

26/11/52

*The*

# BERRI EXPERIMENTAL ORCHARD

HORTICULTURAL BRANCH  
DEPT. *of* AGRICULTURE  
SOUTH AUSTRALIA

# BERRI FIELD DAY

26th November, 1952

## PROGRAMME.

- Assembly Point (10.30 a.m.) Drying Green on the River Flat portion of the Vineyard.
- Welcome to Visitors . . . . . Chairman, Berri Agricultural Bureau (Mr. A. Chapple).
- Opening Address . . . . . The Hon. Sir George Jenkins, K.B.E., M.P. (Minister of Agriculture)
- 11.00 a.m. . . . . Inspection of Vine and Tree Planting—Block I., Mr. W. B. Harris, B.Ag.Sc. (Manager).
- 11.20 a.m. . . . . "Common Sense in Grape Vine Spraying," Mr. B. P. Bidstrup.
- 11.40 a.m. . . . . "Grape Vine Cultural Tests and Results of Immediate Importance," Mr. B. G. Coombe, B.Ag.Sc. (Viticultural Research Officer).

- 12.00 noon . . . . . "The Training of Deciduous Fruit Trees, Mr C G Grosby.
- 12.30 p.m. . . . . Lunch
- 2.00 p.m. . . . . "The Importance of Virus Diseases to the Horticultural Industry," Mr A. G Strickland, M.Ag.Sc
- 2.40 p.m. . . . . Inspection of Hillside Blocks.
- 3.00 p.m. . . . . "Peach Blight, Shothole Scab, and Zinc Deficiency of Stone Fruits," Mr. C. M. Cooper (District Horticultural Adviser).
- 3.20 p.m. . . . . "The Dangers of Late Spring Cultivation," Mr O E. Halliday.
- 3.40 p.m. . . . . "Why Do We Prune?" Mr. H. K. Kemp.

## BERRI EXPERIMENTAL ORCHARD STAFF.

Manager . . . . .	Mr. W. B. Harris, B Ag Sc
Assistant Manager . . . . .	Mr. I. P. Bond R.D.A.
Field Officer . . . . .	Mr. J. N. Sreed, R.D.A.
Foreman . . . . .	Mr. F. G. Fox.

## ADVISORY STAFF, RIVER MURRAY SETTLEMENTS.

### Berri-Renmark District—

Mr. C. M. Cooper, District Horticultural Adviser 'Phone Berri 19

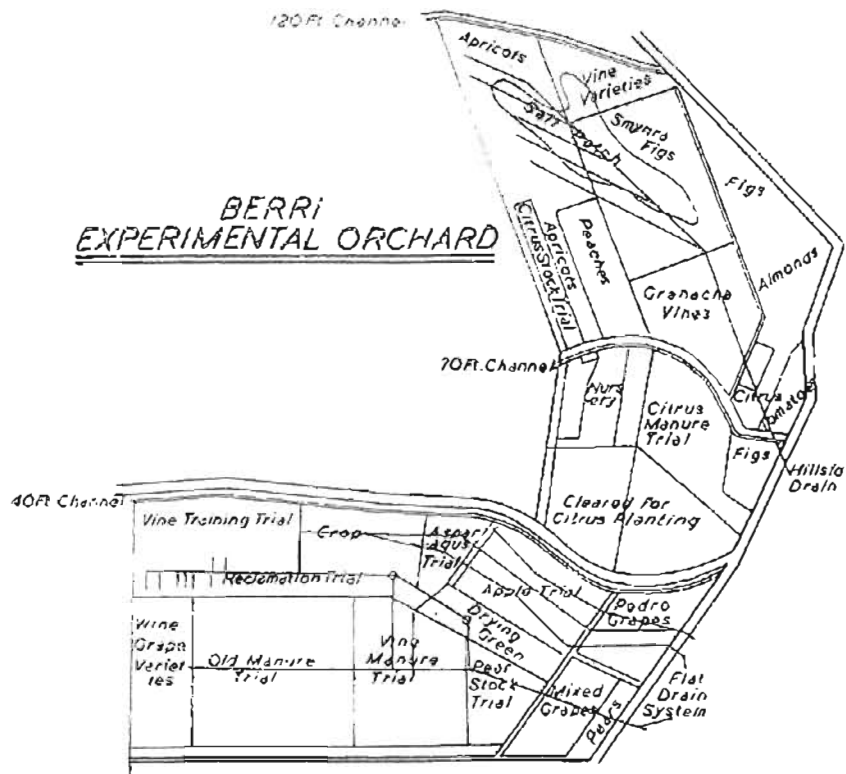
### Waikerie, Kingston, Moorook, Cadell—

Mr. B. P. Bidstrup, District Horticultural Adviser. 'Phone Waikerie 328.

### Loxton—

Mr. C. G. Grasby, District Horticultural Adviser. 'Phone Loxton 127

# BERRI EXPERIMENTAL ORCHARD



## BERRI EXPERIMENTAL ORCHARD

THE Berri Experimental Orchard, established in 1911, consists of 79½ acres of irrigable land, and 157½ acres of dry farming country too high for watering. The irrigable area is watered from the three main channels at the 120ft., 70ft., and 40ft. levels.

Soil types are representative of the Berri area, and can be divided into two main groups—slope soils, above the 40ft. channel, comprise Murray Sand, Berri Sand, a few patches of Grey Mallee, and Moorook Sandy Loam in Block C on the 120ft. channel; and flat soils, below the 40ft., represented by Bookmark Clay Loam and Kulkyne Sand.

The planting of the orchard has been determined by the soil types. The slope soils, particularly adapted for tree culture, are, except for small areas of nursery, and small crop trials, devoted to trees, particularly citrus, apricots, peaches, and figs. The main vine plantings are placed upon the heavier soils of the flat. This is typical of the use made of the soils in the settlement generally.

The standard method of irrigation is furrow watering. Latterly, experimental equipment for sprinkler watering has been installed, and a small area of the lower slope is now watered from this installation, but this is essentially experimental equipment and the area covered is limited.

The original planting of the orchard was concerned to a very large extent with variety and stock trials, with the object of deciding types most suitable for River Settlement plantings. As time has passed, these collections and stock trials have fulfilled their function, and have gradually been replaced, the orchard being more and more devoted to the solution of cultural problems, which is its most important function today. The present plantings are representative of most of the crops grown in these settlements, and as opportunity offers, representation is improved.

# Grape Vine Manure Trials

PLANTED 1940.

The purpose of this trial is to determine the rate of application of nitrogen manure needed by grape vines under different cover crop treatments.

*Varieties.*—Sultana and currant.

*Manure Treatments.*—No nitrogen, 1½wt. and 3wt. of sulphate of ammonia, applied in spring time.

*Cover Crops.*—Melilotus mustard mixture, tick beans, cereal rye, and natural growth.

Marked cover crop differences due to the nitrogen manure are visible, but no significant grape crop difference has been detected except in relation to cover cropping.

Extremely adverse weather at harvest has contaminated results for several seasons, however, and this difference is considered questionable until it can be confirmed under favourable weather conditions.

# Citrus Manure Trials

PLANTED 1912.

*Variety.*—Washington navel on citronelle stock.

*Treatments* and average yield per acre.

Pounds per Acre of Sulphate of Ammonia.	Average Yield Per Acre		
	1949-50. Bushels.	1950-51 Bushels.	1951-52 Bushels.
Nil . . . . .	68	69	9
224 . . . . .	221	225	119
448 . . . . .	238	257	430
672 . . . . .	308	325	452
1,008 . . . . .	320	336	466
1,120 . . . . .	297	310	388

This was the first trial in Australia to show the importance of nitrogen manuring in citrus growing.

In 1930 the plots were subdivided, one-half receiving its nitrogen in organic form—blood manure, and in 1940 all dressings were doubled.

Slightly more fruit has been harvested from the organic manure plots (av. 29bush. per acre), but it is doubtful whether this difference is real. The old design of the trial does not permit close test of significance.



## Citrus Stock Trials

PLANTED 1940.

In the old trial terminated in 1940, sweet orange and citronelle stocks were demonstrated as widely superior to tritoliata, Seville, poorman, and citrange stocks. The present trial was set out to test the relative value of these two stocks.

*Variety.*—Valencia orange.

*Stock.*—Sweet orange seedling. Citronelle seedling.

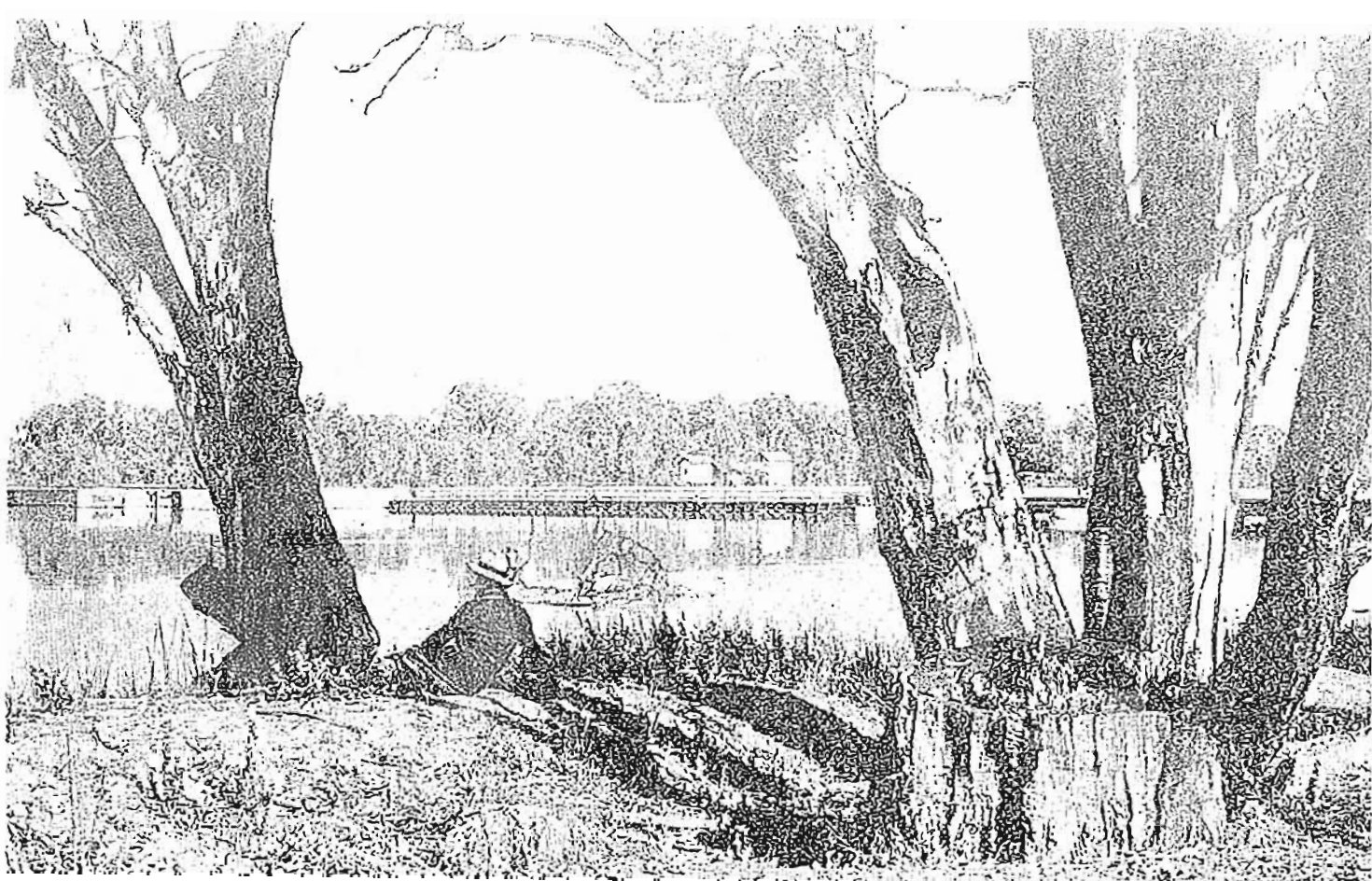
Up to the present time trees worked on citronelle stock have outcropped those on sweet orange over the whole trial.

At the foot of the slope on deep Murray sand, rough lemon stock trees are larger and more fruitful, but at the head of the slope where the soil becomes heavier and more saline, sweet orange appears to be showing differential improvement.

Up till 1950 season citronelle stock cropped significantly more heavily than sweet orange, but over the last three seasons differences had been less than 10bush. per acre. In 1951 season sweet orange stocks yielded 23bush. per acre more than citronelle. This is believed to be due to the unfavourable reaction of citronelle stock to the poorer soil at the head of the rows.

## Pear Planting

French seedling pear stock is being compared with *Pyrus calleryana* in the young pear planting, approximately half of the planting being devoted to each. Apparent advantage in size and evenness with *P. calleryana* stock is apparent in the third season.



## *Grape Vine Training Trial*

The new planting set out in 1951 is designed to replace the old trial planted in 1911, which has been removed for replanting. The varieties comprise currants, sultana, Muscat Gordo Blanco and Malaga in approximately equal quantity in the 5-acre planting.

This new vineyard has been trellised during the winter and the vines brought up to the wire in readiness for training during the present season.

The design is to gain further information on the main differences in the old trial which were:—

1. Yields of fresh currant grapes vary between 3 tons and 6 tons per acre, dependent upon the number of spurs carried, rather than the training method. Quality has been inversely proportional to yield.
2. With sultana vines T-head trellis training has given roughly 50 per cent greater yield than single wire trained vines, due to the larger vine.
3. No major yield differences have been shown in Muscat vines.

## *Peach Blight and Little Leaf*

In the Glossop district peach trees which have very poor cropping history have been placed under a programme of spray treatments for the control of the peach blight phase of the shot-hole fungus and zinc deficiency. Very clear results show the importance of both these disorders.

## *Drainage and Reclamation*

Block 695, Berri—Nookamka Sandy Loam—Berri Sand.

Block H, Berri—Berri Experimental Orchard—Renmark Clay Loam.

Block C, Renmark.

The trial on Block 27, Berri—Renmark Clay Loam, has been closed. This trial showed that while reclamation proceeded slowly with ordinary drain spacing, much closer spacing is necessary to obtain effective reclamation. Experience in this trial indicates that with such close spacing, a shallow depth drain may be equally as effective as the drain depth now in standard use. The new drain trial on the Orchard Block H is testing this possibility.

The condition of plantings commanded by bore drainage at Blocks C and E, Renmark, is being followed closely by systematic health survey of the area influenced.

## *Fig Pruning and Manuring*

The trial on pruning and manuring of Smyrna figs has been concluded. Annual pruning treatment and manuring at the rate of 4 lb. sulphate of ammonia per tree have been tested since 1940. Adverse weather has affected the harvesting of this trial, but the nine years' records available do not show any definite gain from manuring, while pruning appears to have reduced yields.

Average fresh yield per acre per year:—

Pruned, manured.	Unpruned, manured.	Pruned, unmanured.	Nil.
13,575 lb.	19,265 lb.	13,875 lb.	19,650 lb.

## *Citrus Water Requirements*

Mature Washington Navel trees in Block E have been used in test of the frequency of watering required for this planting.

The soil moisture level has been followed by gypsum block resistance readings and the tree water status by fruit growth rate measurement. An index of the probable moisture loss has been obtained from the evaporation from the black pan evaporimeter.

Irrigation appears to be necessary when the evaporimeter loss amounts to  $7\frac{1}{2}$  in. under the conditions of this trial.

## *Irrigation of Peaches*

In this investigation it was shown that the greatest increase in size of fruit occurs during the last two to three weeks before harvest. Picking fruit before this final period of growth can result in an appreciable loss of yield.

## *Oil Spray Weed Control in Vineyards*

Following good reports with oil spray weed control in citrus in California and recently in vines in Victoria, trials have been established at Nuriootpa and Berri to compare the effects of oil spray weed control and non-cultivation with standard cultivation and cover cropping of vineyards. These trials will be long term, aimed at determining relative costs as well as the effect on vine vigour and yield.

In the first season experience has been gained in relation to the watering of the plots and the method of oil spraying. Diesel fuel has been found more practical than kerosene, and the construction of a low volume spray boom to speed up spraying is in progress.

## *Grape Bunch Volume*

The measurement of grape bunch volume from November to maturity was carried out at Berri Experimental Orchard in 1950-51 to gauge its usefulness as a method of testing soil-water relations.

The method was found to give a good indication of the growth of the bunches in relation to watering, and was extended in the 1951-52 season to typical plantings in Barmora, Berri, and Renmark.

## *Apple Planting*

A pilot planting of Granny Smith and Delicious apples on Northern Spy and seedling stock has been set out on Block I. Half of these trees are being trained on the central leader system.



# Asparagus

Attention has been given to this crop as a possible profitable pioneer to the reclamation of salted soils. Gross returns per acre at the three varieties tested are as follows:—

	Yield per Acre			
	1948.	1949.	1950.	1951.
	Lb.	Lb.	Lb.	Lb.
Conover's Colossal (eight years from planting) . . . . .	18,149	7,405	13,374	10,239
Renmark (eight years from planting) . . . . .	16,422	6,794	10,942	7,977
Mary Washington (six years from planting) . . . . .	11,836	5,587	8,734	5,219

An extensive fertilizer trial was begun in 1951, using two varieties, Mary Washington and 500, and having two different basal and eight different annual fertilizer treatments. Light cuts were made on the 500 variety this season to even up crowns, and harvest records will commence in 1953.

Plots of several new American varieties established at Berri, Lyrup, and Loxton are being kept under observation.



## Tomato Root Knot Nematode

During 1951-52 season trial was made of a number of nematode-resistant selections, in co-operation with C.S.I.R.O. Selections were made from plots showing definite nematode resistance, and these will be further tested for resistance and desirable commercial characteristics during the coming season.

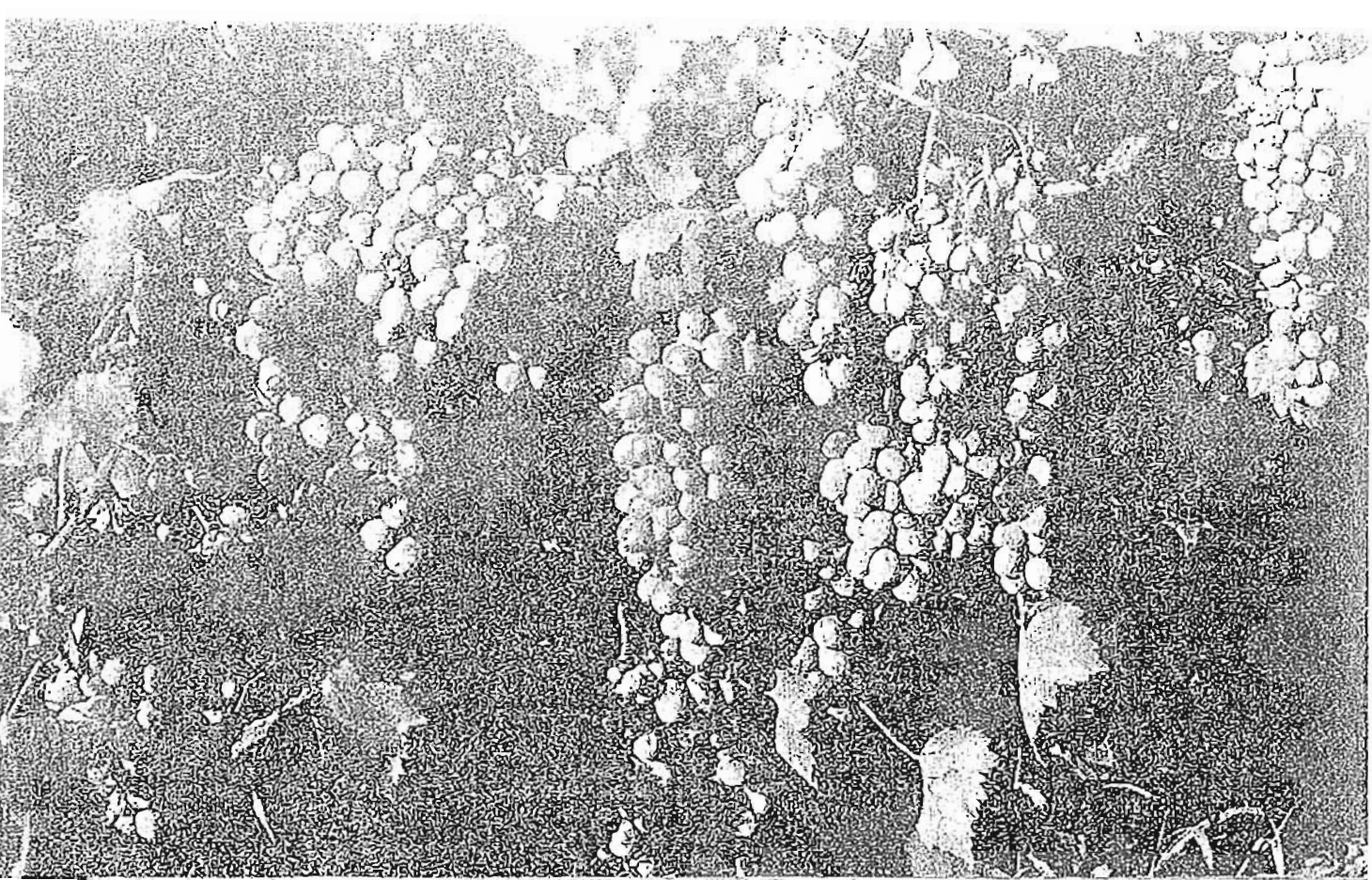
The variety H.E.S. 3963, which has been shown resistant to nematode, is being crossed with a local variety, Hettner's Large Red, in an attempt to confer nematode resistance on the Hettner's variety. This work is being done in co-operation with the Waite Agricultural Research Institute, and the back crossing technique is being used.

## Tomato Planting Distance

A further trial to check previous results which indicated the desirability of close planting is in progress in the Loxton settlement.

## Apricot Brown Rot and Pruning

Modification of pruning method and spray treatment to decrease the loss from Brown rot are being tested at Winkie.



## *Zinc Treatment of Sultanas*

Methods of treating sultana vines with zinc have been under test at Barmera for three seasons. Comparisons of concentration of zinc sulphate solutions show that 1 lb. per gallon is nearly as effective as 2 lb. per gallon. The spray method of application has not been consistently better than the swabbing of cuts, but its convenience makes it the better treatment. Comparisons of times of application have emphasized the importance of applying the zinc solution within half a day of pruning.

## *Pruning of Grenache*

A series of small trials have been started, comprising normal and light pruning of Grenache to see how many spurs a Grenache vine can support. A few vines also have been hedge-pruned to test the feasibility of mechanizing pruning.

The effects of the time of pruning of Grenache on setting and response to zinc treatment is being tested in a comprehensive trial in the Barossa Valley.

## *Grape Vine Anthracnose Control*

Following on the 1951 season trial at Tanunda, a trial is being carried out at Renmark this season, comparing several treatments including the new fungicide T.M.T.D.

Promising results are being obtained from this treatment, and also the 5-5-10 Bordeaux mixture at budburst, as well as the acid treatment, but results cannot be properly assessed until the end of the season.

## *Mealy Bug on Grape Vines*

A trial comparing several spray treatments for the control of Mealy Bug on grapevines is in progress at Renmark. Results will not be available until later in the season. In the meantime, growers are warned that indiscriminate use of the newer insecticides often results in Mealy Bug build-up through destruction of their predators.

## *Dying Vines Investigations*

A survey has been made of dying vines occurring in some vineyards at Renmark and Berri and other districts. Pathological examinations have failed to reveal any associated pathogene. Until its cause is established no recommendations can be made for its control. Investigations are proceeding.

As replants seem to have a fair chance of survival it is worth while replacing dead vines especially by layering.

## *Citrus Storage Trials*

Results for the 1951 trials on Berri and Myppolonga oranges showed that Diphenyl impregnated wraps reduced all wastage about half. No tainting was detectable in the pulp. Variable results were obtained from the use of the growth substance 24-D and 245-T.

This season a trial under the same conditions was designed to test three growth substances as wrap impregnants as well as post-harvest dips. No reductions in wastage were obtained.

A second trial was designed to give information on carrying temperatures for citrus export. Results, though variable, indicate no change from the present recommendation of 40deg. F.

## *Growth Substances—Smyrna Fig*

A further season's trial was carried out, using para chloro phenoxy acetic acid at varying strengths and also benzothiazol-2-oxyacetic acid.

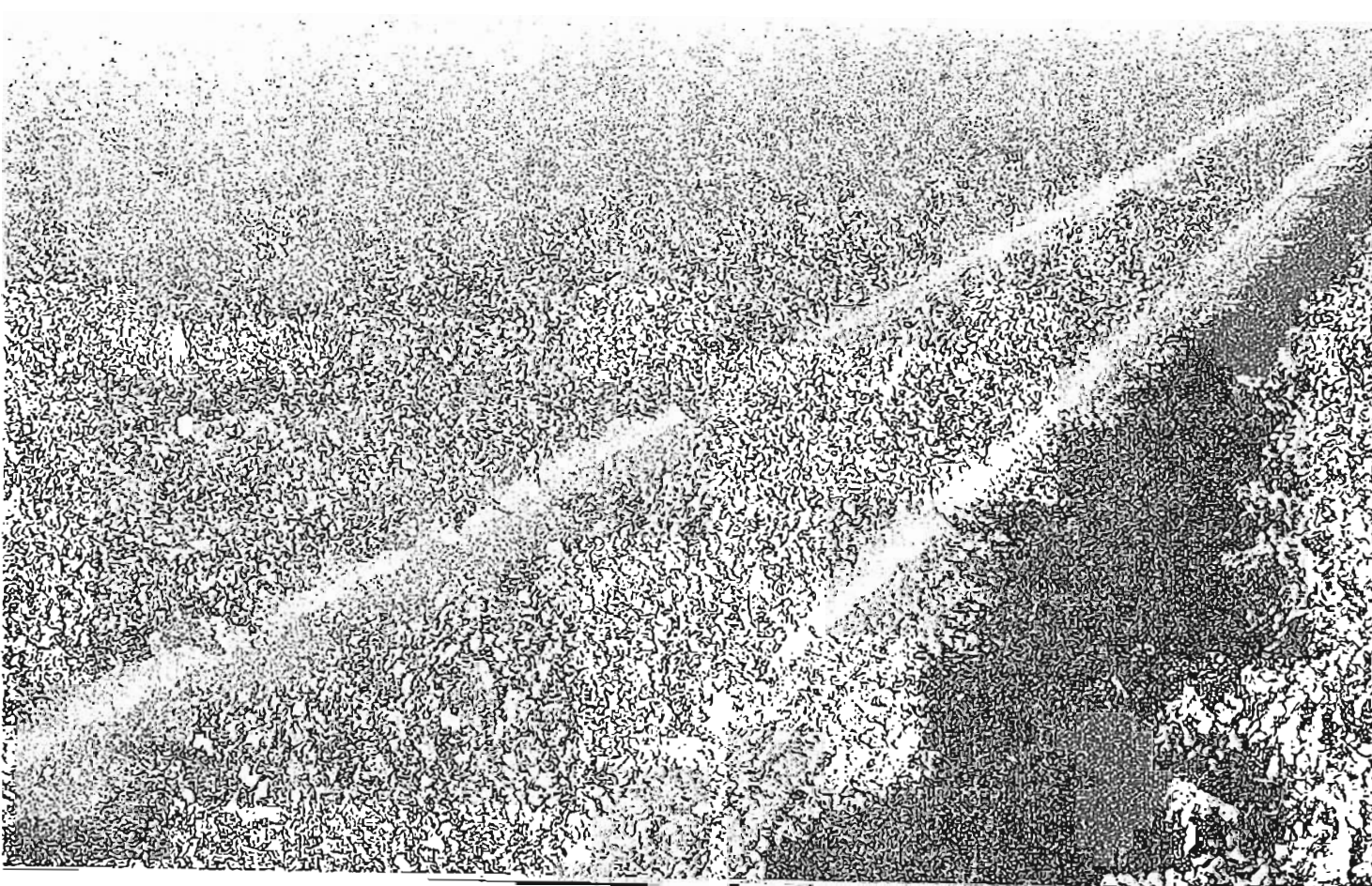
It was found that para chloro phenoxy acetic acid at 80 ppm and benzothiazol-2-oxyacetic acid at 25 ppm both set figs without caprification and without hastening the time of ripening. Much higher concentrations of para chloro phenoxy acetic acid caused severe foliage damage.

The treatments need to be tested on a much larger scale before their usefulness can be judged.

## *Setting Currants with Growth Substances*

Growth substance sprays at setting time have been tested since 1947 in an attempt to eliminate cincturing. The most promising substance, P.C.P.A., has given good bunch set and berry size and quality, but has the serious defect that fruit so produced is more susceptible to mould attack. Although this can be lessened by care in spray timing and concentration it is a serious defect and, with the unknown toxic effects, prevent a general recommendation being made.

Limited grower trials and further intensive trials are being carried out this season.





## *Pruning of Young Peaches*

Clear advantage in decreasing the severity of pruning of young peach trees have been demonstrated in the young peach planting. The crop harvested has been doubled and great advantage in tree size obtained by light pruning.

## *Wine Grape Varieties*

Eighty vine plantings have been established in Block 1 of the varieties following:—

Palomino	Sherry	Verdeilho	Frontignan Black
Carignan	Blanquette	Cabernet Sauvignon	Rhine Riesling
Malbec	Semillon	Ullade	
Madeira	Pedro Ximines	White Sauvignon	
Tokay	Pedro off-type	Frontignan White	

These comprise varieties of wine grapes in South Australia, but not widely grown in irrigation settlements. Their suitability to River Murray conditions and the quality of production is to be tested.

# Fruit Drying and Processing

## Drying Ratios.

Average drying ratios over a number of years of fruit grown at Berri Experimental Orchard:—

### VINE FRUITS:

*Sultanas* (20 years' records).—

11deg. Beaume 4 to 1—Average  $3\frac{1}{2}$  to 1.

14deg. Beaume  $3\frac{1}{2}$  to 1—Average  $3\frac{1}{2}$  to 1.

*Gordos*—

12deg. Beaume  $3\frac{1}{2}$  to 1—Average  $3\frac{1}{2}$  to 1.

17deg. Beaume 2 to 1—Average  $3\frac{1}{2}$  to 1.

*Currants*—

11deg. Beaume  $3\frac{1}{2}$  to 1—Average 3 to 1.

16deg. Beaume  $2\frac{1}{2}$  to 1—Average 3 to 1.

### TREE FRUITS (seven years' records).—

*Apricots*—

Riverside,  $5\frac{1}{2}$  to 1.

Ross, 6 to 1.

Royal, 6 to 1.

Moorpark,  $6\frac{1}{2}$  to 1.

Tilton,  $6\frac{1}{2}$  to 1.

Kingston, 7 to 1.

Oullins,  $7\frac{1}{2}$  to 1.

*Peaches*—

Palmerston, 7 to 1.

Elberta,  $7-7\frac{1}{2}$  to 1.

Crawfords, 7-8 to 1.

*Nectarines*—

Goldmine,  $5\frac{1}{2}$  to 1.

# Standard Control Measures recommended for Pests and Diseases of Vines, Fruit Trees and Vegetables in Murray Irrigation Area

## Vines

### OIDIUM (POWDERY MILDEW).

Dusting sulphur (lime sulphur spray, 1 in 60 to 1 in 80, very effective, but use is limited to cool weather). Dust whenever oidium appears. Generally at 6in. growth, about blossoming time, and through early summer, as required by weather.

### DOWNY MILDEW.

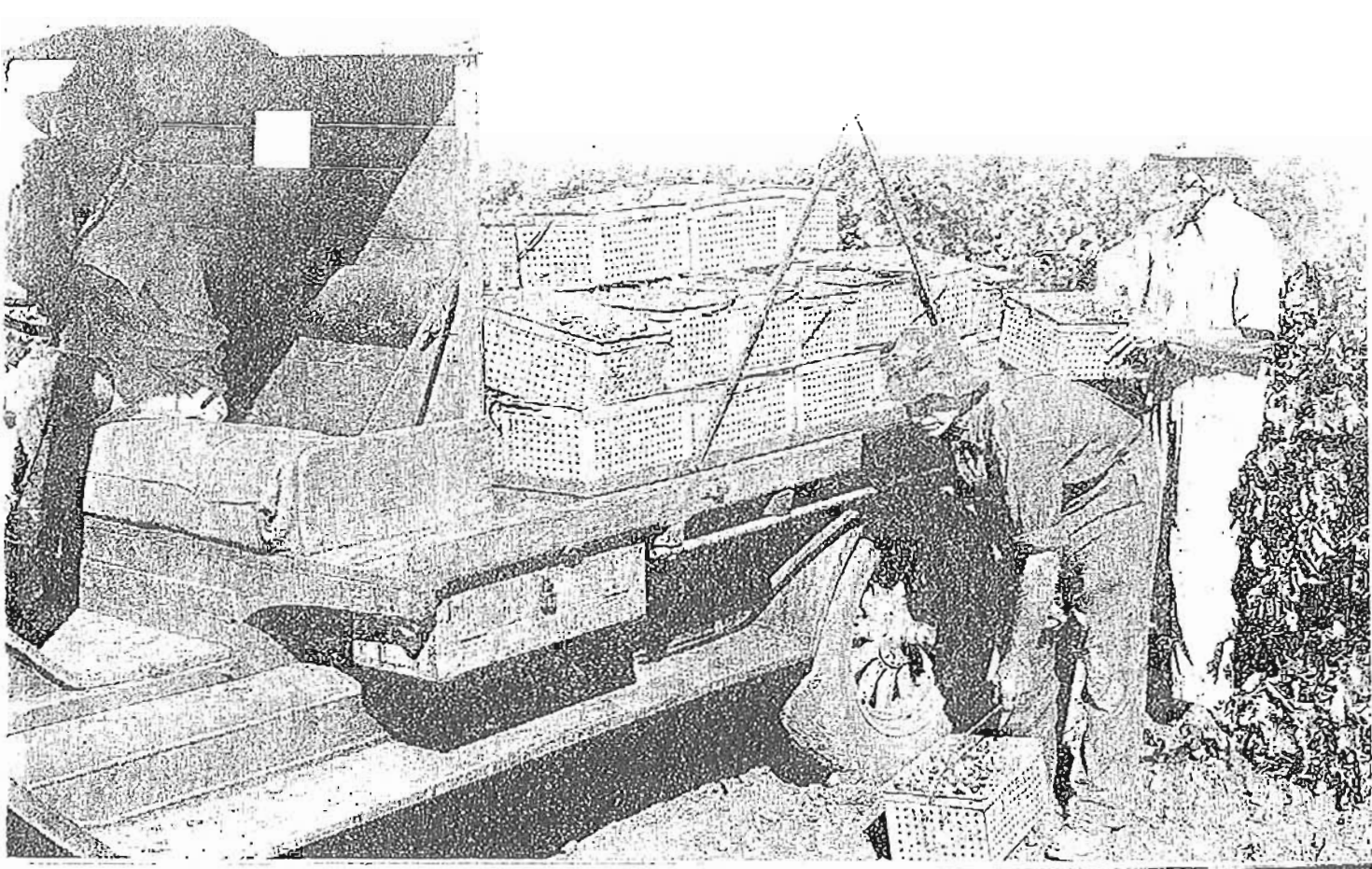
Bordeaux Mixture, 6—4—40, at 6in. growth followed by cover sprays at strength 3—3—50 at three week interval until danger of the disease has passed.

NOTE.—Sultana vines appear to be sensitive to Bordeaux Mixture. Strength 3—3—50 only should be used.

### BLACK SPOT OR ANTHRACNOSE.

Winter: Spray with sulphuric acid 10 per cent by volume. Applied as late as possible before budburst with vines quite dormant. NOTE.—Only pour acid into water, not water into acid.

Summer: Bordeaux Mixture, 6—4—40, will check the disease applied at 6in. growth, repeated just before and after flowering, but to be used only where acid treatment is impracticable.



### ERINOSE, VINE BLISTER MITE.

Leaves becoming distorted above with dense white woolly hairs.

Winter: Lime sulphur, 1 in 12 to 1 in 15, after pruning just before bud movement.

Summer: Spread checker-board, dusting sulphur, but not curative.

### VINE MITE OR TENUIPALPUS MITE.

Early leaf scorch and autumn colours on woolly-backed leaf vine varieties, especially doradillos.

Winter: Lime sulphur, 1 in 15.

Spring Spray: Lime sulphur, 1 in 60, at 6 in.-9 in. growth.

### SNAILS.

"Shellbacks" eating foliage with severe damage at budburst.

Control: Cover spray with Bordeaux Mixture, 6—4—40, just prior to or at first bud movement, repeated if necessary.

Bait at base of vine—Metaldehyde 3-6 lb., bran 100 lb. Lower strengths ineffective.



The Experimental Orchard is the centre of the frost warning network for the River Murray Settlements. This service operates throughout the frost danger period each season.

## Stone Fruits

### APRICOT SCAB AND PEACH BLIGHT.

On apricot, peach, and almond trees. Bordeaux Mixture, 6—1—40, immediately leaves have begun to fall (or earlier in the case of apricot and almond, and at pink bud stage. The autumn spray is important, as it prevents winter blighting of twigs and buds, which would otherwise reduce yields considerably. The pink bud spray maintains clean fruit.

IMPORTANT.—Bordeaux mixture must not be applied to peaches in foliage.

### PRUNE RUST.

On peach. Bordeaux Mixture, 6—1—40, at pink bud. Lime sulphur, 1 to 50, at shuck fall. Lime sulphur, 1 to 100, in early to mid-November. Required only in orchards where rust is established.

### BROWN ROT.

Peach, apricot, nectarine, plum. Blossom blight and brown fruit rot—carefully prune out all dried, mummified fruit and burn. Use following sprays:—

*Pink Bud.*—All varieties, Bordeaux Mixture, 6—1—40.

*Cover Sprays.*—Dessert peach: Wettable sulphur, 4 lb./100 gall. Canning peach: Dry mix lime and sulphur; sulphur flowers 12 lb., water 100 gall. Apricots: No sulphur or copper sprays can be applied safely during growing season.

### LEAF CURL.

Leaves thickened, curled, and brightly coloured: few, if any, aphids present. Bordeaux Mixture, 6—1—40, at pink bud.

### GREEN PEACH APHID.

Often confused with curl leaf. A dense colony of green aphid will be found within the curled leaves. Winter: Tar distillate, 1 in 35; or Universal oil.

Spring: Oil/DDT emulsion at early budswell—can be combined with the budswell Bordeaux Mixture for fungus disease.

Summer: DDT 0.1 per cent.

NOTE.—Emulsion forms only are effective. H.E.T.P. 1 in 1,600 to 1 in 2,000. Nicotine sulphate 1 in 800.

## Citrus

### RED SCALE.

Circular, flat-conical scale  $\frac{1}{16}$  in. diameter and reddish-brown in colour. This is a notifiable pest in these settlements. Treatment is not left to the grower. The grower must notify the Department of Agriculture and the Citrus Association if scale are present.

### BROWN AND BLACK SCALES.

These scales usually betray presence by profuse sooty mould. White oil, 1 in 40, in mid-November. Best applied when young scale appearing and settling down.



### BROWN ROT.

Browning of tips of leaves on skirt foliage followed by curling and dropping. On fruit a light-brown soft rot with indefinite margin. Control: Bordeaux Mixture, 3-3-50, at first autumn.

### COLLAR ROT.

Bark at ground level rots, dies, and splits. Pull earth away from crown of tree, cut away all dead and diseased tissue, and paint with Bordeaux paste. Skirt up, and keep weed growth down to keep trunk dry. Do not wet trunk in irrigating.

### MEALY BUG.

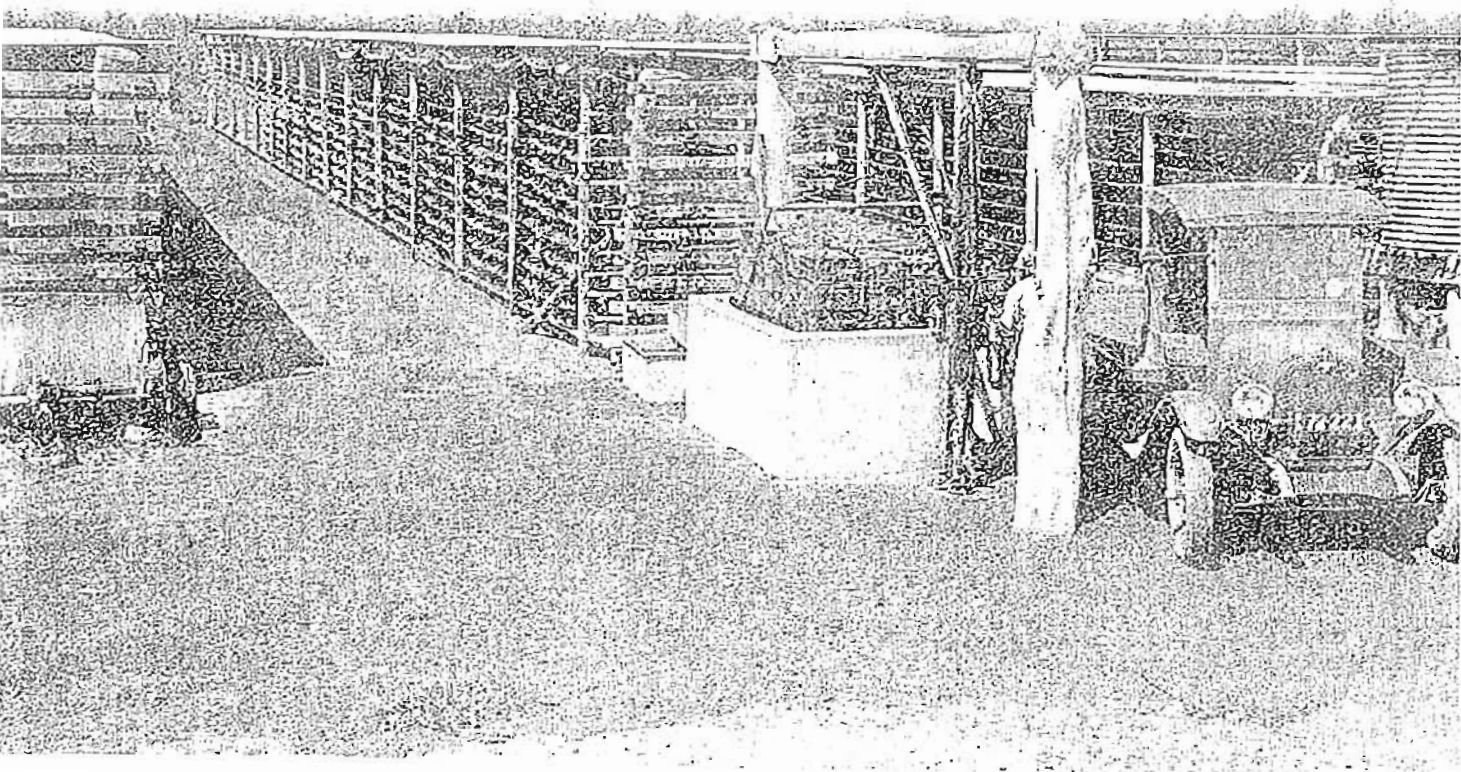
If not severe, this pest is best left undisturbed. Natural enemy species will soon reduce its numbers.

In severe infestation H.E.T.P., 1 in 1,600, timed so that the fruit has a chance to clean before harvest. Repeated sprays may be needed. Seek advice from your district adviser.

Do not use DDT or lead arsenate on citrus unless absolutely necessary. Mealy bug outbreak usually follows the use of these sprays.

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The site of the experimental station at Loxton has been chosen, and development will proceed following the provision of water. In the meantime field trials have been commenced on individual blocks regarding problems facing the growers in early years. This season, planting stock for the experimental orchard itself is being selected; however, trial work outside the orchard will not be curtailed.



## Pears

### CODLING MOTH.

Standard schedule—

Lead arsenate, 3 lb./100gall., plus white oil 3 pints/100gall.

Timing—

1. Petal fall—before calyx has closed.
2. First cover after two weeks.
3. Cover sprays at three-week interval, omitting the oil sticker after December.

#### DDT. Schedule.

To be used only where codling moth is out of hand, and severe losses are being accepted

This schedule should be preceded by a winter spray of red oil, 1 in 20, and very close watch kept throughout the season for red spider mite damage, which can be very severe

After one or at most two seasons of DDT schedule to bring codling moth under control, revert to lead arsenate schedule.

Strength: 0.05 per cent.

Timing: Delay calyx spray about one week after petal fall. Repeat sprays at 3 to 3½-week intervals until at least mid-January.

#### RED SPIDER MITE (BRYOBIA).

Winter: Red oil, 1 in 20.

Summer: White oil, 1 in 60, with any cover spray, or H.E.T.P., 1 in 2,000, at 10-day interval.

# Zinc Treatment for Fruit Trees and Vines

## CITRUS MOTTLE LEAF.

ZINC OXIDE MAY GIVE SEVERE LEAF DROP WITH CITRUS. IT IS NO LONGER RECOMMENDED.

First Treatment: Zinc sulphate (commercial), 10 lb.; hydrated lime, 5 lb.; water, 100gall.

Maintenance Sprays: Zinc sulphate (commercial), 5 lb.; hydrated lime, 2½ lb.; water, 100gall.

Probably best applied before the spring growth cycle. Repeat whenever mottle shows.

## LITTLE LEAF OF STONE FRUITS.

Winter. Spray after pruning—

Apricot: 30 lb. of commercial zinc sulphate/100gall.; peach: 40 lb.-50 lb. of commercial zinc sulphate/100gall.; nectarine: 40 lb.-50 lb. of commercial zinc sulphate/100gall.

Frequency of treatment is dependent on severity of little leaf. Annual treatment is required in bad cases. Biennial treatment may be required in less severe instances.

## Zinc Treatment of Sultanas.

Where growers have low-yielding sultanas with some leaves showing interveinal chlorosis, especially sultanas on sandy soils or at the beginning of the irrigation run, an increase in yield may result from a spray within a few hours of "cutting-out" of 1 lb. commercial zinc sulphate in 1gall. of water. Growers are recommended to try a row or two and watch for results.



# *Pests and Diseases of Vegetables*

## **TOMATOES.**

### **Eelworm.**

Knots on roots. plants stunted, yield and quality of fruit reduced.

Rotate tomatoes with resistant crops, viz., cereals and mustard.

Use clean seedlings.

For small areas: Soil fumigation with DD or chloropierm.

### **Cutworms and Wireworms.**

Seedlings cut through at ground level.

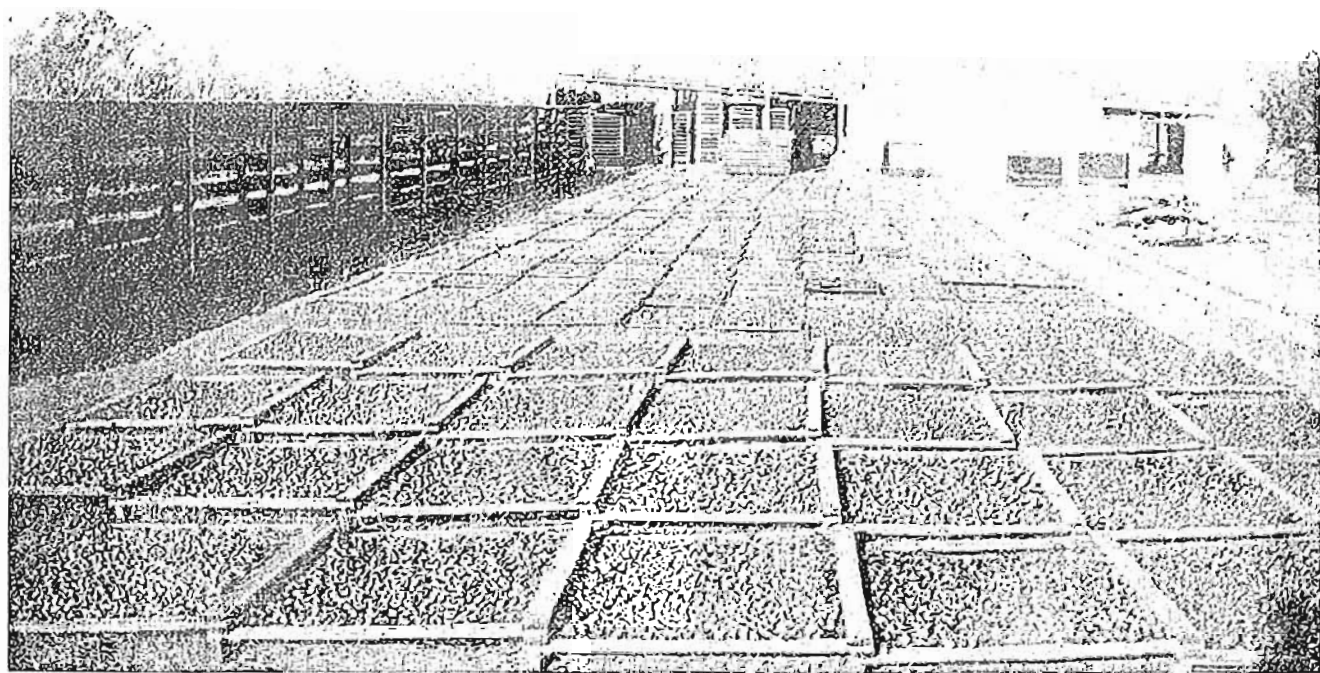
Any of the following bran mash baits broadcast through the crop:—

1. Bran, 30 lb.; Paris green, 8oz.; molasses, 4 lb.; water as required.
2. Bran, 24 lb.; Paris green, 1 lb.; salt, 8oz.; water, 3gall.
3. Bran, 24 lb.; 20 per cent benzene hexa chloride,  $\frac{1}{2}$  lb.; water, 2½gall.

### **Bronze Surface Mite.**

Bronzing and silvering of leaves and stems, stunting and premature dying of plants.

Dust with sulphur mixed with equal proportions of hydrated lime.



### Jassids.

Small, green, weakly flying insects which bleach foliage by sucking sap, particularly in seedling stages. Five per cent nicotine dust or nicotine sulphate spray.

One per cent DDT dust or 0.1 per cent DDT spray.

### Big Bud.

Malformation of floral parts and foliage, stunting of bushes; fruit set may be reduced to nil. Keep seedbeds and surrounding areas free of weeds, especially lucerne, rolly-polly, and three-cornered jack.

Maintain dust programme: rogue out infested plants as soon as noticed to prevent spread.

### FOR PEST AND DISEASE CONTROL IN TOMATOES.

Dusts should contain:—40 per cent sulphur, 1 per cent DDT, 8 per cent copper oxy chloride.

Sprays should contain:—32 fl. oz. 20 per cent DDT emulsion, 1 lb. colloidal sulphur, 1 lb-2 lb. copper oxy chloride, and 40 gall. water; or 32 fl. oz. 20 per cent DDT emulsion, 1 lb. colloidal sulphur, 2 lb. copper sulphate, and 2 lb. hydrated lime (made up as for Bordeaux Mixture), 40 gall. water.

Application, 10-20 day intervals.

### POTATOES.

#### Potato Moth.

Grubs ruining leaves, stems and tubers. Deep-planting. Hilling. Sprinkler irrigation. Two per cent dust or 0.1 per cent DDT spray from flowering onwards.



### **Jassid.**

See tomatoes.

### **Green Vegetable Bug.**

Green shield-shaped bug, sucking sap. Two per cent DDT dust or 0.1 per cent DDT spray.

### **PEAS.**

#### **Thrips.**

Malformation of young pods.

#### **Aphids.**

Stunting and malformation of plants. Two per cent DDT dust or 0.1 per cent spray as pests appear or at flowering for thrips.

### **Mildew.**

Grey mould on under sides of leaves. Dust with sulphur. Reduce irrigations.

### **Pod and Leaf Spots.**

Black spots on leaves and pods. Use seeds from disease-free crops. Crop rotation.

### **Damping Off.**

Reduced germination. Dust seed with Tetrae 2oz./bushel.

## MELONS AND PUMPKINS.

### Pumpkin Beetle.

Leaves skeletonized by orange-yellow black-spotted beetles.

Arsenate of lead spray. 4 lb.—100 gall.

DDT gives control but damages plants of the melon family.

Derris pyrethrum and benzene hexa chloride dusts are effective

### Mildew.

Grey mould on leaves checking plant growth. Dust with sulphur and reduce irrigations

## Vine Variety Collections

The vine collections contain two vines each of varieties grown in South Australia. Most of these originate from Southern France and Spain, the centres from which early introductions were made.

This list is almost complete, but it is likely that a few unidentified or unlocated varieties have to be added. Purposes of the collections which are situated at Berri, Nuriootpa, and Fullarton are:—

1. To enable quick identification of varieties.
2. To provide a source of cuttings available in small numbers for testing in different districts.

Eighty-four (84) varieties are now represented:—

|                      |                                |                       |
|----------------------|--------------------------------|-----------------------|
| Albillo (Sherry)     | Black Prince                   | Doradillo             |
| Aramon               | Black St. Peters               | Duke of Buccleuch     |
| Auldana No. 1        | Black Trentham                 | Early Green           |
| Auldana No. 2        | Buckland's Sweetwater          | False Pedro           |
| Auldana No. 3        | Cabernet Gros                  | Frontignan            |
| Baxter's Sherry      | Cabernet Sauvignon             | Flame Tokay (Wantage) |
| Belas Blanco         | Carignane                      | Gouais                |
| Black Frontignan     | Cornillon                      | Grand Turk            |
| Black Lady's Finger  | Crystal                        | Green Leaf Sherry     |
| Black Malaga         | Currant Corinth (Cape Currant) | Grenache              |
| Black Mammoth        | Currant Zante                  | Gros Colman           |
| Black Muscat Hamburg | Daira Seedling                 | Isabella              |



# VINE VARIETY COLLECTIONS—continued.

|                                |                                                   |                                        |
|--------------------------------|---------------------------------------------------|----------------------------------------|
| Knight's Centennial            | Red Labrusca                                      | Temprano                               |
| Lady Downe's Seedling          | Red Malaga                                        | Tinto (Tainturier)                     |
| Madresfield Court Muscat       | Red Muscat (Wood's)                               | Tokay (White)                          |
| Mataro                         | Red Palomino                                      | Trebbiano                              |
| Muscat Gordo Blanco            | Red Prince                                        | Ullade                                 |
| Muscat of Alexandria (Dolan's) | Red Wantage                                       | Verdale                                |
| Muscat of Alexandria           | Riesling (Rhine)                                  | Verdelho                               |
| Mrs. Pince's Black Muscat      | Royal Ascot                                       | Waltham Cross (White Malaga<br>Rosaki) |
| Ohanez (Daira)                 | Royal Muscadine                                   | White Frontignan                       |
| Palomino Blanco                | Rouschette                                        | White Grenache                         |
| Parsley Leaved Chasselas       | Santa Paula                                       | White Hermitage (Ugni Blanc)           |
| Pedro Ximenes                  | Sercial                                           | White Lady's Finger                    |
| Penarouch                      | Semillon (Hunter River or<br>Shepherd's Riesling) | White Madeira                          |
| Pinot Chardonnay               | Shiraz (Syrah)                                    | White Sauvignon                        |
| Pride of Australia             | Sultana                                           | Wortley Hall                           |
| Raisin de Dames                | Sweetwater (Palomino)                             |                                        |
| Red Daira                      |                                                   |                                        |