Harvest

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

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HASTINGS, GISBORNE
& AUCKLAND

OUR COVER

Pruning a 70-acre block of Peaches on Wattie's No. 2 Farm.

FOREWORD

THE NEED to increase industries in Hawke's Bay has received considerable airing lately. Both the Press and various speakers have from time to time given their views on the subject. The desirability of increasing some industries is logical. Others which have been mooted for New Zealand could be open to question. We should be as certain as possible that any new industry will be an economical proposition before launching out any further. Where both the machinery to operate the plant and all the raw material for production have to be imported, we trust that a thorough investigation is always made before development is undertaken.

With New Zealand's cost of labour, it does not sound feasible that in certain cases where all raw material has to be imported from thousands of miles away, processed here and then exported as a finished article, could even make overhead costs. The population of New Zealand is less than that of many individual cities throughout the world. Unless we can produce an exportable commodity, then, our market is very limited.

Another limiting factor, as far as industrial development in our own district is concerned, is the shortage of labour to man our present industries, let alone developing new ones. This is particularly true of our own industry, where peak processing periods coincide with the demand for labour in harvesting most fruit and vegetable crops.

The food processing industry has expanded considerably in the last few years. Unlike many industries, as the tonnage of produce increases, the labour force increases accordingly both in the factory and the nearby fields. Local labour is utilised for almost all requirements of production from raw material to the finished product. In many industries the labour that produces the raw material is not so closely related to the actual processing of that material.

Lack of labour has already hampered production at certain times of the year, so let us hope that the powers that be give thorough consideration to future development. If this is not done, it could cause serious complications to industries already established. Some of these industries, like our own, are earning overseas funds for New Zealand.

Yours sincerely,

Bob June

Hastings Field Supervisor.

PLANTING TIME FOR ASPARAGUS

By this time most growers should have their areas deep ploughed to a depth of twelve to fourteen inches and levelled ready for planting. This may be done from early July to late August. Some authorities do not like to plant too early, but experience on our own properties where planting has been done the first week in July, has been more satisfactory than that done at the end of August. Time of planting is often controlled by rainfall. Should the weather and soil be suitable in early July, the job should not be delayed. August weather cannot be trusted, ,and if planting is delayed too long it becomes difficult and costly to hold the seedling plants in a dormant condition.

PREPARATION FOR PLANTING

Deep ploughing is always recommended before the trenches are opened up for planting. It disturbs the hard subsoil and mixes some of the life-giving topsoil with it. These conditions must give young plants a better opportunity to become established, rather than being laid on a firm trench with cold undisturbed soil underneath them.

The deep preparation should not be done too long prior to planting, especially if the soil is of a type apt to settle badly after heavy rain. After ploughing, strike-outs and finishes should be carefully levelled and the whole area disced and harrowed sufficiently to obtain some free-flowing soil to fill the trench and cover the plants. This last operation should only be done just ahead of planting, as once the ground is worked down it will pack more readily than before if heavy rain should fall.

Any levelling and draining, of course, should have been done many weeks before deep ploughing was commenced. The same should be said for the control of dangerous weeds such as Californian thistle, couch grass, docks, etc.

PLANTING

This operation has been dealt with previously, but for the benefit of new growers there are a few points worth covering again.

Once the trench is opened, planting should proceed immediately. In this way the soil flows easily, and covering the crowns, is apt to be more thorough. If trenches are opened up too far ahead and rain falls, then the soil may pack and be difficult to handle. It may form a crust so that when the earth is pulled over the plants, it may be lumpy and not provide good cover over the roots and crown.

Trenches can be made by running both ways with a single-furrow swamp plough, as illustrated. Plants should be placed seven or eight inches below the final level of the land, and allowances should be made for the soil to consolidate. The trench therefore needs to be deeper than is often realised. This is an important point.

A good marker system must be arranged on the plough to ensure straight and parallel rows. This is sufficient for experienced ploughmen, but if new to the job, it may be worth while to measure off the rows and peg out in advance.

Plants may be dropped into the trenches from tractor carry-alls or trailers. On our own farms we prefer to use fruit picking bags to hold the plants. One man drops them into the trench, while the second man follows filling in and covering the plants by dragging soil down from the side of the trench with his feet.

The plants should be covered to a depth of three to four inches. It is possible to cover them mechanically, but we feel that the attention each plant receives by covering them individually is well worth while. It is so important to do everything possible to ensure a good strike the first year. Filling in gaps the second year is not always satisfactory, and in any case it is all added expense.

PLANTING ASPARAGUS WITH THE USE OF FRUIT PICKING BAGS

AFTER PLANTING PROCEDURE

After the plants have been covered, there will be a trench four to five inches deep and about eighteen inches wide. Something in the nature of a chain harrow rolled up and if necessary weighted, or anything that can be pulled along the row to smooth it and break up lumps, should be employed. This prepares the surface for chemical weed control. Be sure the lip of the trench is levelled off as well.

Chemical weed control has played a great part in asparagus production. It has eliminated a lot of hand work, and has prevented many failures both in seedling and first-year plantings. Its use after planting out in the permanent bed virtually eliminates hand work.

It is recommended that a strip of 2ft. to 2ft. 6in. should be sprayed. The strip should be wide enough to include the edge of the depression. The rest of the area between the rows can easily be kept free of weeds by cultivation, which is considered to be cheaper than spraying the whole area. The whole area, of course, can be sprayed if nothing is to be grown between the rows the first year.

WEED CONTROL

The only material that can be recommended for seedling and first-year asparagus is C.M.U. Other materials such as Simazin are safe only in established beds. The rate of 3lbs. per acre should be sufficient for most soil types, but up to 4lbs. have been necessary in some cases. The amount of water is important, and 40 gallons to the acre is recommended. Many failures have been put down to insufficient water being used, especially when it is applied to dry topsoil. This material requires moisture to activate it, so that the time of application is important. It should be applied in late August or early September, before weed growth commences, as it is a pre-emergence weed spray.

SEPARATING AND SORTING ASPARAGUS PLANTS

Should weeds and asparagus start to emerge before the spray is applied, it will still pay to carry on. It has been found that asparagus spears in the early stage are not damaged by C.M.U., and it will also kill young tender weeds after they have germinated.

Agitation is important in applying C.M.U. This material settles readily, and thorough and continuous agitation is essential to secure even distribution and satisfactory results.

DIGGING AND CARE OF YOUNG PLANTS

Asparagus seedlings resulting from seed sown the previous spring are not deep-rooted and can be lifted with a potato digger as long as the soil is not too wet. They may also be ploughed out and then shaken out with a fork on spinner type digger. As much soil as possible should be removed in the field before separation by hand is undertaken. The les soil left adhering to them, the easier the task of separating and sorting becomes. A sandy soil is best for producing good plants, as it allows free root growth and easy digging.

After digging the plants should be removed to a shed, preferably an open one. They may be exposed to the sun and air long enough for the soil to dry, but not to allow the plants themselves to dehydrate to any extent. When the soil is dry, the plants can be separated by hand and graded.

There is always a great variation in the size of plants. It is important to discard small, unthrifty plants immediately. It is true that some plants are small because of overcrowding in the seed bed, but some are naturally small and weak and will never produce well. There is a great deal that can be done in the production of better asparagus seed. If every plant in a mature bed would produce as well as the best in that bed, production could probably be doubled. Meantime we must make the best of the seed that is procurable, and selection at digging time must help reduce poor producing plants.

After the plants have been separated and graded, they can be stored in a cool place that will allow some movement of air. They should not be placed in too deep a stack, and must never be placed in a heap while wet. Wet plants will develop blue mould very quickly and establishment will be affected.

If plants are to be stored for a long period, it is best to place them in sacks or boxes and place them in cold storage at a temperature of approximately 32 deg. F. In this way they may be kept for many months.

Last year many thousands of plants were dipped in a fungicidal spray to prevent rot both in storage and in the ground after planting. There is some doubt about the results. In one area plants that had been treated with Captan were planted next to untreated plants, and the untreated ones proved by far the best. Unfortunately the plants were from two different sources, so the trial was not conclusive.

If the plants are dipped, they should be allowed to dry thoroughly before storage. The treatment will not stop the development of blue mould if they remain wet in a stack.

If properly carried out, dipping must be beneficial. The material recommended is Orthocide or Captan at the rate of 2lbs. to 100 gallons of water.

Whether treated or not, a point that remains clear without doubt is that plants should be placed in their permanent position in the ground as soon after digging as possible. If this can be done, there should be no need for dipping. Care at all times is essential. Damage to roots and buds should be avoided by handling the plants as carefully as possible at all times. Many plants have had the buds damaged completely by having been trodden on.

Every plant that fails to grow means the loss of production if it is not replaced. If a plant produced one pound of asparagus spears per year, it would mean a ton of asparagus for every 100 gaps in a bed lost over the lifetime of the bed. We should endeavour to give young plants the best conditions possible to survive planting and to produce the maximum crop during their life.

In spite of the utmost care at planting time, there always seem to be a few gaps in asparagus. In some cases long periods of rain or other causes can result in a fairly high percentage of failures. The only time these misses can be filled successfully is during the winter following planting, about June or July.

If replacements are not made the first year, it is very difficult to get them established later, and is probably a waste of time to try. By planting at this time, it gives the plants a full growing season to establish. In later years the plants in the gaps have the roots of the plants on either side to contend with, and also have to withstand cutting from the word go. There is no way to mark the new plants in a bed where cultivation of the whole area is necessary.

Replanting, or gapping up, should be done while the misses can be seen, in the undisturbed fern. A fairly large hole must be dug because there is always the tendency to plant them too shallow. A hole large enough to take the roots without curling up at the ends and protruding after covering, and deep enough to get the crown down to seven or eight inches, must be dug. A little earth should be thrown over them, but most of the filling in will be done in the course of discing in the fern and weeds immediately the gapping up has been done.

Only extra vigorous one-year or two-year crowns should be used. Small seedlings may not withstand the competition of next-door plants or cutting a little over twelve months after planting.

FUTURE SEED DELIVERIES

As the result of discussions between the Process Growers' Federation, Department of Agriculture, N.Z. Grain and Seeds Federation, N.Z. Horticultural Seedsmen Association and others, we have been asked to supply information with seed when delivered to growers from our factories.

The information requires the germination test as supplied by the Seed Testing Station, Department of Agriculture, Palmerston North; also the kind of seed, variety and the material used in treatment. This information has always been available to anyone for the asking, but it looks like we have just one more regulation with which to comply.

To simplify the whole thing, the information will be supplied on the reverse side of the delivery docket. The grower will, therefore, sign not only for the amount of seed, but also for all the infomation necessary.

We would ask growers to kindly return any seed left over as soon as possible, as we like to plant complete lines at a time rather than finish up with small amounts of various lines at the end of the season.

POVERTY BAY SOILS — PRACTICAL OBSERVATIONS

Here are some observations on the soils of Poverty Bay which produce processing crops for our Gisborne factory. They are made by Mr. L. R. Renouf, Field Supervisor, Gisborne, who after several years' experience in producing peas, sweet corn, tomatoes, beans, fruit and other crops, is well qualified to write them. Growers in the district have stated many times that John Renouf's knowledge and experience has done a great deal in promoting the production of horticultural crops. He is in fact the leading authority in these matters in the district, and we are proud of his achievements and tireless efforts to do his utmost for our growers and our company alike.

There are approximately 40,000 acres of flat land bounded by the hills of Gisborne. After considering all the factors that must be taken into account in the selection of suitable areas for processing crops, it is assessed that between 10,000 and 11,000 acres would be the total from which good reliable production of the main fruit and vegetable crop could be expected year to year. This area is at present utilised for all types of farming. Of this, it is estimated that not more than 1,000 acres would be ideally suited for very early crops and the growing of crops such as peaches and asparagus—crops that require a good depth of well-drained soil that will not remain in a saturated condition for any length of time or to any great depth, even in the wettest period.

CONSIDERABLE VARIATION IN SOIL TYPES.

It is doubtful if there is any land in New Zealand utilised for horticultural crops that has soil type comparative in structure and variation to those of the Gisborne flats. Considerable variation in types occurs on individual farms and in individual fields. This means that much thought has to be given to the selection of the right type of soil to suit the planting period for a particular crop. This selection is vital to obtain a spread in planting dates and to secure a uniform maturity in mechanically harvested crops. The evenness of maturity is one of the greatest factors in consistent quality of the final processed crop.

Apart from the very recent and saline soils, other types have proved to be highly fertile when favourable conditions prevail. Few seasons provide these favourable conditions, when there is no long dry period and there is moderate, evenly spaced rainfall. An analysis of results shows that under these favourable conditions there is little to choose between soil types. However, the periods over which they can be used for successful cropping vary considerably. Also there is great variation in the way different types withstand adverse conditions.

MAJOR FACTORS

The major factors governing the usage of the different soil types are drainage, unevenness of the surface, and the difficulty in working the soil.

Apart from Matawhero and Waihirere silt loams, which are well drained and can be utilised from August onwards, very slow movement of water takes place in other types. It may not be possible to work these until well on in September or October, and in some seasons, into November.

On many of the heavier soils the surface becomes sealed very quickly in wet weather and causes water to lie, even though the top soil is free of excess moisture. In parts of the district insufficient major drains cause otherwise well drained paddocks to remain wet for long periods, through water backing up from the drains. The worth of paddocks near the hills is governed by hill seepage in wet seasons. The use of heavy harvesting equipment in wet conditions, packing by stock and the breaking down of soil structure by excessive cropping, have in many cases aggravated poor drainage.

Marked undulations ranging from small depressions to old stream beds, occur over a large area of the plains on both light and heavy soils. These undulations carry water very late after wet winters, and though only a small part of individual paddocks, they govern their usage. Instances have been noted of well-drained paddocks having only 3 per cent. to 5 per cent. of area in depressions, being up to four weeks later than paddocks with similar soil types. Production from these depressions, even in seasons of favourable conditions, has always been poor. In wet seasons losses in crops have been frequent. The wet areas in spring and early summer have been found to be the driest in late summer, and mixed maturity in pea and corn crops has caused loss of production due to judging the harvest by the most forward parts of the crops. This feature of unevenness is probably the most important in governing the usage of soils for cropping, and is particularly so in respect to the large areas of the friable phases of the Waihirere soils, which in other respects are as good as any in the district. With the exception of Matawhero and Waihirere silt loams, the soils must be regarded as difficult to work for cropping.

While the heavier soils are generally readily worked from turf, they are more difficult to cultivate after cropping and become progressively worse as cropping is continued. Even after two to three years of cropping, the structure of many of the soils breaks down and it becomes extremely difficult to obtain a suitable tilth for processing crops.

Strong winds are generally experienced in late September, October and November, and when cultivating under these conditions the wet soil exposed is often dried out in a matter of hours and large clods can then only be battered down to smaller clods and not to the finer tilth required. Quick drying out is aggravated by the apparent ability of the soils to absorb heat very rapidly. These characteristics play a very large part in limiting the use of the soils for growing of pocessing crops.

Other features that have to be considered in selecting areas for processing crops are extensive cracking that occurs in dry seasons, particularly in the Makauri, Kaiti and Makaraka soil types; By far the greater percentage of crops are grown on the Matawhero series, and it is interesting to note that peak production of all crops has come from this soil type.

CONDITIONS COULD BE IMPROVED

It is considered that improvements could be made to a large area of land in the district by improved drainage facilities, both in respect to main and internal drainage.

Many depressions could be eliminated where the depth of soil is sufficient and where economics allow. Penetration of soil moisture may sometimes be obtained by the judicious use of subsoilers, especially where packing has occurred over the years. Crop rotation, as already mentioned, is an important factor. Organic material incorporated in the soil prevents it from becoming compacted and restores structure.

As time goes on more and more attention may have to be paid to these factors as more land is required for food production in the Gisborne district and New Zealand as a whole. Modern methods and equipment are making light work of drainage and land levelling, and there is no doubt the need for more and improved land will be met when required.

WHITE FRINGED BEETLE DAMAGES PEA CROPS

The illustration shows severity of attack.

There has always been a certain amount of insect damage to pea crops from a variety of insects. Grass grub (Costelytra Zealandica) may at times cause considerable damage to pea roots. It is difficult to say just how much damage is caused to leaves, flowers and pods by the rasping and sucking habit of thrips. Careful examination of peas will reveal their presence in most crops and the damage caused to the plant. We hope to do some work on thrip control in the coming year.

A NEW PROBLEM: WHITE FRINGED BEETLE

Last year for the first time the ravages of a new insect pest caused a considerable impact in the district. Investigations on areas where peas were simply withering and dying in a matter of hours, revealed that roots and stems under the surface were being eaten and causing the plant to collapse.

The collapse proved to be caused by the larvae of the White-Fringed Beetle (Graphognathus leucoloma). Everyone is hoping that conditions the previous year were unusually favourable to the development of this insect, and that it may be less in evidence this coming season. We have had scares before in Hawke's Bay and elsewhere in New Zealand which have not materialised. Many will recall the destruction and fuss over the Red-legged Earth-mite when it first struck in the Bay View district. Later it was thought the wasp and green vegetable bug would be a great problem.

It is natural for insects to multiply very rapidly when they are first introduced into a new environment. They can usually multiply unhindered by parasitic or biological control. Later, parasites, preditors or disease may develop, and the new insect reaches its own level which governs insect life generally. In the case of the White-fringed Beetle this could be wishful thinking, because it appears the insect has been noted in New Zealand for twenty years. It has proved a very serious pest in other countries, and the ravages of the pest in this district last year leaves no doubt in the mind of those who have seen it, that it is potentially a very serious pest. It is wise, therefore, to attempt to do something about it before it reaches too great proportions.

Damage to pea crops was worse in the lighter soil types of Pakowhai, Omaranui and Twyford, but was also noticed in other areas. Threshing mill operators noticed the adult beetle in greater numbers than usual last season in widespread areas when harvesting ryegrass seed. It is possible that we have a fairly serious build-up in our grassland, and have previously blamed grass grub for the damage.

There is still a great deal to be learned of the life cycle of Graphognathus leucoloma under our conditions. Vigorous feeding on pea roots continued over a very long period through spring and early summer. They could be found by the dozen two or three inches below the surface of the ground. Later the adult could not be found in the vicinity.

The adult beetle is nearly half an inch long. It is grey or greyish brown in colour, with a white marking around its base. Hence the name White-finged. The wing cases are well formed but do not operate, so the beetle cannot fly. It has a short snout. It is very active and will crawl great distances.

According to overseas reports, the adult beetle will feed on nearly 200 different plants. The real damage, however, is done by the larvae, which feeds on roots and underground parts of most plants.

The adult female can lay many hundreds of eggs. They reproduce parthenogenetically—that is without the need of the male to fertilise them—and will begin egg laying ten days or so after changing from the larval to the adult stage. The eggs are laid in clusters on sticks and stems or soil or rock particles. They hatch in early summer and form the grubs which do most of the damage. The larvae are a very pale yellow and about half an inch long. They are legless but very active. They will wriggle very vigorously when placed in the hand. They are covered with short, light hairs if carefully examined. The mouth parts are dark and plainly visible. They are readily distinguished from grass grub, being thicker, less elongated and of a different colour.

CONTROL

As previously mentioned, little is known of the life cycle under local conditions, but it is being studied by a member of the entomology division of the Scientific and Industrial Research Division. It has been found that very heavy applications of D.D.T. have given control overseas. The applications are in the vicinity of 10lbs. active ingredient to the acre, and we hope that we never have to apply that much D.D.T. to our soils. Work has been done with Dieldrin and shows promise.

We hope to have some more scientific recommendations to make before next pea planting season. Meantime, we would recommend our growers in suspected areas to use at least 1½lbs. of 100 per cent. Dieldrin to the acre through the seed drill. This can be applied by using 1½cwt. of Dieldrin super, which contains 1lb. of 100 per cent. Dieldrin to each cwt.

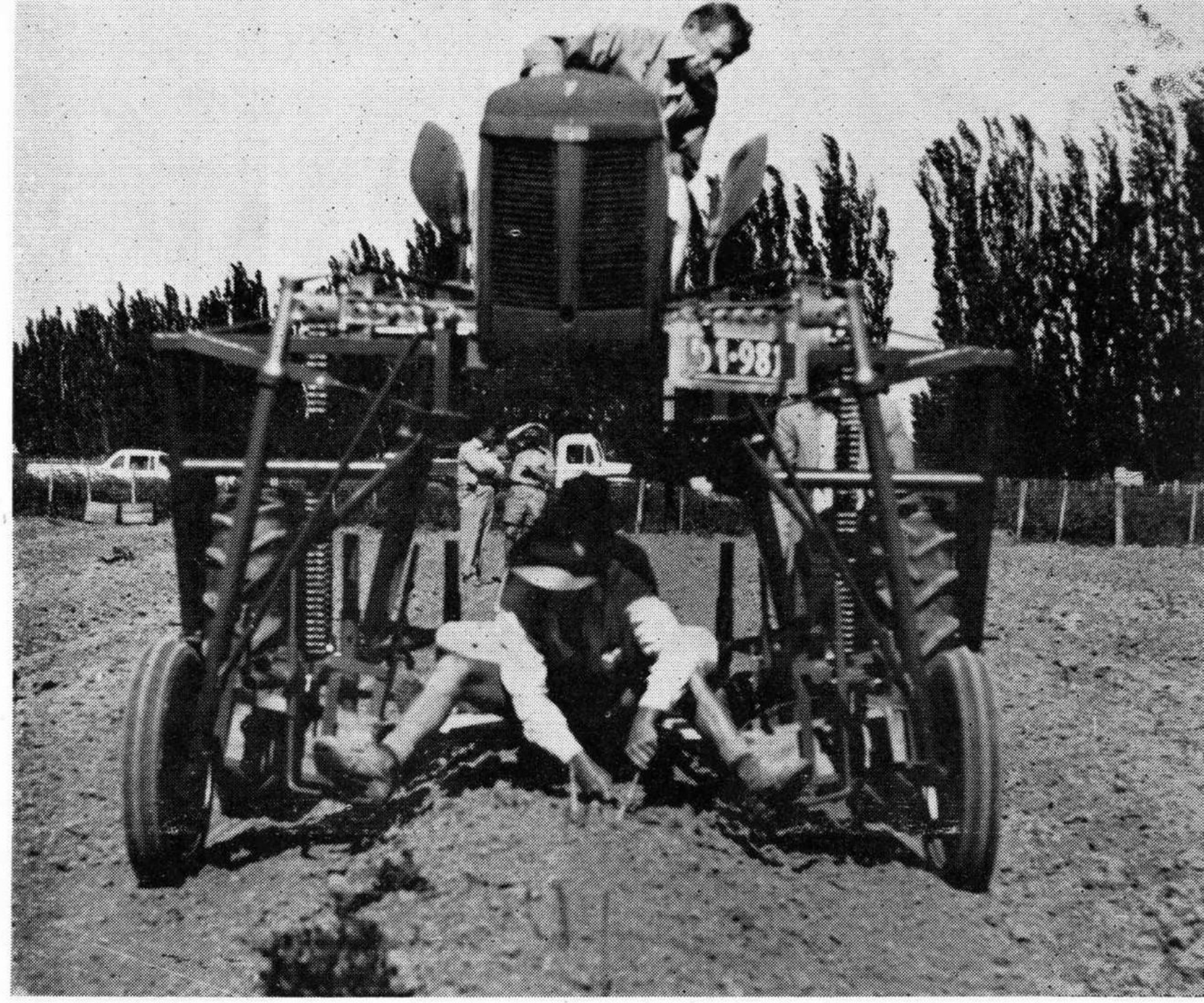
Claims of good control have been made with this application, and we have nothing further to base any recommendation on meantime.

CARE OF YOUNG PEACH TREES

Trees from the nursery should be planted out as soon as possible after delivery. If the roots have dried out, soak them in very muddy water immediately and heel them in moist soil until planted out.

Trees should be separated as much as possible when heeled in to avoid the spread of blast and bacterial canker from one to another. The bacteria live in water and are readily spread in this way if the trees are touching.

MORE ASPARAGUS TO BE PLANTED



FURTHER INCREASES

Asparagus planting time rolls around again. This year, during the next month or two, a considerable area will be planted in Hawke's Bay. The acreage of this crop has doubled in the last two years, bringing the total to 1,,500. In 1958, 350 acres were planted, from which the first cutting will be taken this year in the coming spring. In 1959, over 500 acres were planted, which will mean a further increase in 1961. These plantings will continue to increase in yield per acre for two or three years after their first cutting. The yield then from the last two years' planting will continue to increase for the next four or five years.

There will be approximately 200 acres being planted this year. Although this is a considerable reduction on the past two years, it is still a substantial increase for one year. It will mean that without any further planting, production must increase for the next six or seven years.

LIMITING FACTORS FROM GROWERS' ASPECT

Watties have always welcomed increased production of asparagus because of the possibilities of an export market being developed. In fact, a market has already been opened. From our point of view, we will want a great deal more, and anyone interested in asparagus can plant out with every confidence from the marketing aspect.

Growers do wonder what is to happen about the availability of labour for cutting, and it is well to give this and other aspects of production their due consideration. Labour for harvesting has not been a problem so far, but as more and more cutters are required, it will mean that those near populated areas will be at a distinct advantage to those more isolated.

It has always been our contention that where the need arises, a way will always be found. It may mean that something will have to be done by individual growers in providing accommodation and transport.

It is important that growers co-operate on this issue. It seems most unlikely that prices to growers can be increased in the meantime. There are lessons to be learned on what has happened before with other crops, where growers have accepted increases for picking from time to time, until production no loner becomes economic. If this happens to asparagus it is much more significant. With other crops such as tomatoes and beans or other annual crops, production can simply be terminated without any great loss, and the grower can turn to something else. With asparagus, it is more or less a permanent crop that has cost a considerable sum to establish and bring to full production. The grower has too much at stake to turn it in at a moment's notice.

Control of picking costs must be kept uppermost in our minds if we hope to develop not only asparagus, other crops as well.

Another controlling factor is the availability of suitable land. Heavy, poorly drained land is not suitable, and that is all there is to it. We have seen instances of this in the past where asparagus has failed to produce well because of its locality. Really first-class asparagus land is not unlimited, and growers would be well advised to go into this important aspect before they proceed.

HARVESTING METHODS

Harvesting methods have not changed to any extent over the years. The chief differences are seen in methods of picking up the spears after they are cut and left lying in little heaps along the row. Some pick it up by hand in trays or boxes, and carry it out to the end of the row, where full boxes can be picked up by truck or tractor. One large grower uses wheelbarrows for this purpose.

On Wattie's farms it has been found that the use of a tractor and carry-all, with three men picking up several rows at once, is best. This may not be economical where individual areas are small.

Last year a trial was made putting into practice what we have hoped to develop for many years. The idea is not original, but has not been used in New Zealand before. A high clearance tractor frame was made by Barclay Motors, of Hastings. Seats and foot-rests were made adjustable in any direction, so that the cutter could sit straddling the row with his arms free to move as required. The photograph shows the machine operating. In the coming year two outriggers will enable three rows to be cut at once.

Last year's trial on our 100 acre block showed that actual cutting time was slower where the cutter was transported. When the time for picking up was taken into consideration, there was not much difference in the two methods. Other advantages of the transporter are obvious:—

(a) The cutter is able to work for longer hours with less fatigue.
(b) The cutter can be shaded in the heat or covered in the wet weather.
(c) Cut asparagus is placed in boxes immediately. Allowed to lie on the hot soil until picked up, it loses moisture and, therefore, weight readily and quality is lost.
(d) The ground does not have to be traversed the second time to pick up cut asparagus.
(e) Labour for this type of work is more easily procured.

During the coming season one of these machines, manned to cut three rows at a time, will be used throughout the season. By careful records of time and costs, some useful and interesting information should be available. Everyone is hoping that it meets with success. If it does, and we have every reason to suppose it will, then the whole problem of asparagus cutting must become easier. A limiting factor in production will have been eliminated.

Under present cutting methods a great deal of labour must be available. Little casual work is available in late September when the asparagus cutting season commences, and many are not aware of the opportunities. Up until the present time no advertising for asparagus cutters has been done to any extent, which indicates that no difficulty has so far been encountered. The next three years will prove whether labour will be a limiting factor. Meantime, let us cross our bridges as we come to them. The total area is still under 2,000 acres, which is not a big area for our population.

FRUIT TREE PLANTING SPEEDED UP

The use of a tractor-operated post hole digger speeds up tree planting and reduces hard work. In open textured soil, and using a 12-inch digger, it is often not necessary to enlarge the hole. If a smaller auger is used, the hole can be dug a little deeper than required and the sides pushed in to make room for the roots. Take care there are no air pockets left in the bottom of the hole.

SCLEROTINIA CONTROL IN TOMATOES

Sclerotinia has always been a problem in tomato growing. Last year it was worse than usual due to humid conditions. It is possible that something may be done to control it with a fungicide applied to the soil when the plants are set out.

WHAT IS SCLEROTINIA?

Sclerotinia sclerotiorum is a fungus which attacks a fair range of plants. Together with Sclerotinia trifoliorum it attacks not only tomatoes, but lettuce, cabbage, potatoes, peas, beans, clovers and woody plants such as passion fruit. It has been recorded on over sixty plants in New Zealand which include some weeds. Blue lupin, used so extensively at one time, is very susceptible, and can no longer be recommended as a cover crop in gardens or cropping land. The disease is a serious one and is widespread throughout New Zealand.

If an infected plant is examined, hard black bodies anything up to the size of a pea and often elongated will be found inside the stem. This black body is the Sclerotia which overwinters in this form and is able to withstand severe conditions of heat, cold, wet or dry, and may remain viable in the soil for several years.

In the spring and summer when soil temperatures rise to 60deg. F. or more, the Sclerotia develops small cup-shaped bodies which in turn produce spores which are ejected into the air to be carried by wind for a considerable distance.

Wet, warm soil with humid conditions are ideal for the development of Sclerotinia, and soil temperatures are usually favourable when tomatoes are planted out. Infection on outdoor dwarf tomatoes for canning usually strikes at the main stem at or just above ground level. However, it can gain entry higher up. During the last season it entered the plant in many cases where lateral branches touched the ground. Once infection has taken place, the fungus spreads quickly through the stem tissues and the plant wilts and dies through lack of moisture coming through the damaged tissues. Unfortunately the plant usually succumbs about the time the fruit starts to ripen, when it is too late to consider replacements.

CONTROL

Up to the present time very little can be offered for adequate control, although good cultural practices do help considerably. The soil should be kept loose on top so that the surface dries quickly. This creates conditions less favourable to disease development.

It is considered that one of the greatest causes of infection is through damage to tomato plants during cultivation. This is especially true where hand hoeing is done close to the plant for weed control when the plant is young. It is difficult to carry out this operation without touching the base of the plant, but all care should be taken not to damage the stem, which gives the disease an added chance of entry. This was illustrated recently where part of a crop had been push-hoed, and the few rows left undone showed less sclerotinia.

During the coming season trials with a fungicidal spray material, P.C.N.B., will be laid down. This material is known to control this particular fungus among others, but we will have to work out the economics and technique before any straightforward recommendations can be made.

At least our growers will know that something is being undertaken by this company. As far as we know, nothing has been done along these lines before. It is a serious problem and can affect the economics of tomato growing considerably when up to 30 per cent. of the plants in some crops have been affected. Not only is quantity reduced, but quality as well. There is always the temptation for pickers to take fruit from infected plants. This fruit lacks colour and juice content and often spoils the whole sample.

PEACH TREE PLANTING NEEDS CAREFUL THOUGHT

GIVE THEM SPACE

A large number of peaches will be planted in both Hawke's Bay and Poverty Bay districts this year. Both districts produce very prolific growth, and there has been a tendency in the past to plant too close. The result after a few years is the production of most of the crop in the upper part of the tree. This means that the greater part of the pruning, thinning and picking must be done from ladders. This increases the costs tremendously.

It is common to see a peach tree spread 20 feet in five years. In the past, many peaches were planted only 18ft. to 20ft. apart. This mean that after five or six years the trees met in the row. As the result of the loss of light on the lower part of the tree, growth developed only on the upper part. Trees were drawn up to unnecessary heights. Any attempt to lower them by severe cutting only resulted in multiplying the growing points on the upper part. This formed a canopy which excluded light more than ever, and the initial fault of close planting could never be overcome.

RECOMMENDATIONS

As a result of a great deal of study in established orchards, Watties have of recent years planted out their peaches 24ft. apart each way. Results are most gratifying, and on most soil types it would be a pity to see closer plantings. By pruning to encourage strong laterals or fruiting arms, trees can be allowed to spread without the necessity of growing too high. If every leader is pruned to produce a good strong fruiting arm just above tractor wheel height, about a third of the crop can be thinned and picked from the ground. This is the cheapest fruit to produce, as it can cost twice as much to pick fruit from ladders.

VARIATIONS

When marking out a new orchard, it is well to spend more time in making the best use of the land. The area should first be carefully measured up by a chain measure. It is often possible to fit in an extra row by reducing each row width by a few inches. It is not necessary to plant on the square. Indeed, it could be an advantage with modern methods of spraying to have the trees closer one way than the other—say 22ft. by 24ft. or 23ft. by 25ft., or any such variation.

If an automatic sprayer is used, particularly a double-sided one, spraying on the diagonal is recommended at first. Spraying in this way the first two or three years means the sprayer is much nearer the trees on both sides. This can reduce the quantity of sprays considerably and improves coverage.

This is a general recommendation, of course, and can be varied according to individual situations. There are some soil types where a 22ft. planting could be recommended. There is always the tendency to think there seems a great deal of waste space when an area is pegged out. Many growers have got cold feet at this stage and reduced the space. It is much better to have a look at your neighbour's fully-grown trees first. A thorough inspection, noting the trees touching at the top, will convince most growers that space and light is essential to cheaper production and cheaper establishing costs.

At 20ft. by 20ft. it takes 109 trees to plant an acre. At 22ft. by 22ft. 90, and at 24ft. by 24ft. 75 trees. Variations may easily be worked out from these figures.