

Berri Experimental Orchard Field Day

26th November, 1948



Late Riverside apricot, age 30 years.

PROGRAMME

2.00 p.m.—Assembly of visitors at Implement Shed.

Address of Welcome: Chairman, Berri Agricultural Bureau, Mr. L. H. Laffer.

Opening Address: Hon. Sir George F. Jenkins, K.B.E., Minister of Agriculture.

2.30 p.m.—Orchard inspection conducted by Mr. O. E. Halliday, Manager.

1. Citrus stock trial.
2. Reorganization of planting.
3. Citrus nursery.
4. Citrus fertilizer trial.
5. Soil Profiles:
 - Murray sand—deep phase.
 - Murray sand—shallow phase.
 - Moorook sandy loam.

3.00 p.m.—Inspection of sprinkler irrigation systems under investigation—

“Lateral Systems”: O. E. Halliday, Manager.

“Head Types”: M. B. Spurling, Research Officer.

3.30 p.m.—“Citrus Water Requirements”: C. Pollitt, District Adviser.

3.50 p.m.—“Vine Training Trial”: B. G. Coombe, Research Officer.

4.10 p.m.—Soil Profiles: Kulkyne sand, Renmark clay loam.

4.15 p.m.—“Soil Water Relations and Practical Irrigation Control”: M. B. Spurling, Research Officer.

4.40 p.m.—“D.D.T. Recommendations”: C. Grasby, District Adviser.

5.30 p.m.—Tea.

6.30 p.m.—“Australian Fresh Fruit in Malaya”: A. G. Strickland, Chief Horticulturist.

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 Kulkynne 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 vine training, nursery, and small crop trials, devoted to trees, particularly citrus, apricots, 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.

Drainage upon the orchard is of two forms. In the upper levels an area of grey mallee soil developed bad salting soon after the orchard was established, and drains designed to control and reclaim this area were laid in 1922. The outflow and salt removal from this system have been recorded ever since, and it may be noted in passing that although salt removal has been considerable, this salt patch has not been

reclaimed. It still occupies its original position upon the area of grey mallee soil. A second system of drains in the flat area has been very successful. This section became badly waterlogged from excess hill water, and plantings were lost. Most of the section has been reclaimed and replanted, and salting which was very bad in some patches has been entirely overcome.

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 (set out on back cover) are representative of most of the crops grown in these settlements, and as opportunity offers, representation is improved.

An intensive programme of re-organization has been begun this season and will be completed in the next two years. Unproductive citrus plantings upon the hillside in Blocks A and B which were originally established with defective nursery stock, are being replaced in Block A with apricots and peaches of several varieties. The peaches comprise varieties not widely represented in present River plantings, which will be planted at Loxton.

The Block B section is being replaced with vines of variety more suitable to the soil type.

In Block D the vine training trial which has provided all the information possible will be removed after next harvest and replaced with citrus of pedigree strains.

EXPERIMENTAL AREA, LOXTON

Some 80 acres of the new Loxton irrigation settlement have been reserved for the establishment of experimental plantings. A considerable amount of experimental work of preliminary character has already been carried out upon

the settlement and as soon as water is brought to the block allocated, a start will be made upon cultural problems, so that information required by new settlers will be available ahead of requirements.

EXPERIMENTAL WORK IN PROGRESS

Experimental work in the Murray River Settlements is carried out at the Berri Experimental Orchard where possible, but a large proportion is necessarily decentralized on private growers' blocks to secure the soil type, the crop, or the conditions under which trouble has arisen.

Essentially the work falls into two groups—short period trials, in which tangible results can be obtained in one or two seasons, and long period trials where the investigation must be carried on for several or many years to obtain the information required.

LONG PERIOD TRIALS

Grape Vine Manuring—Block I.

Varieties.—Currant, sultana; planted 1940.

Subjects.—Cover crop varieties. Rate of application of nitrogen.

Number of Plots.—96.



Meteorological equipment showing black pan evaporimeter.

Melilotus-Mustard, Tick Bean, and Rye cover crops are being compared under two rates of sulphate of ammonia dressing; 1½wt. and 3wt. per acre. Differences are beginning to show in response to nitrogen, but the extremely adverse seasonal conditions have so far prevented reliable comparison.

Citrus Stocks.

Variety.—Valencia, Late; planted 1940.

Stocks.—Sweet orange and rough lemon.

This trial has replaced the older trial, which gave clear indication of the superiority of rough lemon and sweet orange over other stock types on this soil type. To date, trees on rough lemon have outcropped those on sweet orange, particularly on the good soil at the foot of the slope. At the head of the slope where the soil type becomes heavier and possibly more saline, sweet orange appears to be showing differential improvement.

Citrus Manuring.

Block E.—Experimental Orchard.

Variety.—Washington Navel.

This was the first trial in Australia to show the importance of nitrogen in citrus culture. It was planted in 1912. The effects of sulphate of ammonia manuring over 25 years of record have been as follows:—

Manure. Pounds of Sulphate of Ammonia.	Average yield per acre. Bushels.
Nil	52½
224	193
448	193
672	272
1,008	290
1,120	270

In 1930 the plots were subdivided to show the difference between nitrogen supplied as sulphate of ammonia, and organic manures, such as blood. In 1940 the dressings over the whole trial were doubled, but over the 16-year period plots receiving blood manure at 15wt./acre have yielded 23bush. per acre more than those receiving equivalent nitrogen dressings as

sulphate of ammonia. The design of this trial is very poor, however, and there is doubt whether this difference is real and due to the fertilizer treatment.

The record yield harvested in this trial in the 1946 season is still being maintained. This is thought to be possibly connected with the change to sprinkler irrigation in this section of the orchard.

Winkie Trial.—Property of Mr. C. Plush.

Variety.—Washington Navel; mature trees.

Treatments were first applied in 1935.

IRRIGATION AND DRAINAGE.

Citrus Leaf Drop and Water Requirements.

Following on the association of excessive leaf drop in citrus with water stress, plots were established at Waikerie and Berri for studying soil moisture changes under citrus. The depletion of moisture in the deeper root zone, even though surface soil may still be moist during winter rains, has been established as the main cause of moisture stress in the trees in connection with leaf drop.

This work is being continued with the aim of



Shallow rooting of citrus shown by trenching on Murray sand—12in. intervals marked. Roots concentrated in zone 6in.-24in.

The value of sulphate of ammonia in citrus manuring was clearly established in trials upon the experimental orchard. This trial was aimed at discovering any value attaching to supplementary manuring with potash and phosphoric acid.

RESULTS.

Yield Per Acre.

Nitrogen only.	Nitrogen plus		
	Nitrogen plus phosphate.	Nitrogen plus phosphate and potash.	Nitrogen plus phosphate.
Lb.	Lb.	Lb.	Lb.
14,024	16,137	16,266	16,127
Increase above nitrogen plots	2,113	2,236	2,103

Rates of applications—

Nitrogen: Sulphate of ammonia, 10lb./tree.

Phosphate: Superphosphate 45 per cent, 8lb./tree.

Potash: Sulphate of potash, 6 lb./tree.

These differences are still of doubtful significance.

overcoming the present failings of citrus watering, and will be extended to other crops as soon as possible.

Sprinkler Watering.

Investigation of new sprinkler head types is being made as they become available.

Furrow Irrigation.

Examination of Loxton Irrigation Area soils was made and the best grades and length of run determined for each type. The work has emphasized the importance of short runs of 3-6 chains, large furrow streams of 0.06-0.14 cusecs* and low grades of 2in.-3in. per chain as the prime necessities for efficient furrow irrigation. The

* Cubic feet per second.

results of this work are being incorporated into the Loxton Area design and their application to established settlements is being recommended.

Salt-Seepage Reclamation.

Following preliminary surveys of soil salt content, salt damage to vines, drain efficiency

SMALL CROPS.

Guayule Rubber.

Plots at the Experimental Orchard and Love-day planted during the war period have been carried on.

Asparagus.

Block H.—Gross returns from the three



A simple broad base furrower.

and water table position, trials on areas of Block 27, Berri, and Block 695, Glossop (owners W. H. Chilton and H. Stone) have been established to compare several drainage and reclamation techniques.

VINE VARIETY TRIAL.

Next planting season a selection of wine varieties will be collected and planted at Berri to compare usefulness under irrigated conditions.

FIG PRUNING AND MANURING.

Portion of the Smyrna fig block, Block C, planted 1914, has been placed under a pruning and manurial trial. Results so far show no significant responses to differential treatments.

varieties of asparagus under test in Block H, based upon 1946 cuttings, are:—

	Gross returns per acre. £	1946. Yield/acre. Lb.
Connover's Colossal	298	14,331
Renmark	215	10,327
Mary Washington	104	4,987

Connover's Colossal and Renmark strains are now five years from planting. Mary Washington crowns are two years younger.

Strawberries.

Seventeen thousand runners from virus-free mother strains were distributed last winter for trial among commercial growers. Development of this project depends upon the performance of these plants in commercial planting.

SHORT PERIOD TRIALS

Control of Curculio Beetle.

Small scale trial was commenced this spring at Reynella for determining best methods of controlling Curculio beetle.

Peach Lime-Induced Iron Chlorosis.

A small scale trial in 1946 in an effort to cure this trouble by foliage sprays, was inconclusive. A further trial on this problem has been set out at Berri and some success is indicated by results to date.

Zinc Application to Rod-Pruned Vines.

Small scale trials at Berri Experimental Orchard and at Barmora (property of H. T. Dunstone) have been initiated to determine the best method of application of zinc to rod-pruned vines.

Williams Bon Chretien (Duchess) Pears.

Leaf scorch, codling moth, and fruit drop prevention are under test this season at Berri and Renmark. Last season pear leaf scorch was shown to have triple origin not previously suspected, and progress in the investigation of this disorder can be expected to quicken now that these factors have been separated.

Codling moth control by D.D.T. has proved superior to lead arsenate over three seasons. Recommendation for the use of D.D.T. will be found in the appropriate section of this pamphlet. The problem of secondary development of bryobia mite must be considered when

D.D.T. is used, however. Methods of control of this pest which proved satisfactory last season are being checked. Leaf scorch arising from the use of D.D.T., noted last year, is also being investigated.

Fruit drop investigations are aimed at dual treatment which will give protection from drop occurring from December onwards, such as experienced last season. Mixed growth substances are being tested in this respect.

Growth Substances.

Setting of Zante Currants.—No result to report; investigations continuing.

Setting of Muscat Gordo-Blanco.—No result to report.

Prevention of Grapefruit drop.—Investigations continuing.

GRAPE MATURITY PROGRESS ADVICE.

In 1946 season the progressive maturity of sultana grapes in each settlement was posted in graph form. Study of these graphs gives the end point of maturity, the date upon which the highest possible tonnage will be harvested. With that date known, growers can arrange picking to best advantage.

In 1947 season the study was extended to other grape types, namely, the muscat and wine grapes. This season maturity progress of representative varieties in each settlement will be posted centrally in each district.



SURVEYS AND GENERAL

Red Scale.

Following the block to block survey of the occurrence of red scale in the Upper Murray areas, fumigation and/or spray treatment was applied to all located infestations during the summer months. A recent survey of the success of the treatments has emphasized the necessity for fumigation to be used before good control can be obtained. The best control obtained with double spray treatment was not greater than 70 per cent kill. A small scale trial at Mypolonga this year has shown beyond all doubt the superiority of fumigation over oil spraying in scale control, and it is hoped that with the improvement in Cyanogas supplies, more fumigation will be possible this summer.

Frost.

To determine the frost liability of land to be planted at Loxton, comparison of temperatures recorded in this area, with standard areas

chosen in the Berri, Glossop, and Waikerie areas, is being made in conjunction with the Lands Department.

Frost Warnings.

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.

Fig Spoilage.

A survey of the occurrence of this disease with the purpose of designing methods of control or eradication is being carried out this season.

Apricot Gummosis.

A State-wide survey of gummosis occurrence has just been completed, and the department is co-operating with the Waite Institute in trials to study causes and methods of infection and methods of control.

DRYING RATIOS.

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

VINE FRUITS—

Sultanas (20 years' records)—

11deg. Beaune 4 to 1. }
14deg. Beaune 3½ to 1. } Average 3½ to 1.

Gordos—

12deg. Beaune 3½ to 1. }
17deg. Beaune 2½ to 1. } Average 3½ to 1.

Currents—

11deg. Beaune 3½ to 1. }
16deg. Beaune 2½ to 1. } Average 3 to 1.

TREE FRUITS (seven years' records)—

Apricots—

Riverside, 5½ to 1.	Tilton, 6½ to 1.
Rosa, 6 to 1.	Kingston, 7 to 1.
Royal, 6 to 1.	Oullins, 7½ to 1.
Moorpark, 6½ to 1.	

Peaches—

Palmerston, 7 to 1.	
Elberta, 7-7½ to 1.	Crawfords, 7-8 to 1.

Nectarines—

Goldmine, 5½ to 1.

Standard Control Measures Recommended for Pests and Diseases of Vines and Fruit Trees in Murray Irrigation Areas

SECTION I.—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

Sulphate of iron, 20 lb.; sulphuric acid, 7 lb.; water, 10 gall. Applied as late as possible but with vines quite dormant.

Summer: Bordeaux mixture, 6-4-40, will check the disease applied at 6 in. growth.



Oidium of the vine.

appears. Generally at 6 in. growth, about blossoming time, and through early summer, as required by weather.

Black Spot or Anthracnose.

Winter: Spray with sulphuric acid 10 per cent by volume or swab, according to formula—

repeated just before flowering, but to be used only where swabbing is impracticable.

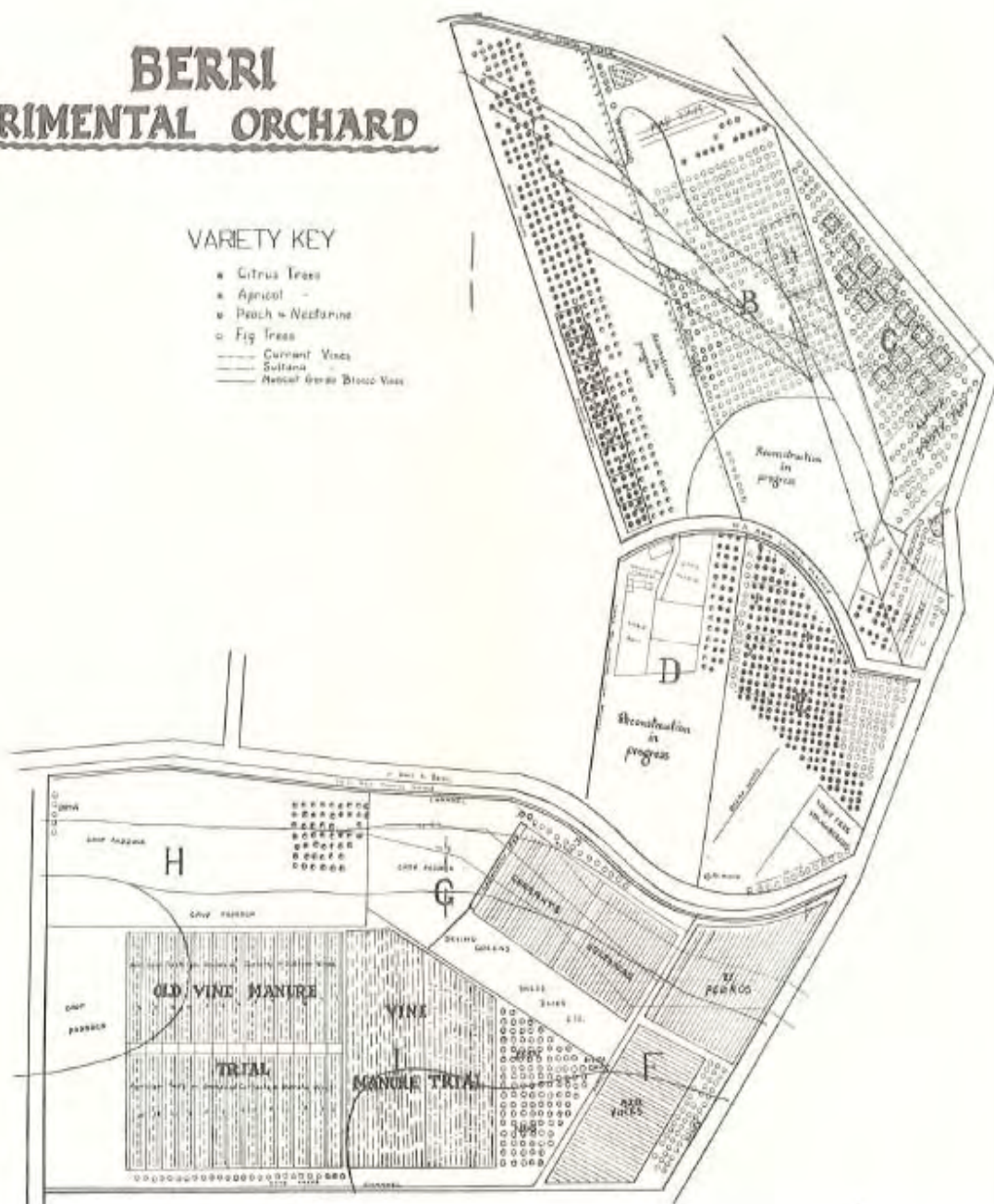
Erinose, Vine Blister Mite.

Leaves become blistered above with dense white wool below. Winter: Lime sulphur, 1 in 10, after pruning. Summer: Spread checked by dusting sulphur, but not curative.

BERRI EXPERIMENTAL ORCHARD

VARIETY KEY

- Citrus Trees
- Apricot
- Peach + Nectarine
- Fig Trees
- Current Vines
- Sultan
- Moscat Verde + Black Vines



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 6in.-9in. growth.

SECTION II.—STONE FRUITS.

Shot Hole or Apricot Scab.

On apricot, peach, almond. Bordeaux Mixture, 6-4-40, at two-thirds leaf fall and at pink



Brown rot mummies of peaches.

bud. To clean up an outbreak both sprays required. To maintain a clean orchard spring spray only necessary.

Important: Bordeaux Mixture must not be applied to peaches in foliage.

Prune Rust.

On peach. Bordeaux Mixture, 6-4-40, at pink bud. Lime sulphur, 1 to 80, 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 6-4-40.

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

Green Peach Aphis.

Often confused with leaf curl. A dense colony of green aphids will be found within the curled and rosetted leaves.

Winter: Tar distillate, 1-35, or Universal oil; D.D.T. 0.1 per cent (P.P. isomer) or nicotine sulphate 1 in 800 in white oil 1 in 80.

Leaf Curl.

Leaves thickened, curled, and brightly coloured, few, if any, aphids present. Bordeaux Mixture, 6-4-40, at pink bud.

SECTION III.—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.

Citrus Blast.

Dark-brown to black sunken fruit spots. Some defoliation with reddish-brown shield-shaped scars at leaf petiole bases, Bordeaux, 3-3-50, at first autumn rain.

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.

SECTION IV.—PEARS.

CODLING MOTH IN WILLIAMS BON CHRETIEN PEAR.

1. Concentration:

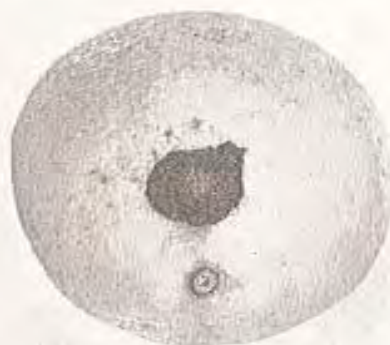
For *Standard* use 0.05 per cent D.D.T.

For *Badly Infested Gardens*.—0.1 per cent D.D.T. in the first season only. Multiplication of Bryobia mite to damaging numbers is likely in three seasons out of four unless precautions are taken. Precede D.D.T. spraying by winter oil to clear Bryobia eggs.

White Oil 1 in 60 with any cover spray.

NOTE.—White Oil must not be mixed with any emulsion form of D.D.T. containing oil solvent, or severe leaf burn is likely.

Where growers are obtaining satisfactory result with lead arsenate, it is recommended that the use of lead arsenate be continued. If D.D.T. is used, special measures to combat Bryobia mite are required. Leaf burn resulting from D.D.T. application to pears has been noted but has not been thoroughly investigated. D.D.T. is recommended only where codling moth loss



Fruit spotting by citrus blast.

2. Timing of Sprays:

First Spray.—Delay until all petals gone and bees have finished working amongst trees. This is some days later than normal for the lead arsenate calyx spray.

First Cover.—14 days later.

Later Covers.—At no more than three week intervals until mid-December.

D.D.T. used according to this schedule will practically eradicate codling moth of the overwintering generation. A D.D.T. deposit does not last on the tree any longer than lead arsenate, and if intervals between sprays are increased, some moths will escape to give damaging infestation late in the season.

3. Summer Control of Bryobia Mite:

Two successive applications of H.E.T.P. 1 in 2,000 with any cover spray 10 to 14 days apart.

NOTE.—H.E.T.P. breaks down in water. The spray must be applied as soon as possible after mixing. After five hours all value is gone.

under lead arsenate spraying is great enough to warrant risking Bryobia damage and leaf burn.

ZINC TREATMENTS FOR FRUIT TREES AND VINES.

Citrus Mottle Leaf.

First Treatment: Zinc sulphate (commercial), 10 lb.; Limal, 5 lb.; water, 100gall., or zinc oxide, 3 lb./100gall.

Maintenance Spray: Commercial zinc sulphate, 5 lb.; Limal, 2½ lb.; water, 100gall., or zinc oxide, 3 lb./100gall.

Apply before spring growth cycle. Repeat maintenance sprays 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.

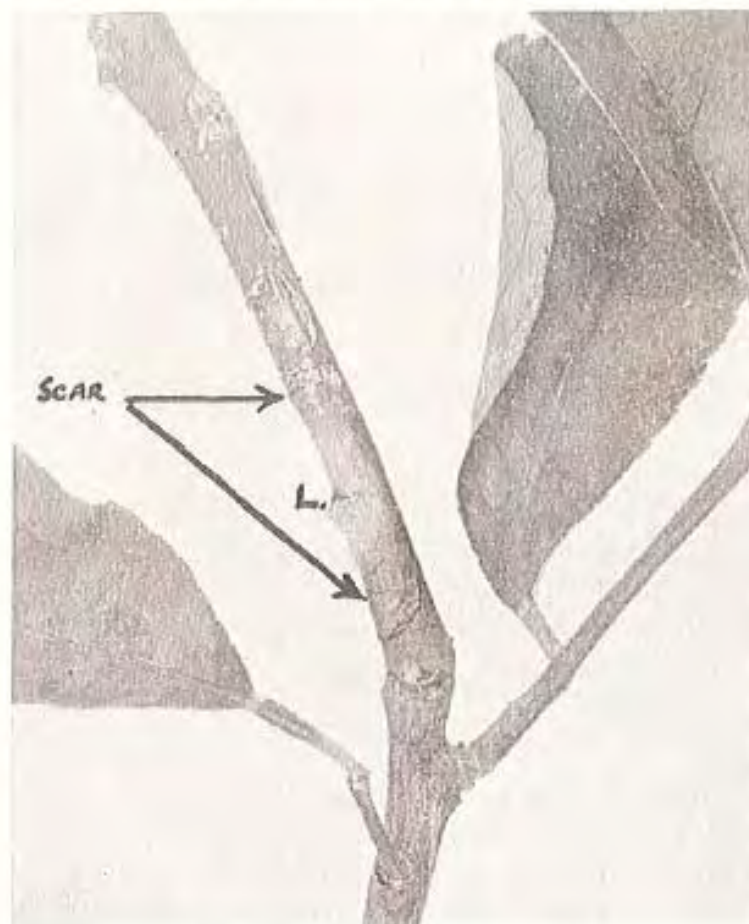
Little Leaf of Vines.

Winter Swab: Agricultural zinc sulphate, 2 lb.; water, 1 gall. Solution coloured deeply with cheap aniline dye or other dye to check

live by adding 1 lb. of zinc oxide per 100 gall. to arsenate sprays for codling. Not to be used with apples.

DIP FORMULAE FOR DRIED FRUITS.

The following formulae have been recommended by the Dried Fruits Processing Committee, on which all States and the C.S.I.R. are represented.



Citrus blast—scars around leaf base (L).

progress of work. Fresh cuts swabbed immediately after pruning. Delay decreases efficiency of absorption proportionately.

Fully effective on spur-pruned varieties. No treatment yet available for rod-pruned types. Foliage sprays as for citrus not very effective.

Pome Fruits.

Winter Spray: As for peaches. This is best for initial treatment. Maintenance very effec-

Sultana Solutions.

1. Cold Dip.

Materials:

- (a) Carbonate of potash.
- (b) Prepared oil emulsion or vegetable oil such as olive oil (5-10 per cent oleic acid), cottonseed oil (10-12 per cent oleic acid), or peanut oil (10 per cent oleic acid), may be

substituted and emulsified in weak potash before use.

- (c) *Wetting agent* (ammonium or potassium linoleate). Proprietary preparation of 28 per cent potassium linoleate is now available.

Preparation of Dip—

- (a) *Carbonate of Potash*: Normal strength 2½deg. Beaume (1 lb. in 4gall.). For rain damaged fruit or poor drying weather use 4deg. Beaume (1 lb. in 3gall.).
- (b) *Prepared Oil Emulsion*: 2-4 pints in 50gall. as recommended by maker or 1 pint in 50gall. non-emulsified oil. Inspect fruit on racks. There should be no definite oil film on dry fruit, but bloom should only re-appear slightly.
- (c) *Wetting Agent*: With 60 per cent oil emulsion 1-1½ pints in 50gall. of 28 per cent potassium linoleate usually sufficient. Adjust amount of wetter so bloom thoroughly wetted in ¼min.-1min.

2. *Mixed Dip.*

Materials—

Carbonate of potash, caustic soda, vegetable oil or oil emulsion (as for cold dip).

Preparation—

Carbonate of potash, 2½ lb. in 50 gall.; vegetable oil, 1½ pints or equivalent in prepared emulsion form; emulsify vegetable oil in 1gall. of potash solution before adding caustic soda, 1½ lb. in 50gall.

Heat to 180deg. F., test for cracking with sample of fruit, add caustic soda in ½ lb. lots until cracking sufficient.

Temperature range 177deg.-183deg. F.
Time of dipping 1sec.-2sec.

Light cracking gives the best grades.
Discard dip when dirty.

Rack Spraying.

Only necessary when racked fruit wetted by rain. In good weather spraying may hasten drying, but spoils quality.

Use 2½deg. B. cold dip mixture.

In poor drying weather, drying can be hastened with 3-4 per cent caustic potash solution, plus normal quantities of oil and wetting agent. More effective than cold dip mixture but darkens the fruit more.

Lexias.

1. *Boiling Caustic Dip*.—1½ lb. of caustic soda in 50gall. Adjust strength by ¼ lb. additions until cracking sufficient. Wilty fruit may not crack. For this fruit use 4 lb.-5 lb. of caustic in 50gall. Dip to be kept boiling.

2. *Modified Temperature Dip*.—Similar to boiling caustic dip but working temperature 190deg.-200deg. F. and more caustic required. Addition of oil not recommended; it does not appear to give any improvement.



Planting citrus seedlings.

Waltham Cross.

As for lexias. Less caustic usually required.

Prunes.

Boiling Caustic Dip.—Start at 1 lb. in 50gall.-60gall. and adjust by small additions. Dip kept boiling while in use.

CONTROL OF MOULD ON DRYING RACKS.

1. *Sulphuring*.—Enclose rack with airtight curtain of hessian, crepe or sisalkraft. Use one sulphur pan for every two bays. Charge 3 lb. per pan to be burnt completely in 1-2 hours.

2. *Spraying*.

- (a) ½ lb. carbonate of potash plus ½ lb. sodium bisulphite per gallon at rate of 1gall. per 250ft.-300ft. of rack space gives excellent mould control.

- (b) *Cold Dip Mixture*: Will hasten drying and retard mould.

- (c) *One per cent Shirian WS in water or in Cold Dip Mixture*: Very effective in mould control, but fruit darkened and must be washed to remove spray residue.

CITRUS NURSERY.

The citrus nursery will be further expanded this year to accommodate approximately 16,000 Sweet Orange and Citronelle seedlings.

Two seedling stocks are being used, viz., Sweet Orange and Citronelle. "Citronelle" is perhaps better known locally as "Rough Lemon." Both

of these stocks have proved very suitable for the propagation of citrus trees in the Murray Irrigation Areas.

There are now 6,000 Valencia trees and 400 grape fruit trees available for the 1949 planting at Loxton, whilst 15,000 seedlings have been budded this spring. The latter stocks were budded with approved Washington Navel and Berri Valencia buds, on the basis of approximately 50 per cent of each variety.

Providing good growth is maintained, the majority of these budded stocks will be ready as trees to be planted out in the spring of 1949.

NOTES :

VINE VARIETY COLLECTION—NURIOOTPA VITICULTURAL STATION

This collection contains 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.

Purpose of the collection is:—

- (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 now represented are:—

Albilla (Sherry)	Mrs. Prince's Black Muscat
Aramon	Ohanez (Daira)
Auldana No. 1	Palomino Blanco
Auldana No. 2	Parsley Leaved Chasselas
Auldana No. 3	Pedro Jimenez
Baxter's Sherry	Penarouch
Belas Blanco	Pinot Chardonnay
Black Frontignan	Pride of Australia
Black Lady's Finger	Raisin de Dames
Black Malaga	Red Daira
Black Mammoth	Red Labrusca
Black Muscat Hamburg	Red Malaga
Black Prince	Red Muscat (Wood's)
Black St. Peters	Red Palomino
Black Trentham	Red Prince
Buckland's Sweetwater	Red Wantage
Cabernet Gros	Riesling (Rhine)
Cabernet Sauvignon	Royal Ascot
Carignane	Royal Muscadine
Cornillon	Rouschette
Crystal	Santa Paula
Current Corinth (Cape Current)	Sercial
Current Zante	Semillon (Hunter River or Shepherd's Riesling)
Daira Seedling	Shiraz (Syrah)
Doradillo	Sultana
Duke of Buccleuch	Sweetwater (Palomino)
Early Green	Temprano
False Pedro	Tinto (Teinturier)
Frontignan	Tokay (White)
Flame Tokay (Wantage)	Trebbiano
Gouais	Ulliade
Grand Turk	Verdale
Green Leaf Sherry	Verdelho
Grenache	Waltham Cross (White Malaga, Rosaki)
Gros Colman	White Frontignan
Isabella	White Grenache
Knight's Centennial	White Hermitage (Ugni Blanc)
Lady Dawne's Seedling	White Lady's Finger
Madresfield Court Muscat	White Madeira
Mataro	White Sauvignon
Muscat Gordo Blanco	Wortley Hall
Muscat of Alexandria (Dolan's)	
Muscat of Alexandria	

BERRI EXPERIMENTAL ORCHARD

Manager - - - - - O. E. Halliday.
 Assistant Manager - - - R. L. Wishart, R.D.A.
 Foreman - - - - - F. J. Fox.

PERMANENT PLANTINGS.

Citrus: Total, 16 acres	Block A	Stock trial Late Valencia Improved on Sweet Orange and Citronelle. Mixed varieties.
	Block B	Citrus varieties.
	Block E	Fertilizer trial Navels.
Figs: Total, 8½ acres	Block B	Fertilizer trial.
	Block C	Fertilizer and Pruning trials.
	Block E	Smyrna and White Adriatics.
Almonds: Total, 3 acres . . .	Blocks A, B	Wind-breaks.
	Block C	Variety collection.
Pears: 1 acre	Blocks G, F	Williams Bon Chretien (Duchess) used for Codling trials.
Apricots: 1½ acres	Block A	Moorparks, Royals, and Riverside.
	Block H	Variety collection.
Vines—		
Sultanas: 9 acres	Block D	Vine-training trial (to be replaced).
	Block G	
	Block I	Fertilizer trial.
Currants: 7½ acres	Block D	Vine-training trial.
	Block G	
	Block I	Fertilizer trial.
Gordos: 3½ acres	Block D	Vine-training trial.
	Block I	Fertilizer trial.
Doradillos: 2½ acres . . .	Block I	Fertilizer trial.
Pedros: 2½ acres	Block F	Training trial.
Shiraz: ½ acre	Block F	Training trial.
White Hermitage: ¼ acre	Block F	Pruning trial.
Small Crops—Guayule Rubber, Asparagus, Strawberry virus-free strains, Citrus nursery: Total, 6 acres (approximately).		