisture are not considered. Between these maximum and minimum temperatures lies the optimum, when the most rapid growth occurs. The minimum temperatures for sweet corn and peas have been fixed at 50 degrees F. and 40 degrees F. respectively. The maximum temperatures are disregarded because they are seldom reached.

To bring the system into every-day terms, it is converted into degree days. To do this, the maximum and minimum temperatures for each day are recorded and added together. This figure is then divided by two to arrive at the daily average of mean temperature. From the mean temperature the minimum or base temperature for the particular crop is subtracted. The resultant figure is the number of effective heat units for a day and is expressed as degree days.

For example, if the maximum temperature for a certain day is 65 deg. F. and the minimum 45 deg. F., the two added together equals 110. Divided by two equals 55. If we are considering peas, the base line temperature is 40, and subtracted from 55 equals 15 heat units or 15 degree days.

Approximately 30 degree days will be needed each day to ripen peas at harvest time, so that 30 heat units should be allowed to elapse between plantings, taking into account the capacity of the factory. If a factory is capable of handling, say, 50 acres per day, and a grower wanted to plant 150, he would not plant 50 acres on three consecutive days. The first 50 acres would be planted, and then he would wait until 30 heat units accumulated before he proceeded with the next planting, and so on. In the above example, that would be a period of two days between plantings.

Varieties differ in their unit requirements, of course. The variety we grow requires about 1,500 degree days to bring it from planting to a maturity of 100 tenderometer reading, suitable for freezing.

MANY VARIABLE FACTORS

If everything was as straightforward as this theory, everything would be made very simple. However, there are a great many factors to be taken into consideration, and much data would need to be assembled before a start could be made here. In some parts of the world where peas are grown extensively, there are large areas of one soil type which makes for a reasonably uniform maturity. In Hawke's Bay and Gisborne, and particularly on the Heretaunga Plains, the soil has been laid down by rivers which have left the plains with many variations of both topsoil and subsoil. We seldom see a crop of peas maturing evenly, and in many instances one part of a field may be harvested at a different time from the other. It has been found in Hastings to vary up to four days in one field. This is one reason why J. Wattie Canneries Ltd. has not adopted the system.

One other main reason is the controlling factor of moisture. Some of our growers plough early and have the turf well broken down before final work-up and planting. Others consider their livestock more important than peas or corn, and utilise the pasture till the last minute. These growers often work up their land out of grass and into peas in a matter of a few days. This often results in a wide variation in soil moisture, and crops side by side may vary several days in reaching the surface. Peas planted deeply in dry soil will take much longer to emerge than if sown shallowly in moist soil. Then it may rain between sowing and emergence, again widening the gap.

We have noticed many times that previous use of the soil has an influence on growth and maturity. Cases have been noted where two fields have been made into one larger one by the removal of an intervening fence, and peas planted in the whole area. A great variation has been noted between one part of the new area and another. This may be caused by differences in fertility level or a difference in the organic status of the soil. Whatever the cause, it is still another variation to be reckoned with, and another reason why we have not used the heat unit system.

OTHER USES

Many uses are made of the heat unit system in other parts of the world. It has been used for forecasting container requirements, their manufacture, and even shipping requirements. Another use is the forecasting of possible insects and disease occurrence. Diseases such as mildews on various crops, late blight in tomato and potato crops, and one, that interests us in Gisborne, bacterial wilt of sweet corn, can be forecast. Bacterial wilt, which has developed recently in Gisborne, was found to be worse following warm winters. It was discovered that recording the temperature during the winter months of December, January and February in America, would result in a fairly accurate forecast of the incidence of the disease the following summer. Once this relationship was known, it was further established that it depended on the overwintering of the corn flea beetle, the insect responsible for its spread in that country.

The heat unit system is not presented as an absolutely accurate means of planting and harvesting forecasts; it is only a guide. With this in mind, it is quite possible that we shall be making use of it one of these days. So far we usually have a reserve of processing capacity over harvesting output. Also we can often fit other lines in with our pea and corn harvesting that give employment during slack periods to at least some of the casual factory staff. Perhaps precise forecasting is not quite so necessary for us, being a very diversified factory, as it is for one processing only one commodity at a time. Nevertheless we must keep abreast of the times, and we must admit that any system which will help in a more uniform flow of raw material to the factory would be well worth while.

FIELD TALK

GREEN BEAN SHRINKAGE

Green beans, both pole and dwarf varieties, have a very high water content. Under certain hot and drying conditions this moisture is lost very readily. We therefore urge growers to bring their beans in to the factory as soon as possible after picking. If this is not practicable, then precautions against shrinkage should be taken.

A few years ago, a bean grower found a big discrepancy between his picked weights and the weighbridge weights. It is a fact that weighing a large number of individual amounts will seldom be the same as if the whole were weighed at one time. The difference in this case was too great, and started an investigation into the loss of weight through shrinkage, or loss of moisture from the bean.

Our Field Supervisor brought in a freshly picked sample, on a sunny warm day, and the results are set out below. A very hot, windy day would result in an even greater loss. The beans were left in the open during the weighing period to simulate field conditions. The beans were taken from boxes picked between 1 p.m. and 1.30 p.m. and were first weighed at 2.45 p.m.

Loss between 2.45 p.m. and 4.45 p.m. (2 hours) ...	2.5%
Loss between 2.45 p.m. and 8.45 a.m. (18 hours) ...	9.2%
Loss between 2.45 p.m. and 1.45 p.m. (23 hours) ...	12.7%

No doubt there was considerable loss between picking and weighing, and in very hot, windy weather the loss would be even greater, so that it would appear likely that anything up to 20 per cent. could be lost in a 24-hour period.

Beans therefore should be placed in shade immediately they are picked. Wet sacks over the stack of boxes may help, but under conditions where soft rots are present, it is not wise to interfere with ventilation. All we ask is that growers DO NOT POUR WATER OVER THE BEANS. This interferes with the holding quality should they need to be stored, to say nothing of alterations to the weight of the containers which absorb moisture. We are not keen to pay for water, as we have our own wells at the factory!

FACTORY FIRSTS

Three new lines have increased the tremendous range of Wattie products in the last few months. They are canned Chinese Gooseberries, Grapefruit Juice and Mushrooms. This brings the grand total of different packs, both frozen and canned, to over ninety.

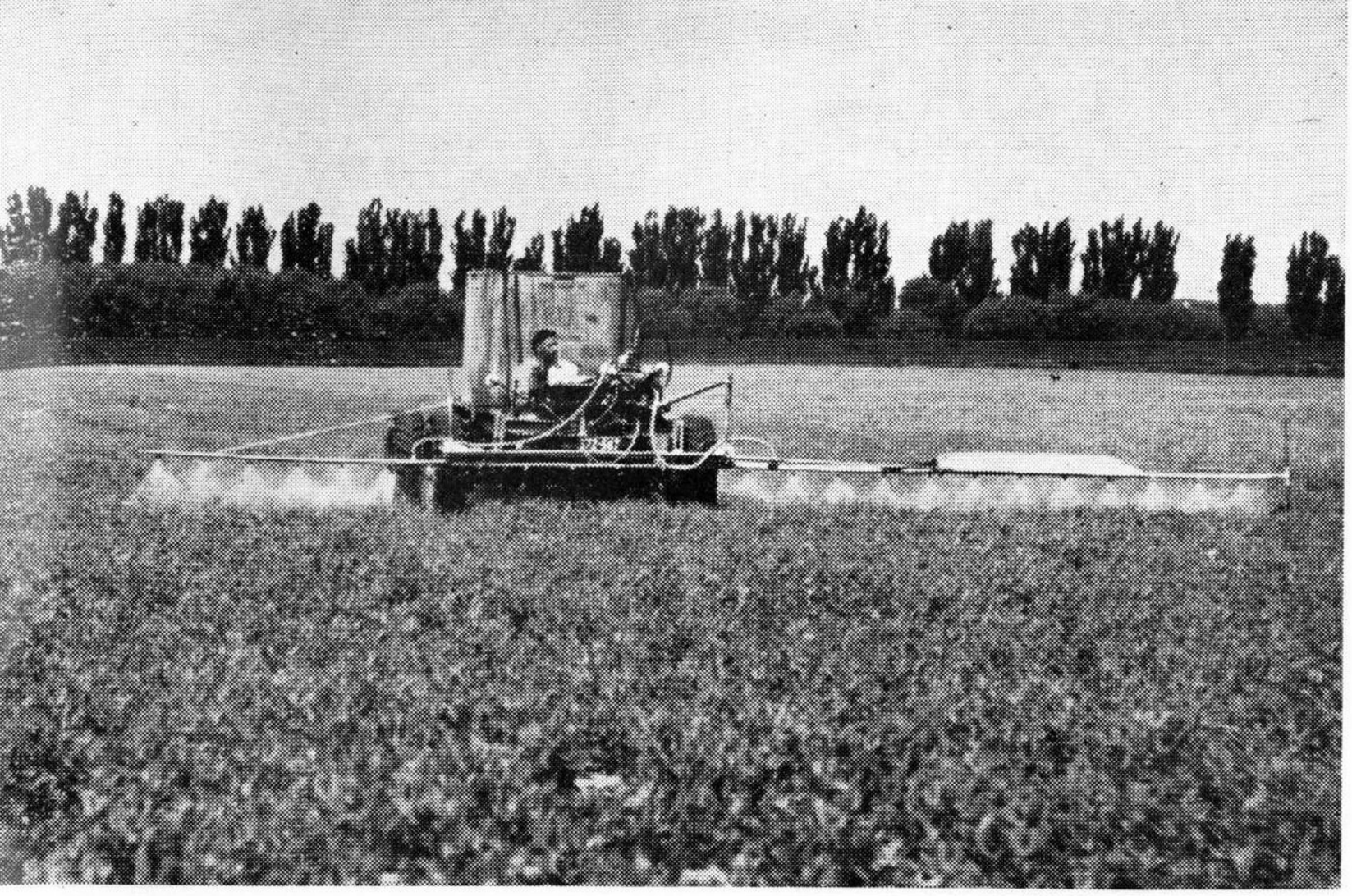
Over 100 tons of Chinese gooseberries were brought into our factories at both Hastings and Gisborne from the Tauranga and Te Puke districts during last winter. They were sliced and canned, and have created a great deal of interest. Production of this fruit was quickly reaching saturation point as a fresh product. Last season's crop was a heavy one, and a new outlet was welcomed by growers. Everyone who has tried this product has commented very favourably on it. It maintains a beautiful clean fresh taste just a little different from any other fruit.

Grapefruit was obtained from Tauranga and Gisborne districts, and manufactured in our Gisborne factory. Supplies are limited, but with more trees coming into production, and the experience gained in handling this line the first year, there should be a place for this product on the New Zealand market.

Mushrooms are being produced more than ever before in New Zealand, and it is fitting that Watties should be the first to process them, enabling the New Zealand housewife to buy this luxury line at a reasonable price all the year round. They are canned whole so that the housewife may use them as she pleases. A line of canned Mushroom Soup has also been produced and should prove yet another popular line.

Change of Telephone Numbers

Growers should note that both Mr. M. R. Crooks, Assistant Field Supervisor, and Mr. T. Cotterill, Nos. 3, 4 and 5 Farm Manager, may now be contacted by ringing 6864 Hastings.



Weed Control in Peas Still Changing

For many years now D.N.B.P. has held its own as a weed control spray in pea crops. It is still being used almost exclusively in the Gisborne district, but in Hastings is being replaced to a certain extent by M.C.P.B. This is mainly due to the widespread presence of Prince of Wales Feather (Amaranthus retroflexus) in that district, with its resistance to D.N.B.P.

The two materials have been tested against each other in the same crop on several occasions in Hawke's Bay, and it has been difficult to ascertain any significant effect on maturity. It would appear that the time of application has as much to do with it as any other factor, and we would like to see all weed sprays applied as soon as possible. This, of course, varies according to weed growth, and application has to be delayed at times because of unsuitable weather conditions or late weed germination due to rain.

If it were not for the fact that Nightshade (Salanum nigrum) and locally known as Berry Weed, is not very well controlled by M.C.P.B., it is likely that this material would eventually supersede D.N.B.P. in Hawke's Bay, in spite of the fact that some seed producers will not use it because of possible implications and effect on germination and genetics. It would appear that there is a great deal more work to be done on this material. It seems obvious that it has a different effect in Hawke's Bay from that obtained in Poverty Bay. Reputable seed firms in Canterbury, on the other hand, have used it on seed and processing crops for many years with satisfaction.

D.N.B.P.-M.C.P.B. MIXTURE

For the past three years a considerable amount of experimentation has been done, on a mixture of these two sprays. We have not published any results up to the present time, because recommendations should never be made on only one season's trials. There seems to be a consistent and satisfactory picture developing from the trial work, and in no case has the control been disappointing in the last two years.

Various mixtures of these two materials have been tried with quite satisfactory results. The combination of Prince of Wales Feather and Berry Weed is the main consideration: the former being so difficult to control with D.N.B.P. and the latter so easy. With most other weeds D.N.B.P. gives reasonable control. Californian thistle can be well retarded with M.C.P.B., but only slightly checked with D.N.B.P.

Using the combination of the two, then, as long as we use enough D.N.B.P. to control Berry Weed, the M.C.P.B. will do the rest. Therefore a small amount of D.N.B.P. is all that is necessary. One pint of 30% and $1\frac{1}{2}$ pints of 20% D.N.B.P. is sufficient if conditions are reasonable and temperatures above 60 degrees F. The full rates of M.C.P.B. are usually necessary, and we recommend 2 pints of 4 pound acid equivalent and $2\frac{1}{2}$ pints of 3 pound acid equivalent as a general recommendation. These rates may be varied according to conditions prevailing at the time.

J. WATTIE CANNERIES LTD.

HASTINGS, GISBORNE & AUCKLAND

Food Processors to the Nation

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