



Department of
Primary Industries and
Regional Development

Journal of the Department of Agriculture, Western Australia, Series 3

Volume 4
Number 6 *November-December, 1955*

Article 14

1-11-1955

The handling, presentation and storage of stone fruits

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Melville, F. and Bloomfield, J. S. (1955) "The handling, presentation and storage of stone fruits," *Journal of the Department of Agriculture, Western Australia, Series 3*: Vol. 4: No. 6, Article 14.

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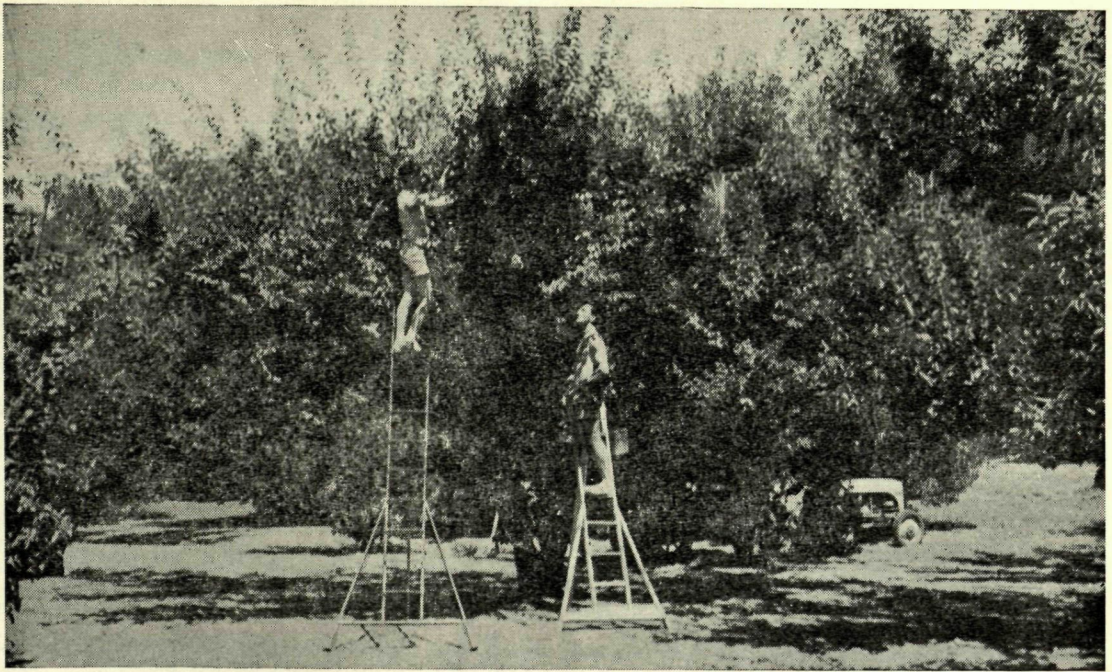


Fig. 1.—Picking export plums on the property of Mr. C. Davey of Pickering Brook. These trees have produced 25 half-bushel cases each for the last four years

THE HANDLING, PRESENTATION AND STORAGE OF STONE FRUITS

By F. MELVILLE, Senior Horticultural Adviser, and
J. S. BLOOMFIELD, Senior Packing Instructor

THE stone fruit industry in Western Australia produces up to 250,000 bushels of fruit per annum. The crop is disposed of mainly as fresh fruit on the local market, but during the last few years a useful outlet for certain varieties of plums has developed in Singapore which imports about 12,000 bushels each year. Stone fruits are not dried commercially and processing is confined mainly to the use of surplus fruit for jam making.

Easily accessible markets are important for the successful disposal of stone fruits, hence a large proportion of the crop is produced in mixed orchards in the Hills areas adjacent to Perth. Considerable areas are also planted in the Donnybrook district, particularly with late varieties, but distance from the market has limited expansion of the industry in that area.

The marketing of stone fruits extends from late November until the end of March. The season opens with early apricots and peaches and the first plums

are usually available by the middle of December. January is the main month for stone fruits and a wide range of varieties is available at that time. The better peach varieties such as the Elberta types ripen towards the end of January and supply the demand until well into February. Supplies in late February and March are limited to a few of the later varieties of peaches, nectarines and plums particularly the Ruby Blood. Late canning varieties of peaches are not grown on a commercial scale.

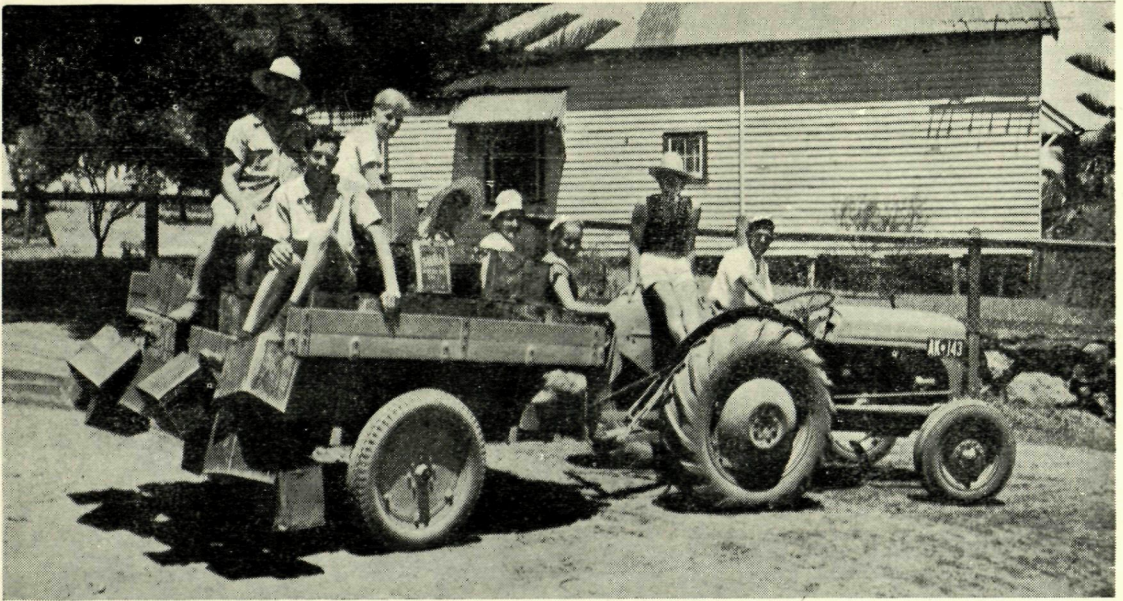


Fig. 2.—Picking containers constructed from 4-gallon tins are ideal for handling stone fruits. The fruit picked directly into the tins in the orchard is not handled again until it reaches the packing shed

With limited outlet for bulk supplies of fruit, the stone fruit grower must depend upon the local fresh fruit market or export trade for the disposal of his produce and as each orchardist packs his own fruit, his success will depend largely on building up a reputation for good presentation and high quality. The postwar development of the Singapore market has enabled some growers to make a specialty of supplying fruit for this trade.

The stone fruit grower is faced with harvesting and marketing problems peculiar to this industry. The picking period for any one variety is relatively short while ripening off the tree proceeds at a rapid rate. During periods of heat wave conditions, ripening is greatly accelerated and when holiday periods intervene or the market is oversupplied then considerable losses can occur. The handling of stone fruits requires considerable skill and judgement.

PICKING

As stone fruits damage very easily, every care must be taken to minimise injury. Stem punctures, finger nail marks and bruising must be guarded against and the less handling the fruit receives, the better. This is particularly important for peaches

and nectarines where any type of pressure mark will show up as a deep brown bruise as the fruit ripens. The type of



Fig. 3.—Harvesting Elberta peaches on the property of J. E. Dowell of Bedfordale. A permanent hook on the picking bucket facilitates hanging on the ladder or tree

picking container used is quite important. A shallow rigid picking bucket is ideal and a common type in use is made from a 4-gallon tin fitted with a permanent handle and hook for hanging on the tree or picking ladder. A convenient size is about nine inches deep with the sharp edge turned over all round. One grower has developed a light wooden picking box fitted with suitable handles, which has proved very satisfactory. On no account should any type of canvas bag be used nor should the fruit be piled too deep in the container, or the bottom fruit will be damaged. Tapered buckets are also undesirable. It is advisable to place some type of padding such as woodwool covered with paper in the bottom of the container. In recent years certain growers have marketed peaches in a firm ripe condition and particular care is necessary in handling this class of fruit as it is quite easy to make it unmarketable. One satisfactory method is to use flats open on the side and suitably padded. Only a single layer of fruit is placed in each box and in

the packing shed the peaches are transferred directly to the market cases with the minimum of handling.

PICKING MATURITY

In common with most fruits there is an optimum stage of maturity for picking stone fruits but as they ripen rapidly the picking period is very short. There is therefore much less latitude in harvesting than for most other fruits and considerable judgement is required to market the fruit to its best advantage. The degree of ripeness required at picking will depend upon the type of marketing. For instance export fruit or fruit which is subject to long transport must be very firm to stand the length of storage and additional handling. However care must be exercised to ensure that the fruit is not picked when immature otherwise it will tend to lack colour, shrivel and may fail to ripen properly. On the other hand it must be borne in mind that overripe fruit has no market demand and therefore in determining the best stage for harvesting due consideration

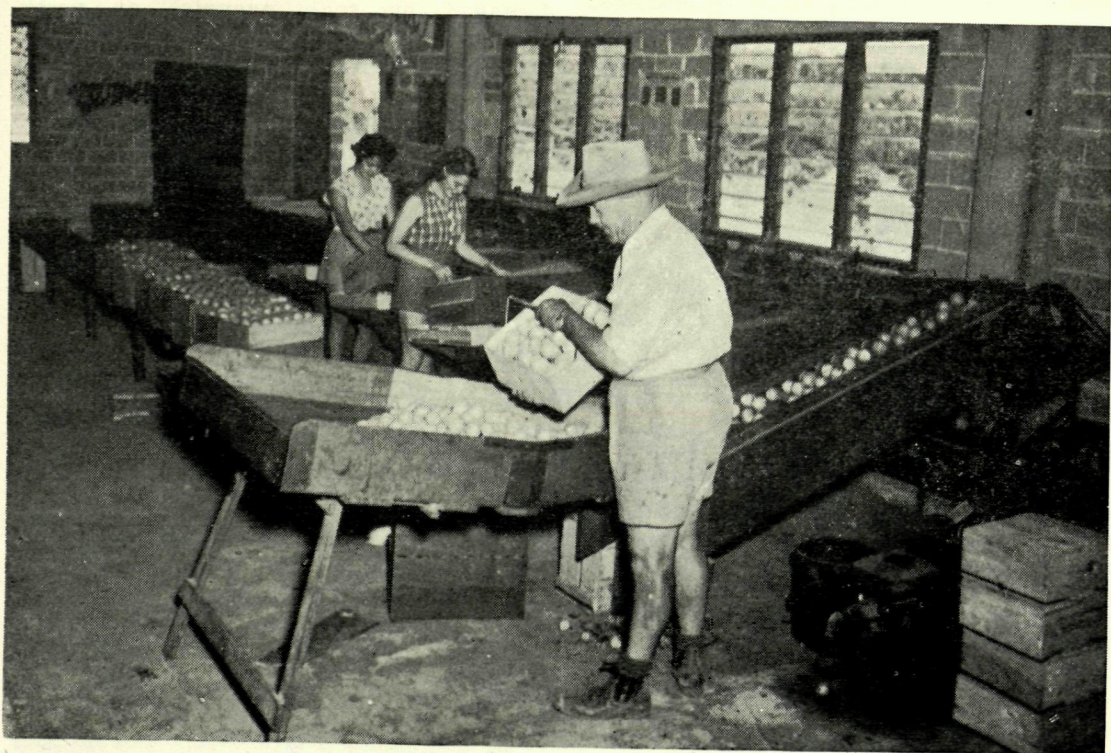


Fig. 4.—Export plums being handled on the property of Mr. R. C. Owen of Carmel. Accurate sizing is essential to produce satisfactory packs and with care this can be performed mechanically. Wooden picking boxes designed by the grower can be seen in use

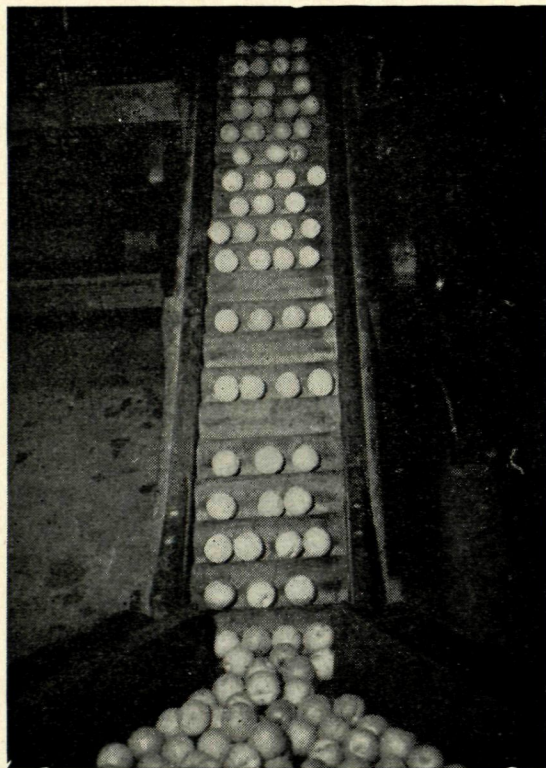


Fig. 5.—A specially constructed elevator in which the rollers do not turn and covered with a canvas sheet prevents stone fruits from marking

must be given to the ripening which will take place during the period from picking to retail consumption.

Meticulous care is necessary in grading plums for export to ensure that the fruit is of even and correct maturity. A few forward plums can spoil the whole presentation. It is not practicable to make one picking and sort into export and local market fruit. A selective picking specially for export is the only satisfactory method.

FRUIT SIZE AND QUALITY

Fruit quality and in particular size has a very important effect on market returns as is shown by the wide variations in prices obtained for different lines of fruit. It is only by giving attention to such factors as size, colour, proper grading, correct maturity and good presentation that uniformly satisfactory returns can be expected. In this regard fruit thinning plays a very important part. Not only is fruit size improved, but the proportion of marketable fruit is increased. It also provides an opportunity to remove fruit damaged by such agencies as pests, diseases, hail and wind before the market stage is reached. Thinning is necessary



Fig. 6.—Apricots should be carefully segregated according to maturity and a practical method of doing this is to pack two cases at the same time from each bin

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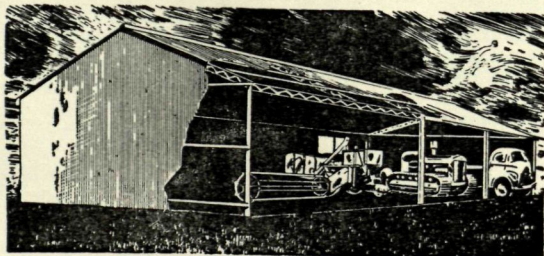
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Fig. 7.—Ripe peaches damage very readily and cannot be handled successfully over a grader. A long bench on which a single layer of fruit is placed is used by B. V. Cross and Sons of Bedfordale for packing local market peaches into open flats

HANDLING

Cases.

Stone fruits are prepared for market in a variety of ways depending upon the kind of fruit, the size, the maturity and the growers own particular preference, but whatever method is used good presentation will amply repay the effort involved.

The $\frac{3}{4}$ -bushel flat with a central division, is the best all round case and is extensively used for all kinds of stone fruits either as a lidded box or as an open flat. The stone fruit tray is also based on the measurements of the $\frac{3}{4}$ -bushel flat but is only deep enough to take one layer of fruit. Export plums are packed in the half bushel case and this also provides a useful alternative container for the local marketing of plums. With the limited supplies of cherries grown in this State and the high prices offering, the larger boxes are not popular and a number of smaller containers has been tried. Of these a box which is essentially a quarter of a $\frac{3}{4}$ -bushel flat and containing approximately 7 lbs. of fruit has proved very satisfactory. Alternatively a quarter dump case which is slightly larger and contains approximately 10 lb. of fruit can be used.

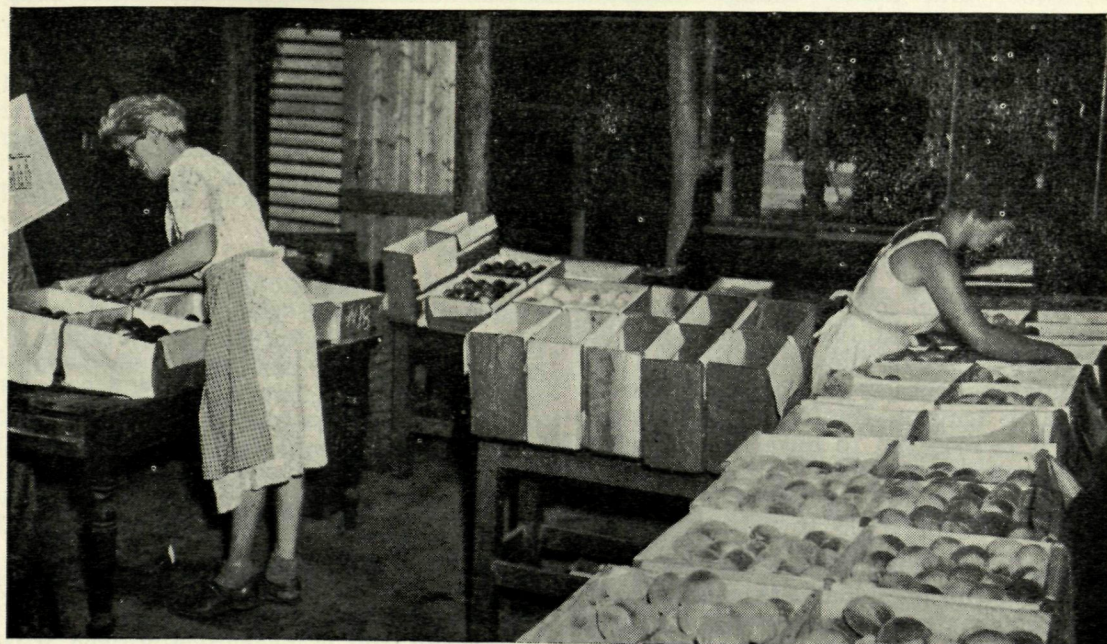


Fig. 8.—Packing ripe Blackburn peaches and nectarines from flat orchard boxes to open flats for market. This method of handling ripe peaches as used by Mr. S. E. Ward on his property at Kelmscott reduces handling to a minimum. The firmer fruit is segregated for packing into upright $\frac{3}{4}$ -bus. boxes to be lidded for country trade

Stone fruits need some type of case lining material to protect the fruit. For the $\frac{3}{4}$ -bushel flat a good grade white paper is preferable. Newspaper is sometimes used but this greatly detracts from the appearance. Export regulations require corrugated cardboard liners for stone fruit packed in the half bushel box. On the local market either cardboard or white paper should be used.

For the specialised marketing of peaches, trays or open flats are used and as the fruit presented in this way is riper greater precautions are necessary to obviate bruising. The trays contain a single layer of fruit placed on the stem end on a pad of soft woodwool with tissue paper. Green fruit wraps are used by some growers mainly for decorative purposes but the fruit, provided it is good fruit, will show up equally well without such trimmings. Trays are particularly valuable for early peach varieties which tend to soften quickly on the point.

The $\frac{3}{4}$ -bushel open flat provides the best means of handling high-class peaches and nectarines of the later varieties and considerable success has been achieved in handling fruit in this way. As with the tray it is essential to have a soft quality woodwool pad covered with tissue paper on which two or three layers of fruit are packed diagonally on the cheek.

It must be emphasised that both the tray and the open flat are special packs and require special fruit. They are used for marketing tree-ripe fruit and only first-class peaches and nectarines of large sizes should be packed in this way. These

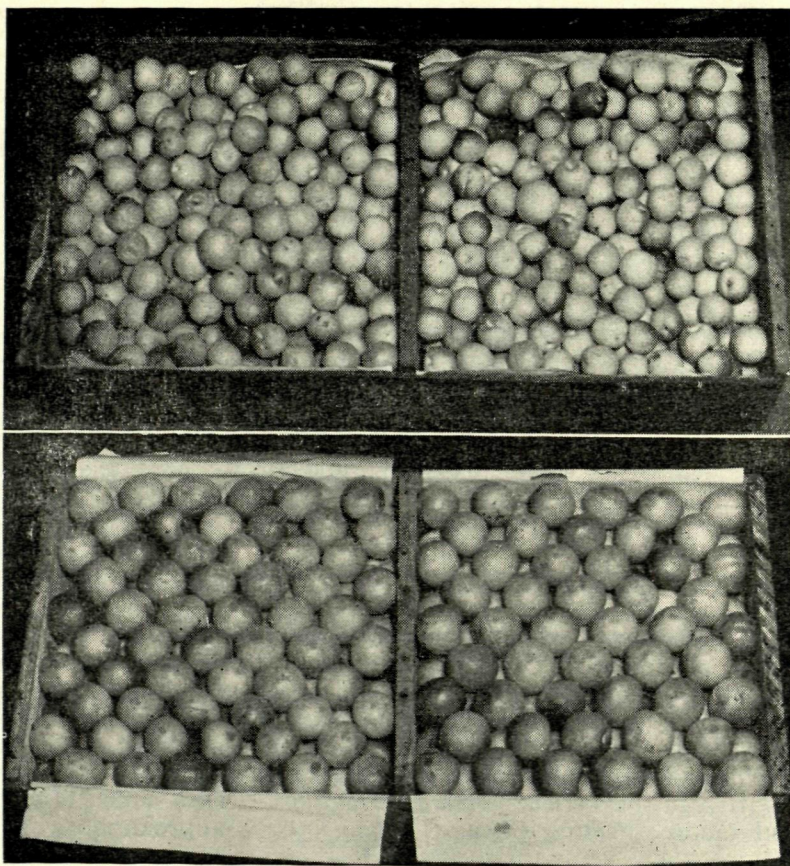


Fig. 9.—An illustration of the value of careful sizing, grading and packing is provided by the wide variation in market prices. The case of apricots at the top of the picture was difficult to sell at 8s., whereas the well presented case (below) was in keen demand at 25s. Fruit not worth packing well is not worth marketing

packs are best suited to growers delivering their own fruit to market, due to the careful handling required.

Packing.

All stone fruits should be properly presented for market, that is graded, sized and packed. Poor presentation tends to bring the general price level down. One of the main pitfalls is the inclusion of fruit of different degrees of ripeness in the one case, and this is particularly important in the case of export plums. Every endeavour should be made to pack lines of even maturity, and this means more selective picking. With apricots, even with selective picking it is still necessary to sort into maturity grades during packing. Where the fruit is mechanically sized, it is usual to pack at least two cases of different maturity from the same bin.

Peaches and nectarines, because of their variable shape, do not lend themselves to mechanical sizing but with care apricots and plums can be put over a grader. Only firm fruit should be sized in this way and every precaution taken to minimise bruising. Such precautions include tipping only a small quantity of fruit into the hopper at a time, using a canvas cover on the elevator to prevent the fruit turning, keeping the belt and rollers clean and dressed with talc and frequently removing foreign material such as stalks from the bins. The machine should operate at slow speed and be adjusted so that the fruit will occupy the first few bins to reduce the run of the fruit along the belt. Uniform sizing is very important in obtaining attractive packs in trays.

The diversity of packs due to the variability in shape and size of stone fruit varieties makes any detailed discussion of packing or the preparation of packing charts difficult. However there are certain fundamental principles which must be followed. These include correct sizing in order to maintain evenness of pockets for the correct placing of the fruit and packing as firm as possible without causing bruising. Most stone fruits are better presented as straight packs with the exception of a few flat types such as Narrabeen plums, which are packed diagonally.

A good check on the presentation is to remove a side board after the case is nailed down.

The growing of export fruit calls for specialised presentation. The selection of fruit for size and maturity is all-import-

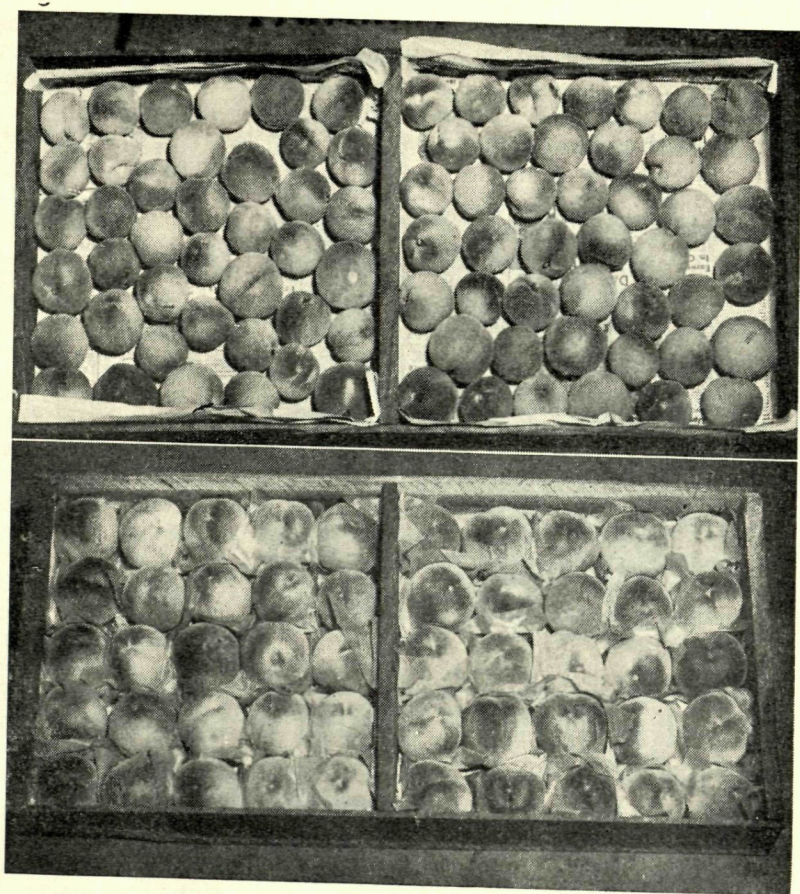


Fig. 10.—Only special fruit should be packed in trays as this is a display pack and will readily show up defects in presentation. This is illustrated by these two contrasting packs

ant and particular attention should be paid to the firmness of the pack as the fruit must undergo several weeks storage and transport during which time some shrinkage will occur and there is a danger of the pack becoming slack. Packing charts covering the main export varieties, viz. Santa Rosa, Wickson and Narrabeen plums are available from the Department of Agriculture.

COOL STORAGE

There is a continuity of stone fruits throughout the summer months, varieties following rapidly on one another and often overlapping. There is therefore little opportunity for cool-storing fruit to meet short supplies except towards the end of the season. The main advantage of cool storage is to enable the grower to hold fruit for short periods to tide the marketing over holidays, heatwaves and

temporary gluts. This however is only possible where a grower has his own store or where facilities are close handy. Export stone fruit must also be held in cool store awaiting shipment.

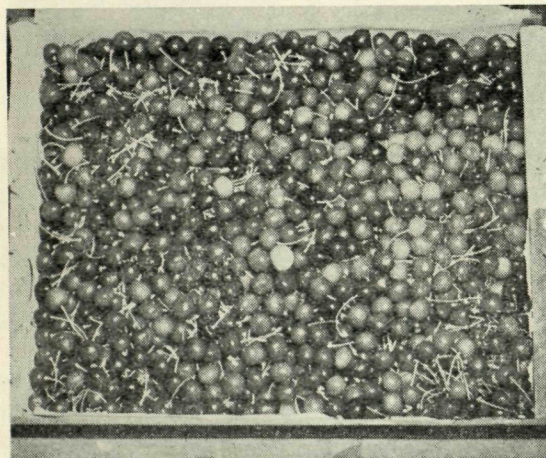


Fig. 11.—Because of the high prices operating, cherries are marketed in small containers. A popular size is one quarter of a $\frac{3}{4}$ -bushel flat containing approximately 7 lb. of fruit

The cool-storage of stone fruits is more difficult than for other fruits and the stored product is never as good as that fresh off the tree. The storage life is also quite short and, unless harvested at the right stage of maturity and handled properly, results can be very disappointing. Peaches and apricots are particularly difficult to cool-store and should be avoided if possible. Where cool storage is essential, then the peaches should be firm ripe and the apricots well coloured, otherwise storage disorders may develop. If immature fruit is cool stored it will fail to develop the juice, flavour or sweetness characteristic of ripe fruit. Peaches become "woolly" or dry. It is not wise to store most varieties for more than two to three weeks. The Elberta type peach is usually the best for storage purposes.

Plums have a somewhat longer storage life than peaches although for most varieties three to four weeks is about the safe limit. Santa Rosas probably store the best followed by Narrabeens. Wicksons are rather subject to browning around the stone, while Ruby Bloods become soft and bladdery. As with other stone fruits the secret of successful cool storage of plums is to pick the fruit at the right stage, that

is when definite signs of ripening are obvious. Immature plums will not ripen to an acceptable product.

EXPORT PLUMS

The journey by sea to Singapore is less than a fortnight and therefore it is possible to ship a number of our plum varieties to that destination. The main export varieties are Santa Rosa, Wickson and Narrabeen although there is a demand for Kelsey and certain other varieties in short supply.

From experiments conducted in recent years the optimum picking maturity for the main three export varieties was determined. For Santa Rosas best results are obtained when the skin has developed a light red colour over practically the whole surface of the fruit but before any signs of softening or dark red colour are apparent. In later pickings and in some seasons the colour development is not as good, in which case the ground colour should also be taken into account. The green colour should be showing a definite yellow tinge but not have reached the yellow stage.

Wicksons ripen first on the apex and this serves as a good guide to picking maturity. The skin should show a distinct change in the green ground colour and a slight yellowing should be apparent on the apex. Any fruits developing a blush should be discarded as too forward.

It is rather more difficult to define the optimum picking stage for the Narrabeen variety because of the large variation in colour which is encountered in different districts and different parts of the tree. However good results are obtained with fruit which is well coloured and showing a definite break in the ground colour, and there is a slight give in the flesh. Nevertheless it is essential that the fruit should not be showing any signs of softening.

Export stone fruit should be cool stored as soon as possible after picking. A good procedure is to pick early in the morning while the fruit is still cool, pack during the day and place in cool store late in the afternoon. The important thing is to maintain the temperature of the fruit during the pre-storage period as low as possible. The most satisfactory cool storage temperature is approximately 32° F.

With the short storage life of export plum varieties the pre-shipment storage period must be reduced to a minimum to allow the fruit time to reach its destination and be distributed before its useful life is over.

ACKNOWLEDGMENT

The authors would like to acknowledge the assistance of the many growers who provided material for the photographs and also the Government Photographer who carried out the photographic work.

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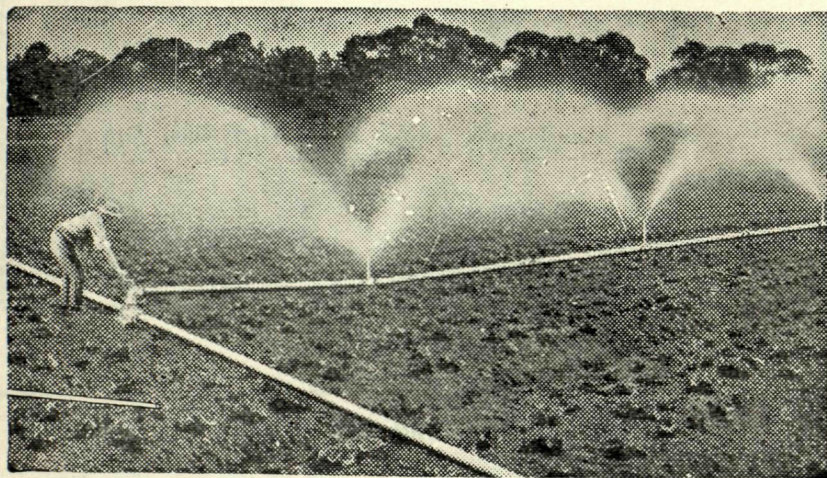
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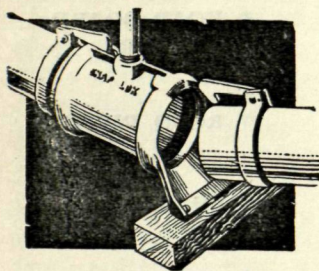
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