Harvest

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

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Harvest

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HASTINGS, GISBORNE
& AUCKLAND

OUR COVER

Noel Kitching, a prominent Hastings contractor, at the 1958 Hawke's Bay Ploughing Match which he won.

Photo by Russell Orr.

FOREWORD

BIGGER, better and brighter is the theme for our coming year's production. The budget prepared for this year calls for substantial increases in most lines, and the introduction of some new ones. Bright prospects such as these make welcome news when some industries are finding it difficult to maintain their present production.

The largest area of peas, beans and tomatoes ever undertaken has been planned, and pea planting is already under way. Fruit is also required in larger quantities. Whether this will be forthcoming depends largely on the season. It is reasonable to suppose that last year's record crop cannot be expected again this season. Nevertheless, prospects for a reasonable crop look fair at this stage. Peaches and pears are required to the full extent of production. Apples too are required in larger quantities than before. Our tomato products continue to gain popularity, and as a result the area to be planted is only limited by the capacity of both factories and exceeds all previous plantings. Other lines too are limited by factory capacity, and expansion is necessary.

Many factors are responsible for this continued expansion. Both local and export markets continue to be developed in canned and frozen foods. The percentage of New Zealand's frozen food trade now enjoyed by our Company is remarkable when we realise that it is only three years since we entered this field. Overseas contacts are maintained by Company representatives each year. Mr. J. Wattie, Managing Director, has just returned from a three month's trip overseas and the results of his time away from New Zealand are most encouraging.

All this expansion means more and more development of buildings and equipment. Extensions to buildings are under way, and once again new equipment is being installed to speed up and improve canning and freezing techniques. It means more people will be employed and more growers required to produce the necessary raw material.

Requirements of processed food are not likely to decrease with world population increasing so rapidly. The future then looks bright for all concerned. We trust our factories will continue to play the important role they have in the past. No one can deny they have played a major part in the development of the Hastings and Gisborne districts.

Yours sincerely,

Bob June

Hastings Field Supervisor.

PEAS BY THE MILLION !

Peas continue to be one of our major lines. It is a crop which calls for the closest co-operation between the factory and the grower. With this season's area exceeding all others, we will require that co-operation to the fullest extent. The season leading up to the present time has been a remarkable one with such a dry Autumn and early Winter. This can bring about complications with regard to stock and pasture requirements, to say nothing of a likely wet Spring or Summer.

Our Field Supervisors have always done their best to fit in with the grower, but as the pea areas continue to increase, it follows that more attention has to be placed on keeing up to schedule with planting. Allowances must always be made for weather conditions. A grower is never forced to plant under unfavourable soil conditions. Nothing is gained by it either for the grower or the processor. Nevertheless when conditions are favourable, not a moment can be lost.

CONSIDERATIONS

You as our growers have your problems, and we have ours. You may have to quit stock profitably and therefore need to study your grazing accordingly. Time of preparing the ground may be limited. Naturally, too, you want to plant when you think you will get the best returns from your particular piece of land. We, on the other hand, must plant continuously throughout the season from mid August to November. We are interested too in obtaining the maximum return and try to arrange our early, mid-season and late plantings to suit the land. Continuity of supply is tremendously important. This cannot be assured because of unknown weather factors beyond our control. However, we have a certain area to plant and a fixed season in which to plant. We can do no more than to plan according to our knowledge of the soil, the district and the variety of peas planted. After that, it is up to weather conditions.

PREPARATION OF LAND

One of the problems in pea planting is to get the ground worked up in good time. This is most difficult when stock food is in short supply and every bit of grass is needed. Very often the ground is worked up and planted in a matter of a week or so. The resultant crop may be satisfactory, but would likely have been much better if ploughed sooner. The rotting down of green material during the germination of pea seed is one ofthe main factors of poor germination due to the release of gases. If time is short, some of this risk can be offset by discing or rotary hoeing the land prior to ploughing. The use of the harrow to help kill the turf before ploughing, if conditions are sufficiently dry, is also an advantage. This method of working up land is becoming more general. It is cheaper because it reduces the running on soft ground after ploughing. It also reduces the possibility of packing on some soils.

If turf is ploughed under in its natural state, discing has to be sufficiently deep to cut through to the bottom of the furrow. If this is not done a layer of undisturbed turf may interfere with soil moisture reaching the surface. Air pockets may be left, and as a result patchy maturity will interfer with harvesting to best advantage. The ground must not feel springy when walked on prior to planting.

Soil need not be worked too fine for peas. Like all seeds, peas need air to germinate, and if heavy rain falls on finely worked land between planting time and germination, a severe loss may be incurred.

SEED SUPPLY AND TREATMENT

Seed is supplied to growers by the factory because we wish to have control of variety and type. Most of our seed is produced in the South Island of New Zealand. It is sold to the grower at cost. When a paddock of peas is lost for processing, the factory takes the seed back from the grower at a price which should be about equal to the return from the crop had it been harvested green. If the seed is one year from an imported line, it is used again the next season or sold outside the district. If the seed was from a line previously grown in the district, it is sold at a loss for stock food. Germination is also watched carefully. for many years now, no seed has been supplied to growers below 90% germination by Government test.

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All seed supplied by the Company is treated against damping off disease. This may not be necessary in the latter part of the year, but to be certain, all seed is treated. Damping off is a common cause of a poor strike especially in the early planting when heavy rain can be expected and when the soil temperatures are low.

In the past, seed has always been dusted with a variety of materials, all of which brought about good control. Some interfered with a steady flow in the drill and were eliminated. Many of these materials were very difficult to apply to obtain even coverage of the seed. Men working in the treating stations were often allergic to them. Cases of serious skin diseases and hospitalization were common. To do away with this problem, and to obtain a more even coverage without waste, most seed treating plants now apply materials wet. This is known as slurry treatment. This does away with dust entirely, and both insecticides and fungicides can be readily used.

This slurry treated seed was grown under trial last season in Hastings. We wished to see if control was adequate and to test the flow in the drill. It flowed slightly slower, but no blockages occurred. The best dusting material, both in disease control and drill flow, used during the past few seasons has been Spergon. This material is now available as a slurry, and the majority of this season's seed is treated with it. In future, all seed will be slurry treated, and Spergon will be the material used.

PEA PRICES

In spite of reductions by other processing firms, J. Wattie Canneries Ltd., are continuing to pay the grower the same price as paid for the last two seasons. This price is paid out on weighbridge weights, less a percentage if waste is excessive. The maturity is measured by a carefully checked tenderometer, and payment varies in a range of grades accordingly. Prices were set out in the December issue of Harvest.

HARVESTING

The bulk of the Hastings harvesting will be done with a fleet of thirteen mobile viners. Due to the large area, it will be necessary to use stationary viners as a standby. **No guarantee can be given therefore that all peas will be harvested by mobile viners in the Hastings district.** In Gisborne, where the area of pear has also increased, all peas will be handled by stationary viners.

Pea hay from the mobile harvesters has become keenly sought after, and often gives an extra return of £6 to £10 an acre. This hay has been of great value recently with the shortage of grass and other feed. This is an advantage the Hastings growers have had for several years, and has helped considerably to increase their returns. This return is incidental and not considered in the light of compensation should a crop be missed by reasons beyond the factory control.

SEASON'S PROSPECTS

A study of rainfall reveals that just under 19 inches in any one year is the lowest on record for the past sixty years. With nearly eight months of the year gone, and only 10 inches of rain so far, it makes one wonder what is in store for us. If the rainfall comes up to 20 inches, it means we are due for nearly 10 inches between the time of writing and the end of December. It is not a bright prospect. If, on the other hand, we don't get a good soaking soon, the subsoil will be dry to start the summer. However, there is nothing we can do about it, but hope it will work out with satisfaction to all.

NOW IS THE TIME

If you are considering planting an area in asparagus next winter, now is the time to make initial plans. Asparagus seed should be planted in late September and early October. Costs of establishing asparagus are high. One of the main costs is the purchase of plants. This cost can be considerably reduced by growing your own crowns from seed.

For the production of the best plants a medium sandy or silt loam is best. The land should be high in organic matter if possible. A reasonably fine seed bed should be prepared as the seed is slow in germinating and needs good conditions for a satisfactory strike.

Seed takes up to three weeks to show above ground, and at one time this fact made asparagus rather difficult to grow. Weeds tended to germinate long before the asparagus showed up in the rows and often took charge before cultivation and weed control could be obtained. There is now a very satisfactory pre emergence weed spray which eliminates this risk. The material is C.M.U. As soon as the seed has been planted the C.M.U. is applied at the rate of 3 to 4 lbs. to the acre. In silt loam 3 lbs. should be enough but on sandy soil a little more should be applied. The whole area should be sprayed which should keep the area free of most weeds for many weeks. Subsequent control requires only a little surface cultivation. The material should be applied with 30 to 40 gallons of water to the acre.

A good stand of seedling Asparagus on J. Wattie Canneries' No. 2 Farm.

Like most weed sprays certain conditions are necessary for the best results. C.M.U. needs a reasonable amount of soil moisture to activate it. If the soil is dry when applied and no rain is experienced within a week or so of application, irrigation should be employed. Normally at this time of the year there is ample moisture.

One other point experienced last season is worthy of note. Where C.M.U. was applied early in the year good results were obtained. Where it was applied late, in November, results were very patchy even when rain fell shortly after application. The only explanation to offer is the fact that this material is broken down by soil micro organisms. When applied early in cool soil conditions this breaking down process is slow. Later, when the soil warms up bacterial action is speeded up and the material loses its effect more quickly. Planting then should not be delayed.

PLANTING

It requires 12 to 16 lbs. of seed per acre according to the distance allowed between rows. Row spacing may be varied from 14 to 18 inches apart in accordance with the wheel spacing of the tractor for cultivation and digging of plants. Seed should be planted about 1 to $1\frac{1}{2}$ inches deep. If the soil is moist an inch is quite alright, but if dry the deeper planting is preferable.

Anything up to two hundred thousand plants can be produced from an acre of seed. However, it is best to allow for the production of more plants than may be required at least $\frac{1}{2}$ lb. of seed for every acre of established crop. This gives the grower a chance for rigorous selection. At present we have little control of the parentage of Asparagus seed. It produces a very wide variation of plants: some will produce large numbers of good sized spears, and others that may only produce small ones. Still others will produce very large spears but only a few of them.

If we could have all the plants in our crops high producers our present tonnage could be almost doubled. A great deal of work is being done in this field, but meantime our only chance of improving production is to select only the strongest plants from the seed bed, and to see that they are planted out in good condition.

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JACK FROST IN OUR ORCHARDS

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Hawke's Bay fruitgrowers have been fortunate in the past few seasons as frost damage has been slight. However, they cannot afford to be caught off guard. It is one problem that can be overcome, and any grower who does not prepare to fight a frost is throwing away a safe means of insurance against the loss of crop. Frost, and its control is an interesting subject, and these few notes may be of use to some growers as well as being an interesting subjects to others.

A frost is said to occur when the temperature of air reaches 32 degrees fahrenheit, the freezing point of water. Many factors are involved in bringing about a frost, and a study of them is worth while, leading to a better understanding of the protection of crops.

RADIATION

The earth and every object on it radiates heat at all times. Usually during the day radiation from the sun allows the earth to absorb more heat than it gives off. After sunset radiation from the earth increases until heat from the sun is sufficient to offset it again. This occurs well after sunrise. Atmosphere, i.e. water in the form of rain, cloud or snow reduces radiation as does invisible water vapour or the humidity of the air. The temperature of the air determines the amount of water vapour held in it. Warm air can contain more water vapour and thus reduces radiation.

Different types of soil radiate heat at different rates. A wet or heavy soil radiates heat more slowly than a dry or sandy soil. It follows, that if the soil is dry during late spring as it is at the moment, frosts are apt to be more severe. An example of this is found in desert areas where the amount of heat absorbed from the sun during the day is tremendous, but because the sand is open and dry, the stored heat radiates very quickly and very cold nights are often experienced in these areas. A compact soil radiates heat for a longer period than a loosely cultivated one. There is not a great deal of difference between compact moist soils and a grassed orchard, if the grass is not allowed to grow too long.

Trees, hedges, walls and areas of water such as rivers and lakes also radiate heat over a long period which explains why temperatures remain higher near these objects. Clouds play an important part in preventing warm air from the earth escaping into outer space. If even slight cloud formation is seen during the frost fighting period it is always a welcome sign. To give some idea of this, a clear sky is said to allow radiation to take place at twelve times the rate of a cloudy one when the cloud is at 4,000 feet.

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Asparagus seedlings should not want for plant food and moisture. A light dressing of phosphate, about 1 cwt. per acre can be drilled with the seed or prior to planting. A side dressing of a fertilizer high in nitrogen such as No. 2 Orchard Mix can be applied after the plants are well up. This fertilizer also contains some potash which can be an advantage in most soil types.

It has been very apparent that irrigated plants have produced much better crowns than non-irrigated in the last two seasons. Irrigation then can be an advantage both for activating the pre-emergence weed killer and to ensure the best possible plants are produced.

Asparagus is a long term crop and everything possible should be done to ensure that only the best plants are used in the first place. No amount of care will make a naturally poor producing plant give a high yield.

The area to be planted out should also be selected at this stage. It is not essential but preferable to grow a cultivated crop such as peas in the land this year. This leaves the land free of turf and makes the preparation for permanent planting easier. It also gives an opportunity to rid the area of any weeds such as Californian thistle, docks, couch grass or doab. It also allows time for any drainage or levelling that may be required prior to planting.

CONDUCTION

The earth is a poor conductor of heat, and air is a very poor conductor. Heat lost from the surface layer of soil is not easily replaced from below. The temperature of the soil a few inches below the surface can be fairly warm and the surface much colder. The air next to the earth also cools quickly. Conduction then is simply the gain or loss of heat between two objects in contact with one another. An example is the transfer of heat when a poker is held in a fire. The heat is transferred from the fire to the hand quickly, and we say the poker is a good conductor of heat. Because the process is slow in the atmosphere, we say the air is a poor conductor.

After sunset the earth's surface begins to cool. As soon as the earth's surface temperature falls, the air next to it begins to lose heat by conduction. The air being a poor conductor of heat, it is cooled in a shallow layer next to the earth first. We find then that air can be freezing at ground level, but at the height of fruit trees can be very much warmer.

Wind enters into the picture to a great extent. It mixes the cold surface air with warmer air above. If there is a breeze there is normally little danger of frost. Only when a great depth of cold air is blowing do we get a frost in conjunction with wind. This does not occur in this district. Clear still nights are ideal conditions for frost.

Hoar frose occurs when water vapour in the air freezes into ice srystals to give us a white frost. Moisture in the air when cooled further freezes into hoar frost crystals. Heat is released as condensation of air moisture takes place, so that frost is less likely on a dewy night. Frost can take place without this visible condensation and this is known as a black frost.

AIR DRAINAGE

Another important factor in the study of frost is air drainage. Cold air is denser than warm air and therefore builds up in the lowest areas. It tends to flow much like water from high to lower levels. Shelter such as trees or walls tend to form frost pockets. It is common to see frost tender plants grown on slopes where they cannot be grown at lower levels. If no wind or other factors interfere the air on a slope increases in temperature about 1.6° F. with every 300 feet in elevation.

THE INVERSION CEILING

One more factor to consider before getting on to methods of frost control is a phenomenon known as the inversion ceiling. The knowledge of this factor really makes the whole problem of frost control a possibility. As a cold layer of air forms next to the earth's surface, the warm air rises to form a layer higher up. This layer of warm air varies in height, but it prevents quick loss of heat into space. It forms a sort of lid overhead and makes the heating of orchards possible. If it were not for this layer it would be futile trying to warm a huge volume of cold air extending into space. As someone once said, trying to warm the whole outdoors.

The application of heat at ground level if too slight will tend to do more damage than none at all because it will lift the frost to a higher level in the tree. Enough heat must be applied to warm the air up to the inversion ceiling or above the height of the trees. In practice a large number of small heaters is better than a few large ones. Small numerous heaters will raise the heat slowly and evenly towards the inversion ceiling until it meets air of equal temperature when it will rise no further. If the air is heated still further it will pass through this layer and is wasted. Few large fires tend to do this, creating turbulence at the same time. It is necessary then to warm the layer of air below this ceiling.

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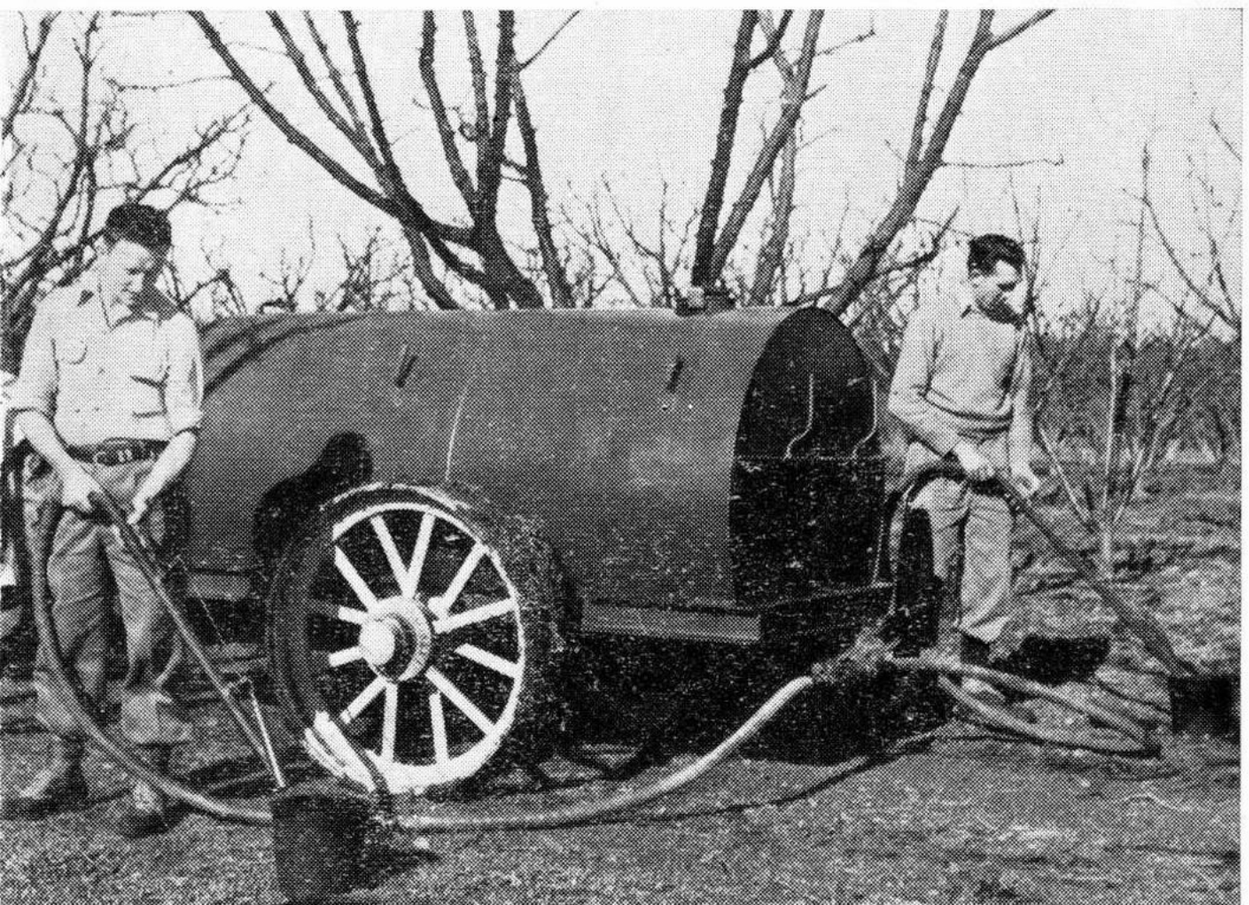
Filling fire-pots from tanker with gravity feed.



METHODS OF CONTROL

There are many methods of frost control, the most common one being small heaters using fuel oil which we will deal with later. Others are heaters using other fuel, fans and blowers, central heating and the use of irrigation. Infra-red radiant heat and smoke screening have not proved successful.

Heaters using other fuels such as coke have proved successful as far as the generation of heat is concerned. They burn without smoke which is an advantage. However, coke supplies are limited here and they also have the disadvantage of being difficult to extinguish. Heat generation falls off as the coke burns out and refilling is difficult.

Fans and blowers have been tried in New Zealand over a number of years without any great sccess, although thev are numerous in U.S.A. and good frost control is claimed. The theory of this method is to pull the warm air down from above and spread it out over thc surface of the earth. However, as the warm air reaches the ground and comes in contact with cold air it tends to rise immediately and the area controlled by each fan is limited. Their efficiency varies with the height of the warm air above. Combining heat from a furnace or similar heater and blowing it over the orchard is also used. The drawback here is that the heated air is so much hotter than the surrounding air that it does not travel far into the orchard.

Controlling frost by irrigation is fairly practical and has been used successfully on crops such as strawberries in England. Water is sprayed on the crop during the danger period at something like 1,000 gallons per acre per hour. As water reaches freezing point it gives up heat. This heat prevents the plant from freezing even though ice formed on them. However, this system also has its limitations.

Central heating has been used in some orchards overseas. Heat from a furnace being piped to individual trees. This is also out of the question here.

In New Zealand the "sludge pot" is still most widely used. It has faults such as the smoke nuisance, but properly operated, frosts of up to 20 degress F can be controlled. This pot is of about five pint capacity and requires about 120 to the acre for safe results. Usually one is placed in the centre space between trees, one to the tree. Extra pots may be useful around the outside of the orchard especially on the south side. It has a good fitting lid necessary to keep out rain and is used to extinguish the fire. It also has a metal spider which fits over it to reduce combustion and prolong the burning time of the fuel.

Pots should be filled and placed in the orchard just prior to blossom time. The pots are most readily filled from a tanker, but 40 gallon drums laid flat on a trailer with a good fast flowing tap are satisfactory. Tankers with pressure pumps have been tried but gravity flow is sufficient. Too much pressure tends to make the oil spurt out too quickly making filling difficult.

LIGHTING

Lighting is done by means of a torch made for the purpose. A mixture of petrol and kerosene in equal quantities has been recommended but most growers prefer to increase the petrol two thirds to one third kerosene. The torch has a wick which keeps burning, and as the torch is tipped up into the pot it ignites the oil. New pots are difficult to light and it is well to light them before required. If they are let burn for a short time, soot forms on the side of the pot and acts as a wick. One man should be able to light between 250 to 300 pots per hour.

The time of lighting is all important and varies so much that recommendations are difficult to make. The stage of growth is one controlling factor. For instance when buds are just showing colour, peaches will stand 6 degrees of frost for half an hour or more. At full bloom 5 degrees and at small fruit stage only 1 degree. Other fruits vary considerably. Then too, one part of an orchard is often colder than another. Generally, lighting should start on the south side as there is usually a slight southerly drift even though the night seems still. Lighting one pot will soon show this by the way the flame and smoke drift. If this side of the orchard is heated first, it is not always necessary to light the whole orchard when temperatures are not severe. If frosts are light or reach danger point late in the morning it may only be necessary to light alternate pots.

THERMOMETERS AND ALARM SYSTEMS

Reliable tested thermometers are essential. They should be checked before each season and well looked after. Incorrect readings can be the cause of loss of crop or waste of fuel. Alarm systems too, must be of a reliable type and carefully checked. Several thermometers are required both inside and outside the orchard area. By comparing the reading while firing it is easy to ascertain how the temperature is being held. Remembering that fuel can easily be wastd by over heating.

The proper screening of thermometers is also most important. Ground temperatures are not important. The usual height is 4ft. 6in. The thermometers should be hung in the open between trees and screened from above. If hung in a tree incorrect readings will be made. A useful screen is a 7 x 7in. case nailed to a post with two sides and ends only left intact; one side as a cover and the other behind the instrument and facing south. A wide board nailed on the top of a post so that the thermometer hangs under it protected from rain and the sun is also satisfactory. Sun should not be allowed to play directly on the thermometer as it bleaches the red liquid usually used in this type of instrument.

WHEN TO LIGHT

The time to light is the most difficult problem. Not only does it vary with variety, stage of growth and type of fruit, but the time of the night at which it occurs also has an important bearing. If the temperature drops to danger point just before sunrise, the short duration before an expected temperature rise may be risked. If it occurs earlier, lighting is essential because the duration of the frost is just as important as the degree. As mentioned peaches will stand 1 degree for 30 minutes at small green fruit stage, but damage would occur if subjected to the same temperature for an hour or more. Frost after a warm spell will do more damage than after a spell of cold weather. Do not take notice of neighbouring orchards, their readings may be quite different.

With all these factors, it is readily understood that few would be prepared to set down a definite recomendation. The following is a guide only for a 30 minute duration.

APPLES AND PEARS

Buds closed, colour showing	Fire at	7°F
Full bloom	„ „	4°F
Small green fruit (according to size)	„ „	2-3°F

JAPANESE PLUMS

Full bloom	„ „	2°F
Blossom drop	„ „	1°F
Fruits harden gradually till at finger nail size they will stand 2°.		

PEACHES AND NECTARINES

Late varieties and yellow varieties are more susceptible.

Full bloom	Fire at	6°F
Small green fruit	„ „	1-2½°F
The last reading gradually decreases till by thinning time they will stand 3° or more.		

So "Be prepared" is the motto. Check your thermometers and alarms and have plenty of oil on hand. If the season remains dry the danger could be greater than it has been for many seasons.

IRRIGATION OF CROPS IN GISBORNE

In Gisborne in the past year irrigation of processing crops was undertaken by a number of growers. Results obtained were not as satisfactory as growers expected, and while in most cases this was due to lateness in starting irrigation, the application of water was not as thorough as it should have been.

Costs of installing and operating sprinkler irrigation systems are high, particularly in Gisborne where sources of water are extremely limited, and in many cases pumping long distances has to be undertaken.

To ensure that returns obtained from the use of irrigation justify the costs involved, efficient and economical use of the water is essential, and it is hoped that the following points will be helpful to growers in future use of systems.

SOIL REQUIREMENTS:

When water is applied to a soil a fairly rapid downward movement, and to a lesser extent lateral movement, occurs, and water which cannot be held by the soil, pases to lower levels. After 24 to 48 hours, depending on soil types, movement of water will have practically ceased, and the moisture status of the soil becomes stable. The amount of water held by the soil after drainage is the "field capacity" of the soil. When the soil moisture is reduced to the stage when plants wilt, this is known as the "wilting point" of the soil. The amount of water between wilting point and field capacity is the supply available to plants. Apart from soils that have a water table close to the surface, no upward movement of water occurs, so that the moisture available to plants is contained only on the volume of soil occupied by the roots.

The purpose of irrigation is to supply water to the soil so that available moisture is present in the whole of the root zone of the crop throughout the growing period.

If available moisture is not maintained, even for a short time under very hot conditions, the check plants receive will not allow them to fully recover and the extent of loss of production and effect on quality will be governed by length of time this condition exists.

As a general average, the available water that can be held per foot depth in different soils is:—

Sandy soils	½in. to 1 in.
Sandy loams	1 in. to 1½in.
Silt and clay loams	1½in. to 2 in.
Clays	2 in. and above

To assure efficient irrigation, soils should be checked by digging 48 hours after application of water, and until this checking has been carried out, a time period of application in each position cannot be arrived at.

APPLICATION OF WATER

Soils should be irrigated well before available moisture has been depleted. Less water per application will be required under these conditions, and penetration of water will be more rapid.

As a general guide, 1in. at each application of water on average soils in Gisborne, before available moisture is depleted, will give satisfactory results, but when soils have been allowed to dry out, as was the case last season, 1½in. to 2in. will be necessary. Under such conditions, two applications a few days apart would be most satisfactory.

The penetration rate of water varies considerably, and amounts no greater than ½in. per hour should be applied. These figures do not apply to other districts.

Under calm conditions, spacing of sprinklers up to 4/5ths of the diameter of the spread apart each way, will give satisfactory results and keep the number of shifts to a minimum. Under windy conditions considerably more overlap is required, and suitable placings of sprinklers can only be arrived at by trial and error. Checking efficiency of wetting soil under windy conditions by digging is essential.

Uneven watering of any crop will give poor results for the outlay involved on irrigating, and in the case of crops mechanically harvested at a certain stage, variations in maturity caused by uneven watering can considerably reduce production due to harvesting being governed by the most mature sections of the crop.

Irrigation properly applied will increase development and production of crops, but the extent of increase will be governed by the efficiency of its use and the fertility and state of the soil on which it is used. Highly fertile soils of good structure will produce the greatest crops per unit of water.

Rook Destruction

Once again war has been waged on the wily rook. In last December's issue of Harvest a fairly full report of the methods of destruction was outlined. The latest effort resulted in over 700 birds being destroyed. The proof is in the accompanying photo.

Rooks or crows continue to be a problem as they destroy crops of peas, corn or maize, pumpkins and grain. A Rook Committee was set up about five years ago to deal with the problem, and since that time many thousands of these birds have been either shot or poisoned in the Hastings district. Funds were originally donated by processing firms and farmers. These funds are used for poisoning and supplying ammunition for shooting. Farmers in troublesome areas are high in their praise for the work done by the Committee.

Farmers may obtain free ammunition for shooting these birds. Shooting is only worth while when the young have hatched but have not yet learned to fly. At any other time very few birds can be brought within range.

The new tasteless and odourless poison called 1080 (Sodium Monofluoracetate) is the first satisfactory material ever used for rook destruction. The Committee have previously tried many ways to deal with the problem. Apart from shooting, results have been poor. It is felt that with careful use of this poison the menace can be kept reas-onably under control.

Collecting poisoned crows: over 700 were taken in this area.

1080 is a deadly poison with no known antidote. It is made available by the Department of Agriculture only. The Committee's thanks go to Mr. J. G. Niccol, Livestock Instructor, Hastings, for his help and co-operation. A further attempt will be made on another rookery later in the year.

Looking Ahead

Growers who attended the farm school held in Hastings in July will remember an address by Mr. M. Richards, of Massey Agricultural College. The subject covered water requirements and irrigation, growth, and fruit bud initiation.

In the course of the talk it was explained how fruit buds were formed in late spring and early summer, about November and December. To ensure a good fruit crop then in **1959 - 60,** the best possible conditions should prevail now! ! These conditions mean that the tree should have ample nutrients and moisture.

Unless a good deal of rain falls in the very near future, the conditions suitable for fruit bud initiation canot materialise. No matter how good other soil conditions are, if there is not sufficient moisture at this critical time, a poor crop must follow. At the present time soil conditions are very dry. There is no moisture in the subsoil. Growers with irrigation plants would be well advised to use them **now.** If heavy rain did fall in the near future a tremendous amount would be required to bring the soil to saturation point or field capacity, and the extra put on at this stage could do no harm. Tree roots have been in dry soil now for many months. As we have stated on previous occasions, it is not only the present season's crop we are considering. An orchardist, to be sucessful, must of necessity look a long way ahead.

Another consideration from the aspect of adequate moisture is the setting of fruit buds now coming into flower. Unless there is adequate moisture in the soil, this year's fruit buds are not likely to set heavy crops. The buds are there but fruit buds do not always mean fruit. We have had heavy crops of most fruit for several seasons now, and unless we are alert and trying to help nature along, this could be the year our trees take a rest. It is possible that irrigation or rain could bring about the development of brown rot spores, but this is a risk we have to take.

Spare What Tree?

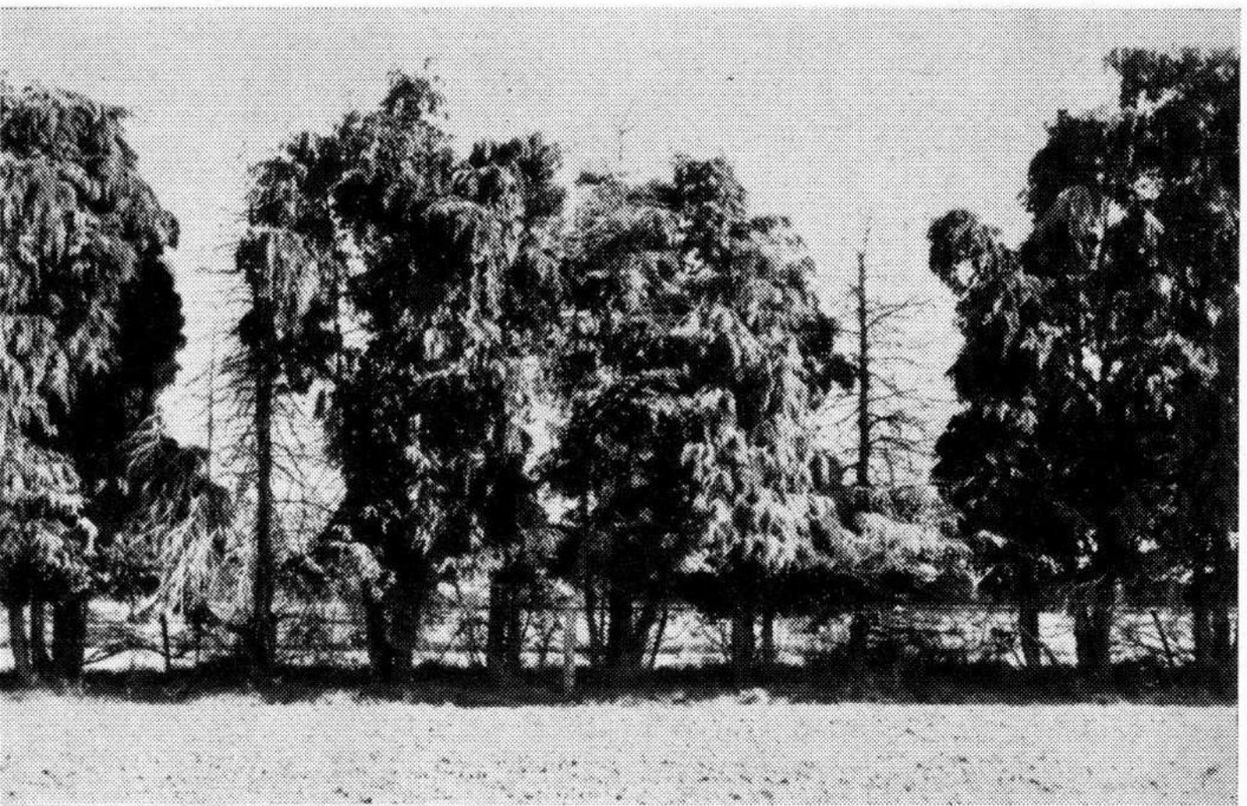
In the next few years thousands of trees will disappear from the Heretaunga Plains. Already many hundreds have been destroyed. There is no doubt trees make our countryside more beautiful and one hates to see their destruction taking place. Of the hundreds removed in recent years very few have been replaced. There has been no wanton destruction of these beauties of nature, their removal has been brought about for various reasons.

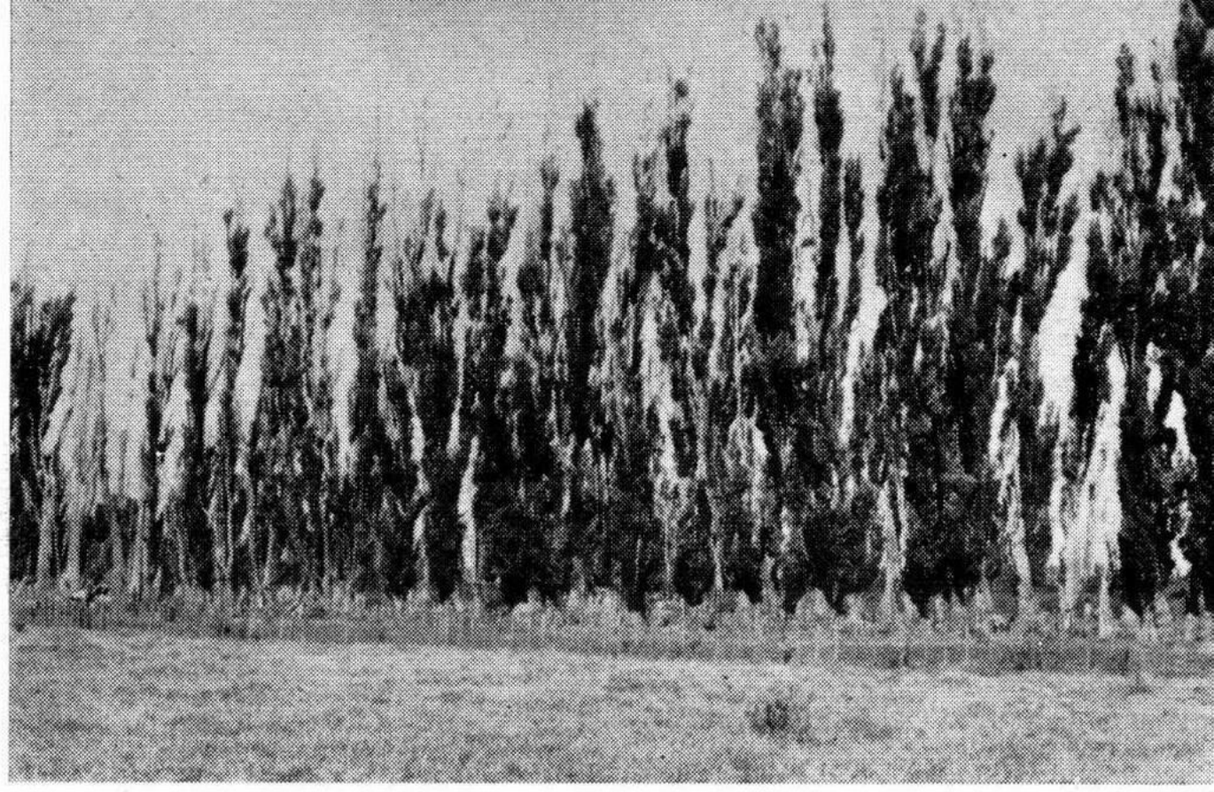
In the first place our forefathers planted trees for their beauty and for the protection of river banks, cattle and crops. With the tremendous increase in the value of land, many farmers are removing trees because they are taking up too much valuable room. Perhaps the main reason is simply the fact that thousands of trees are now becoming mature or diseased and are dying or dangerous.

Hawke's Bay is famous for its Poplar shelters and scattered Weeping Willows, to say nothing of other trees. Oak Avenue is always a pleasure to drive through no matter how often one sees it. However, through age many trees are now dying from the top and falling limbs become a hazard.

Members of the Cupressus family form a large part of the conifers planted in the past. C. Macrocarpa is a well known spreading tree, and although a single tree can provide shade for many sheep and cattle, it is little use against wind unless planted closely in a hedge and trimmed. C. Lawsoniana has also been widely grown and makes a beautiful shelter when healthy. C. Benthami has been recommended to replace Lawsoniana in Hawke's Bay because it stands extremes of wet and dry conditions better. All these trees are subject to attacks of a canker which has become widespread throughout the country. Even C. Sempervirens (Roman Cypress) used so extensively as an ornamental tree, die out from time to time from the same disease. As a result of this canker trees of this family can no longer be recommended.

Dying-back of C. Lawsonia through effects of canker.





Typical dying-back of mature poplar shelters.

TREES TO PLANT

In an area where so much fruit is grown, comparatively high shelter is necessary and Lombardy Poplar has been the most widely used for many reasons. It gives quick shelter from planting, leafy in the late spring and summer and open in the winter when shade and thick shelter are not required. It stands topping and trimming well. Its drawbacks are that it is a host to silver blight all too common in fruit trees, and its roots are very spreading. In most cases it grows much higher than necessary. Pinus is a useful shelter on the south side of orchards where shade it not a problem. It requires trimming and topping if used in this way, otherwise it spreads too much and becomes open near ground level.

With so many limiting factors it is most difficult to know what trees to plant. Pussy Willow has been used in increasing numbers lately. It is fairly quick growing and worthy of consideration at least for intermediate shelter if not for main ones. Phebalium Billardieri has been used quite a lot in other districts, but will not stand wet conditions. C. Lawsoniana and C. Benthami cannot be recommended because of their susceptibility to canker, but a very similar tree which will grow well in extremes of wet and dry is now

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THE PATTERN CHANGES

The pattern of farming on the flat land of Hawke's Bay is changing more rapidly than we realise. During the last two years the number of farmers offering land for the production of crops for processing has created a real problem as to volume. Hardly a day goes by that an enquiry is not received from an interested grower, and hundreds of acres have to be turned down. There are waiting lists of growers for most of our crops.

Why should this be so? It certainly is not because our firm has reduced its requirements of produce. On the contrary, production of almost every Wattie food product has increased, and many new crops have been introduced, such as broad beans and sprouting broccoli, and so on.

MANY CAUSES

Growers who have had faith in our firm and have supplied consistently over the years, have proved to all concerned that it is sound business all round to have an assured market for their produce at a known price. Now that sheep and dairy produce are bringing less to the farmer and grass seed too has slumped, it is natural that farmers turn to the production of other crops. Growing for produce markets is unstable, with good prices during shortages and below production costs during gluts. Many growers have therefore obtained contracts for annual crops, such as peas, beans, tomatoes, etc., to the point where the factory is limited in what it can handle. Its policy is not to encourage more production than can be accommodated, and apart from conditions beyond its control, such as weather, any crop contracted for has always been received in full.

When a grower finds that annual crops cannot be accepted at present, it is natural that he turns to permanent crops, such as asparagus and peaches. As a result of this, large areas of these crops are now being undertaken. Over 250 acres of asparagus have been planted for our factory in the last two months, and peach planting has only been limited by the number of trees available.

Many people have predicted this change, but world conditions have speeded it up considerably. Where once a farmer did well buying sheep and cattle and grazing them to advantage, this is now the exception.

J. Wattie Canneries Ltd., have a tremendous market for their produce both in New Zealand and overseas, but growers must realise that although we are expanding rapidly, we cannot cope with this accelerated shift from farming to cropping, with its sudden and tremendous demand from farmers with offers of land for production. We regret therefore that we cannot accomodate more growers at this juncture, for with our present growers serving us so loyally with such satisfactory products, it is only right that we stand by them.

New growers are, however, taken on as production increases, and many new names appear on our growers' list this year. We regret that we cannot accommodate more, but it is pleasing to know that so many realise the stability of the industry which has contiued to increase its production year by year no matter how other industries have fluctuated with the times.

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available. This is one of the Thuya species, Thuya Plicata. It would seem likely that it will replace C. Lawsoniana. It stands trimming too and can be used as a hedge or let go to a fair height much the same as C. Lawsoniana. It seems fair to predict that this beautiful specie will go far to answer the long felt need of an evergreen tree of upright habit, the growth of which can be controlled by trimming without detrimental affects.

Although trees are being removed there is no danger of our countryside ever being exposed and open. The mere fact that orchards and other crops must have shelter will take care of that. The reduction in scattered trees will continue but largely unnoticed.

THE RECENT FARM SCHOOL AT HASTINGS

Hastings was the venue for a Farm School held towards the end of July last. This was the first school of this kind ever held in New Zealand for the benefit of orchardists and their workers. It was organised by the Horticulture Division of the Department of Agriculture in conjunction with the Hawke's Bay Fruitgrowers' Assn.

The programme covered a wide range of subjects including elementary fruit tree botany, fruit bud initiation, irrigation, rootstocks pest control, and other cultural practices. Speakers were drawn from Fruit Research and Plant Diseases Divisions, Massey Agricultural College and the Horticulture Division. There was plenty of opportunity for questions and discussions on any subject, and it was pleasing to see so many fruitgrowers and their employees availing themselves of the opportunity to improve their knowledge of fruitgrowing.

The ladies were not forgotten. They could either attend the main school or a special ladies' session. This included a demonstration on floral arrangement and a talk on shrubs for the home garden. All sessions were well atended and the whole affair voted a great success. It is to be hoped that more of these schools will be held in the future in other fruitgrowing districts of New ealand.

HIGHLIGHTS

Fruit buds for the 1958-59 crops were initiated in November and December of 1957. Good conditions should be made available this coming spring then for the crop you are to harvest in 1959-60.

Fertilizer applied as sprays to foliage are not as good as those applied to the soil. Temporary improvement of leaves may be noticed with foliar sprays, but this effect is not lasting.

The temperature of irrigation water at time of application is not important. The soil at the time of the year when irrigation is applied is usually high enough to prevent sudden chilling of the plants with resultant check in growth.

Be sure to commence watering before the soil becomes too dry. Apply sufficient to bring the soil up to field capacity. If the top soil alone is irrigated without water reaching moist soil underneath, it is usually wasted as it evaporates quickly.

Continuous cultivation reduces soil moisture. The old idea of cultivating and forming a dust mulch to conserve moisture has long since proved a fallacy. What is more, every time new soil is exposed to the sun, humus is lost as well as moisture.

The keeping quality of fruit is higher where soils are maintained at or near field capacity. If dry periods occur and cause checks to growth — keeping quality is reduced.

New type lighter spray oils are proving better than the heavier winter red oils: one reason being that they can be applied later in the season without damage. The later oils are applied the easier it is to kill overwintering red mite eggs.

Prune fruit trees to keep the amount of old wood to a minimum, often called the renewal system. Old fruiting spurs cannot carry the necessary sap as well as younger ones.

Northern Spy root stock for apples has stood the test of time and is still recommended for new plantings on most Hawke's Bay soils. Malling XII and XVI are being recomended for replanting and work is still being done on other root stocks and Murton 793 may find a place in the near future.

Notes of the proceedings of the school are being made available to all who attended and it is understood that some spare copies can be purchased at a later date.

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