BERRI EXPERIMENTAL ORCHARD

1911-1961, 50 YEARS SERVICE

The Experimental Orchard at Berri on the River Murray has this year completed its 50th year of service to the fruit growing industry along the River.

Started to study crops that might be grown in the irrigation areas and problems of irrigated horticulture, the Orchard has added a great deal to our knowledge of irrigation practices and the methods of fruit growing.

There have been rapid developments in irrigation methods, drainage, and the marketing and processing of our crops over the past 50 years. Continual experimenting and recording has been necessary to keep growers up to date with these changing conditions and to make sure that the most efficient methods of growing fruit are known.

The Experimental Orchard has been in the forefront of this work and has done much in developing and demonstrating new methods. Fruit growing along the River Murray has been well served by the establishment of the Experimental Orchard at Berri 50 years ago.
Work started on the Experimental Orchard site in 1910 when the Berri Irrigation Area was opened for settlement and the main channels were put down. The land was occupied in the following year.

The early history of settlement was recorded in the farm diary which opens with the following entries:—8th May 1911, Shifting camp from Renmark to Berri; 9th May 1911, Erecting tents on Experimental Farm.

Temporary housing, stables, and domestic water supply followed. Land was ploughed and the first trees and vines were planted on the hillside blocks in August and September, 1911.

The Experimental Orchard was established by the Department of Irrigation and Reclamation Works on land which had been reserved for experimental purposes when the settlement was founded. This Department, now incorporated in the Lands Department, developed the property for the first 6 years, with the Department of Agriculture advising on plantings and experiments. The first manager for the Irrigation Department was Mr. Wescombe. In 1917 the property was transferred to the Department of Agriculture and Mr. C. G. Savage took over as Manager. Following Mr. Savage Mr. N. S. Fotheringham held the position of Manager from 1927 to 1937 and he was succeeded by Mr. O. E. Halliday who was in charge of the Orchard from 1937 to 1952. Mr. W. B. Harris has held the position since that date.

Plantings in the early years included citrus, stone fruits, vines, almonds, figs, walnuts,
prunes, pears, and date palms. Lucerne was grown on the lower block for stock feed, and 150 acres of dry land were cropped for hay. Fruitgrowing was the main interest, and experiments on vine manuring, citrus rootstocks, tree pruning, and fruit drying and dehydration were started in the early years.

Rainfall recording started in 1913 and daily temperature records have been kept since 1917. Synoptic weather reporting, which includes wind and cloud observations, was started in 1925 and has been kept up on the Orchard over the past 36 years.

Seepage appeared as a threat to sections of the Irrigation Area in 1922 and the first studies in drainage and soil reclamation of irrigation areas were started on the Orchard in that year. Drains were put in on the flat and later on part of the hillside blocks, and the drain flows and drain water analysis were recorded for about 30 years.

An extensive replanting programme got under way on the property about 1940 to replace early plantings of peaches and vines which had been affected by seepage and reclaimed. The Valencia orange stock trial and vine manural trials were laid in this period.

During the war years attention was directed to vegetable growing and trials with beans, tomatoes and guayule rubber were carried out. Land Army girls were employed to help with the vegetable trial work. A good deal of nursery work was also done around this period to propagate the improved Valencia orange selection and to raise citrus trees for the post-war Land Settlement plantings.

A dehydrator was put in during 1944 so that experimental work could be done on dehydration of fruit and vegetables.

Mechanization also overtook the horses in this year with the arrival of the Orchard’s first tractor, and cropping of the dry blocks for hay was abandoned.

In the post-war period sprinkler irrigation came into prominence. To study this the sprinklers on Block E and pump on the River were put in and sprinkler watering started in 1948. Much early work on sprinklers was done here, and the installation has been extended in recent years.

A further period of replanting and development came in 1949-53. This included the introduction of apples as a commercial planting on the river, the vine pruning and training trials, vine grape varieties, clingstone peaches and the peach pruning trials. To meet the need for housing for permanent employees, 3 houses were built on the Orchard in 1952.

As it became evident in the late 1950’s that the experimental work now needed on fruit crops and sprinkler irrigation called for new areas of soil and new plantings, the decision was taken to establish the Loxton Research Centre. The bottom blocks of the Berri Experimental Orchard were sold in 1960 and planting started on the new property at Loxton.

The Berri Experimental Orchard with 50 years service behind it, is now pushing on with this new development.
HIGHLIGHTS FROM RESEARCH AT THE ORCHARD

From the time of the first plantings the Orchard has been testing crops and varieties to find their possible usefulness in the irrigated districts. For example, the suitability of cotton for these districts was first shown by plantings at the Orchard in 1922.

Some of the trials have lasted only one season, some have extended over 40 years.

Results of particular value to the fruit growing industry include these:

Variety Testing—Improved Valencia

The outstanding item in variety work was the selection and propagation of the Berri Improved Valencia orange. The Improved Valencia orange, which has the ability to hang on the tree and hold its colour and quality throughout the summer, has greatly extended the marketing season for oranges. After the finding of improved strains, the Valencia orange has been widely planted and now ranks with the Washington Navel as a major orange variety.

The Berri Improved Valencia was selected from a planting of ordinary Valencia oranges on the Orchard in the 1930's. After proving its quality, the Orchard entered into nursery work, and thousands of trees of this strain were worked and distributed through Murray Citrus Growers' Association.

Since the Berri Improved strain was selected, similar Valencia selections have been made in other districts and the name Lord Howe Valencia has been given to the Berri strain.

The selection and propagation of the improved strain on the Orchard has been responsible for much of the importance of the Valencia orange in River areas today.

Nitrogen for Citrus

Another trial of importance to the citrus industry was the orange manurial trial in Block E, started in 1920. This was the first manurial trial in Australia to show the importance of nitrogen fertilizer for citrus.

More recently it has given useful leads on the importance of soil acidification and the use of urea fertilizer.

Fig Growing

Smyrna figs were included in the first plantings on the Berri Orchard. From this developed the local fig growing industry. In the early years packing and marketing of dried figs was done from the Orchard, and many of the cultural practices for figs in this district were developed here.

Irrigation Studies

Irrigation methods and the timing of irrigations have been
studied at the Berri Orchard since early sprinkler trials in the 1920's.

The most important irrigation work done here, however, was the study of citrus irrigation schedules in the late 1940's by M.B. Spurling. This work led to general improvements in citrus watering and the introduction of the Black Pan Evaporimeter as a guide to irrigation programmes.

Cling Peach Thinning
Growing of clingstone peaches for canning is a fairly new industry along the River and one in which fruit quality is of great importance. Trials of fruit thinning, centered around the variety Wight, started on the Orchard in 1956 and showed the very large gains in fruit quality that can be gained by fruit thinning. A desirable level of cropping for peaches in these districts was found.

From these trials fruit thinning has come to be an accepted practice for Wight peaches, and its importance in controlling fruit quality in other varieties is being seen.

Trellising Grapevines
An early trial on the Orchard showed that with vigorous spur pruned vines such as Currants cropping could be increased by carrying more spurs.

A recent trial has shown that growing bigger vines on larger trellises can increase crops but the effect on fruit quality needs to be watched. However, the T trellis has been shown to have advantages over the vertical trellis without growing bigger vines. Results of this trial work are showing up in increasing areas of new vine plantings that are being trellised on the T trellis.
## CURRENT TRIALS

### CITRUS

**Stock Trials**

- Planted 1940—Valencias on Rough Lemon and Sweet Orange

  An early lead by rough lemon stock disappeared at about 15 years, now no difference between stocks.

- Planted 1953—Washington Navel on Rough Lemon and Sweet Orange

- Planted 1953—Marsh Grapefruit on Rough Lemon and Sweet Orange

**Location**

- Stock Trials: 9
- Nitrogen Application: 8
- Commenced 1920. Soil pH has not seriously declined under long term use of sulphate of ammonia. Urea application through sprinklers, commenced 1956, appears satisfactory.

**Replanting Techniques**

- Commenced 1957—Soil fumigation prior to replanting

  Early results show that by proper management replanting amongst mature trees can be successful. Differences from pre-planting fumigation treatments are small.

### PEACHES

**Varieties**

- Commenced 1952—Assessment of new varieties under local conditions.

  Ten clingstone and 3 freestone varieties are being tested to find their performance under local conditions.
Pruning and Tree Management .......................... 4
Commenced 1949—Pruning levels and fruit thinning.
    Lighter pruning has been shown to give the greatest yield of canning fruit. Fruit thinning is essential on some varieties.

Thinning .................................................. 11
Commenced 1956—Thinning by hand to find best thinning levels on Wight Cling.
    Very large gains in fruit quality have resulted from thinning. Blossom thinning has been very effective.

APRICOTS

Varieties ................................................. 1
Commenced 1957—Assessment of early varieties.
    Four new early varieties are being tested.

Internal Breakdown .................................... 12
Growth studies and spray treatments on Trevatts to study causes and treatment of internal breakdown.

GRAPEVINES

Spirit Grapes ........................................... 5
Planted 1956—Assessment of spirit grape varieties.
    False Trebbiano, White Grenache and Doradillo are being compared.

MISCELLANEOUS

IRRIGATION ............................................. 6
Irrigation control studies using meteorological data.
    Involves examination of frequency and amount of application. Irrigation guide figures are being issued.

Drainage
    Drainage and reclamation of saline soils.
## CURRENT TRIALS

### LOXTON RESEARCH CENTRE

#### CITRUS

<table>
<thead>
<tr>
<th>Varieties</th>
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<th>Irrigation and Planting Distance</th>
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<td>Proposed Planting 1963—Irrigation and planting distance combination treatments</td>
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#### GRAPEVINES

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<tr>
<th>Wine Grape Varieties</th>
<th>Location</th>
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<td>Planted 1960-61—Variety assessment on 43 varieties</td>
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<td>Planted 1961—Semillon Training Trial</td>
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<td>Planted 1961—Comparison of V. labrusca varieties</td>
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<th>Table Grapes</th>
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<td>Planted 1961—Variety assessment on 12 varieties</td>
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<td>Planted 1960—Ohanez training trial. Comparison of overhead and T trellis</td>
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<th>Drying Grapes</th>
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<td>Planted 1960—Currant Selections</td>
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<td>Planted 1960—Zante Currant Training Trial</td>
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#### STONE FRUITS

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<td>Proposed Planting 1962—Peach Stock Trial.</td>
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<tr>
<th>Apricots</th>
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<td>Proposed Planting 1962—Irrigation and Fertilizer Trial.</td>
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<th>Almonds</th>
<th>Location</th>
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<tr>
<td>Planted 1960—Comparison of 4 varieties.</td>
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Research Station Staff

Manager—W. B. Harris, B.Ag.Sc.
Project Officer—D. R. Spurling, R.D.A.
Field Officer—R. E. Cawthorne.
Foreman, Berri—W. E. Rout.

District Officers

Berri-Barmera—C. M. Cooper : 'Phone Berri 407.
Waikerie-Moorook-Kingston-Cadell—J. P. Jennings, R.D.A. :
'Phone Waikerie 437.
PROGRAMME

BERRI FIELD DAY

THURSDAY, 23rd NOVEMBER, 1961

"Fifty Years of Progress"

Welcome—Mr. M. Nicholson, Chairman, Berri Agricultural Bureau

Opening Address—the Director of Agriculture, Mr. A. G. Strickland

Soil Changes in 50 years—Mr. W. B. Harris, Manager
  pH
  Soil Condition
  Soil Texture
  Soil-borne diseases

Advances in Irrigation—Mr. M. R. Till

Luncheon

Address—Mr. T. C. Miller, Chief Horticulturist
  Comments on overseas trip

Advances in Nutrition—Mr. M. B. Spurling—
  (a) Fertilizer Trial Results
  (b) The value of leaf and soil analysis

Mites—two spotted mites on pears and stone fruit—Mr. T. L. Fenner

Replanting—
  (a) New ideas on planting distances
  (b) Drainage and reclamation
  —Mr. W. B. Harris