Marketing export grapes

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In recent years there have been many changes in the buying power and of the availability of fresh fruit on our principal overseas grape market, Singapore.

The market has become highly competitive and trade acceptance today demands that only grapes having a large berry size for the particular variety be exported, and that the grapes arrive in sound condition.

Large berry size can only be obtained by avoiding overcropping the vines. This may mean removing some of the crop, bunch thinning, or judicious use of irrigation water.

For grapes to arrive in sound condition on the consumer market requires that the grower, the cool store and shipper and the importer must each play a part to ensure that the grapes are properly handled.

Increasing cost of production is a major problem that is confronting the grower. This is a challenge which has to be met. Rejection of borderline or substandard grapes greatly increases costs and it pays every grower to make certain that the grapes comply with the Export (Fresh Fruit) Regulations when they arrive at the cool store.

This article outlines the main points to be observed when harvesting and packing grapes for export and gives a summary of the requirements of the Export Fresh Fruit Regulations.
GROWING GRAPES FOR EXPORT

In this article it is possible to make only a brief reference to the cultural factors which influence the production of high quality grapes.

Vineyard management practices are the most important factor influencing the quality of fruit over which the grower has control. They can also exert a considerable influence on the cost of producing grapes.

(a) Choice of Soils

Grapes for export should be grown on soils with reasonable fertility and adequate moisture reserves.

Early varieties such as the Canon Hall Muscat can be grown on light lands if there is sufficient moisture stored in the ground to carry the vines and the fruit through periods of intense heat.

The development of a vigorous root system to enable the vine to obtain sufficient moisture to replace that lost by transpiration through the vine leaves during a heat wave demands deep, well drained soils as the first essential requirement.

The variety most suited for the particular soil type should be chosen for planting. Further advice on this or any other aspect of grape growing can be obtained from your District Horticultural Officer, or from the Department of Agriculture, Jarrah Road, South Perth.

(b) Trellising

The type of trellising to be erected depends on the variety and the soil type.

Chief points to remember are:

1. The trellis must allow proper distribution of the fruiting wood. Rod pruned varieties growing on fertile soils need a small T arm where the vine is 'headed'.
2. The trellis must ensure that the fruit is protected from wind damage and sunburn. This requires the provision of foliage wires.
3. The trellis should enable spraying, pollenising, picking and thinning of bunches or berries to be carried out with ease and thoroughness.
(c) Pruning

The system of pruning adopted should be that which experience has shown to be best suited for the particular variety. In some instances it may be necessary to modify accepted pruning practices to get the best results.

Pruning is the main method of regulating crop production. The aim of the pruner should be to establish a balance between crop production and the vigour of the vine.

It is most important that over-cropping of the vines be avoided, as this leads to a low sugar content in the grapes, undersized berries and lack of colour development.

(d) Fertilisers and Manures

On soils of reasonable fertility there is doubt whether the application of fertilisers gives any increase in yield, but growers are advised to apply superphosphate when sowing the cover crop in the autumn.

Bulky organic manures such as poultry and other stock manures, abattoir refuse and so on can serve a useful purpose in building up the organic matter in the soil. Care is necessary when applying these, as too much can induce excessive vegetative vigour at the expense of fruit production.

Vines growing on soil with a high nitrogen content mature their fruit much more slowly than vines where the nitrogen content is lower. If the vines receive excessive nitrogen the fruit is watery and prone to breakdown.

(e) Pollenising

The Ohanez variety should be cross pollinated to ensure satisfactory setting of the crop.

The customary procedure today is to make a water suspension of pollen from a variety such as Black Malaga and apply with hand sprays to the Ohanez flowers. The spray is applied every two or three days during the flowering period, using a freshly made pollen suspension.

(f) Irrigation

Judicious irrigation is of great value in the successful maturation of heavy crops of export grapes. Only well drained soils can be successfully irrigated for this purpose.

It is desirable that all irrigation should cease at least six weeks before the maturation of the grapes. This enables the vegetative growth processes to slow down so that the transport of food material to the grape berries can take place.

Grapes high in water content are very prone to 'breakdown' disorders.

(g) Disease Control

The control of fungus diseases and insect pests is outlined in the accompanying spray programme.

Absence of disease or insect damage is essential in export grapes. This can only be obtained by closely following control recommendations.

HARVESTING EXPORT GRAPES

(a) When to Pick

If possible, only experienced and reliable pickers should be employed picking grapes for export.

At the beginning of picking on any particular soil type the vigneron should satisfy himself that the grapes are sufficiently mature.

To meet the requirements of the Export Regulations this is best done by the use of the Beaume hydrometer to determine the sugar content of the grapes. However, the grower should also consider whether other characteristics such as berry colour and bunch stem colour are satisfactory.

Well matured stems are less subject to dessication, discolouration and mould attack than immature ones.

The Beaume Test

This is very simple, and the equipment needed is also simple and inexpensive:—

0-10° Beaume hydrometer.

Measuring cylinder (200 milligram) or wide mouth pickle bottle.

Two important precautions must be taken:

- The grapes when tested should be cool to avoid large errors due to temperature when reading the scale on the Beaume hydrometer.
- It is important to gather a truly representative sample of the fruit it is intended to pick. To do this sprigs of berries should be collected from all parts
## SPRAY PROGRAMME FOR GRAPE VINES

<table>
<thead>
<tr>
<th>Disease or Pest</th>
<th>Treatment</th>
<th>Time of Application</th>
<th>Rate</th>
<th>Remarks</th>
</tr>
</thead>
</table>
| **Black Spot (Anthracnose)** | Ziram or Thiram sprays... | (a) Late dormant—budswell, 3 lb. in 100 gallons  
(b) When shoots are 2-4 inches long 1 1/2 lb. in 100 gallons  
(c) Before flowering 1 1/2 lb. in 100 gallons  
(d) After fruit set 1 1/2 lb. in 100 gallons  
(e) Thereafter at any time when wet weather conditions favour further black spot infections | 3 lb./100 gallons water  
1 lb./100 gallons water  
1 lb./100 gallons water  
1 lb./100 gallons water  
1 lb./100 gallons water | Dormant spray essential and should be applied at high pressure. |
| **Powdery Mildew (Oidium)** | Sulphur Dust or Sulphur Sprays | (a) When shoots are 4 inches long ....  
(b) Just before flowering  
(c) After fruit set  
(d) Any time thereafter according to seasonal conditions | Wettable Sulphur can be used in the Ziram or Thiram sprays at the rate of 1 1/2 lb./40 gallons water. Dust at 5-10 lb. per acre | Sulphur dust is probably more effective than spraying when the fruit has set and the foliage has become dense. |
| **Mealy Bug** | D.D.T. Spray | Late winter just before budswell .... | 1% water mixture = 2 1/2 gallons 20% D.D.T./100 gallons water | Essential to spray at high pressure (200-250 lb. per square inch) and to thoroughly drench the bark. |
| **Mites. Eriose or Vine Leaf Blister Mite, Rust, Bunch, and Bud Mites** | Lime Sulphur Spray Mixture | Late winter just before budswell .... | 1 part Lime Sulphur to 10 parts water .... | Sulphur dust or wettable sulphur can be used as a control treatment for Eriose and Rust Mites. |
| **Grasshoppers** | Dieldrin | Apply when grasshoppers attack vines .... | 0-1% Dieldrin = 5 pints of 15% Dieldrin/100 gallons water | Spot spray vines and apply a light barrier spray around perimeter of vineyard or along the perimeter from which grasshoppers invade the vineyard. |
| **Weevils and Beetles** | Dieldrin Spray | Apply when damage appears .... | 0-1% Dieldrin = 5 pints of 15% Dieldrin/100 gallons water | Usually sufficient to spray trunk and surrounding ground. |
| **Cut Worms** | D.D.T. Dust or Spray | Apply when damage appears .... | 0-1% D.D.T. 4 pints of 20% D.D.T./100 gallons water | One year old vines and grafts should be sprayed as a precaution before damage appears. |
| **Vine Scale** | Superior Oil-Guasathion Mixture | Late Winter or budswell .... | Superior Oil 3 gallons. Guasathion 25%  
2 lb. in 100 gallons water | Use sodium fluoride bait on wine grapes. Important to control infestation in other fruits in the neighbourhood. Spray or splash bait on to foliage. |
| **Fruit Fly** | Fruit Fly Baits | Apply every 7 days from 6 weeks before ripening until 2 weeks after grapes have been picked | (a) Sodium fluoride 1 oz.; Sugar 2 1/2 lb., in 4 gallons of water  
(b) Malathion 50, 4 oz.; Sugar, 2 1/2 lb., in 4 gallons of water  
(c) Malathion 50, 4 oz.; Protein lure 2-4 oz., in 4 gallons of water | Use sodium fluoride bait on wine grapes. Important to control infestation in other fruits in the neighbourhood. Spray or splash bait on to foliage. |

Nematodes or Eelworm: When planting vines in nematode affected soils use a nematode resistant rootstock such as Teleki, and graft on to it the desired scion variety. As an alternative, consult Biological Services Division of the Department of Agriculture on the use of nematocides.

Note.—The above guide for spraying vines to control diseases and pests is given as a reference for growers. Further details can be obtained from Department of Agriculture publications or the District Horticultural Officer, or the Department of Agriculture, Jarrah Road, South Perth.
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When the grapes are picked the bunch must be handled by the stalk to avoid removing the bloom. In the lower picture the operator's hand is damaging the bloom and reducing the final quality of the grapes.

of the bunch (top, middle and bottom) and from vines in all parts of the vineyard.

The sprigs of berries are crushed into a container and the juice strained through muslin or clean cheese cloth until sufficient is obtained to float the hydrometer in a glass cylinder or jar. Before a reading is taken the hydrometer is spun or twirled in the juice to remove any air bubbles that may adhere; the scale on the hydrometer may be read when it becomes steady in the juice.

Most hydrometers are standardised at 60°F. and if an accurate reading is desired then temperature corrections must be applied. For each 4°F above the standard temperature (60°F.) add 0.1° Be. to the observed reading. Thus if the observed reading is 8.6° Be. and the temperature of the grape juice is 84°F., the true Beaume reading is $8.6° + 0.6° = 9.2°$ Be.

Grapes for export must not be less than 9° Beaume. Too often has a grower picked because his neighbour has started picking or because the shipping agent is anxious to obtain grapes for an early boat.

(b) How to Pick

Damage due to drying of bunch stalks and stems should be minimised by picking in the early morning.

Avoid picking wet fruit.

When picking grapes for export the bunch must be cut from the vine with a pair of snips. The cutting edges of the grape snips should be sharp, with the point of the blade slightly rounded off.

A long stub or stalk should be left to facilitate handling, and removed or shortened after trimming the bunch at the packing shed.

Cut all leaves and tendrils to free the bunch from the vine and never pull the bunch free.
The bunch should always be handled by
the stalk to retain the protective waxy
coating on the surface of the berry. This
coating is known as the 'bloom.' Every
time a berry is touched, portion of the
bloom is removed and thus mould spores
can attack the berry through the cells on
the skin. Also evaporation of moisture
from the berry can quickly take place
when the bloom is damaged.

After picking, the bunch is placed stalk
upwards in the picking box. Again—
minimise drying of berry stems and bunch
stalks by always placing picking boxes,
empty or full, in the shade.

Never put one bunch on top of another
bunch.

The picking boxes should be strongly
constructed and should be made of
smoothly sawn wood. The bottoms should
be lined with clean cardboard or a pad
of grapevine leaves.

Placing a bunch of export grapes into the picking case.
Note the pad of wine leaves in the bottom of the case

RIGHT WAY

Trimming the bunches. Once
again it is important to
handle by the stalk, as a sup-
porting hand can rub the
bloom from the grapes.
The best method of trimming
is to hold the bunch by the
stalk and allow it to lie along
the palm and wrist while the
undersized, diseased and
blemished berries are removed

WRONG WAY
Avoid putting mouldy, split or mealy bug infested fruit in export picking boxes. The picked fruit should be transported carefully to the packing shed.

REMEMBER—grapes are a very perishable fruit and the rate and degree of deterioration is largely determined by the way the fruit is handled during picking and packing.

Rough treatment causes injuries which predispose the fruit to mould injury as well as causing “shattering.”

After picking it is most important that grapes are not exposed to sun and wind. For this reason they should be taken to the packing shed immediately and within 24 hours of picking the packed case should be in the cool store.

Rapid removal of field heat is essential if dehydration of stems and berries is to be minimised.

PACKING GRAPES FOR EXPORT

(a) The Grape Packing Shed

The packing shed should be properly constructed to permit adequate natural lighting and movement of air with protection from hot, dry easterly winds.

The floor should be of concrete with a slight fall towards a drain, thus enabling it to be kept properly clean and free of water.

The export grape shed should be at a suitable distance from any wine making activity or any livestock pen.

At no time should grapes be near volatile substances such as kerosene, soil fumigants and so on, particularly in a closed building.

The shed equipment should consist of:

(a) One set of small platform scales.
(b) Long benches for laying out grapes to pack.
(c) Packing stands for cases.
(d) Casemaking benches.
(e) Cork dustbin.
(f) Wiring machine.
(g) Metabisulphite container.
(h) Lining paper container.
(i) Stencilling outfit.

(b) Selection of Fruit

Too much emphasis cannot be made of the fact that each bunch should be carefully handled by the stalk.

When lifting the fruit from the picking boxes the bunch should be examined for general suitability for export packing.

The bunch should be held by the stalk and allowed to lie along the palm and wrist of the hand, whilst removing undersized, blemished or diseased berries.

After trimming the bunch is laid on the bench to enable the packer to select a conveniently sized bunch during packing.
If too many berries are removed from a bunch it has a scraggy, unattractive appearance and the numerous cut berry stems allow moisture to be evaporated from the bunch very rapidly.

Do not include such bunches in an export pack.

If the berries are too tightly packed on the bunch or if there is much trimming of berries, or if the bunch is immature or overmature, it should be discarded as fit only for local market or as distillation material.

The ideal bunch to pack is a large, loose bunch with large, even berries.

(c) Packing the Grapes

The export grape case is packed on the flat.

The box is lined with paper and about \(\frac{1}{2}\) in. of granulated cork dust is placed on the bottom and three or four grams of potassium metabisulphite sprinkled on the cork. The box is lightly shaken to distribute the metabisulphite.

The first layer of grapes is started by placing the points of two bunches in the corner of one end of the box with the stalks slightly towards the centre of the box and facing slightly upwards.

Other bunches are placed in the box with the points of the bunches facing away from the centre of the box at each end of the case. The bunches are placed firmly against each other.

Where necessary, spaces may be filled with small bunches not less than \(\frac{1}{4}\) lb. in weight—but the skilful packer avoids the use of small bunches as the overseas buyer prefers to handle medium sized bunches.

When the first layer is completed, add cork dust and with a firm but gentle rock, shake the cork down through the individual bunches and berries.

Repeat this process layer by layer until the case is full.

Metabisulphite should be added when the case is half full, and again when full. Avoid putting metabisulphite in heaps on the cork dust but distribute it evenly over the granulated cork.

When the packed case of grapes is opened it should not be possible to see any grape berries because of the layer of cork dust.

A properly packed case contains at least 29 lb. of grapes, \(4\frac{1}{2}\) lb. of granulated cork and 10 grams of metabisulphite. Occasional checks should be made of the weight of the cases and of the cork used in packing. A scoop constructed to hold \(4\frac{1}{2}\) lb. of cork is very useful to ensure that the correct amount of cork is placed in each box.

Finally, the export case should be correctly stencilled or labelled and bound securely with wire about one inch from each end.

Small jar with screwtop lid converted to metabisulphite shaker. Experience is needed to gauge the required amount of metabisulphite. Note that the exposed berries should have been covered with cork to avoid sulphur burn.
GENERAL

Export Grape Case

The specifications for the export grape box are:

Inside measurements (clear of divisions):

- Length: 24-5/16th in.
- Depth: 6¹/₄ in.
- Width: 12¹/₄ in.

The centre and end boards shall not be less than 9/16th in. in thickness and the sides, top and bottom boards shall not be less than 1 in. in thickness. The cases must be made from seasoned hardwood or softwood and in the case of jarrah or karri the timber shall have the end boards dressed on one side and the side boards shall be smoothly sawn.

The grower should realise that the buyer is first attracted or repelled by the appearance of the case and not by the contents.

Stained, warped or dirty boards should be rejected when making export cases. These reject boards, if not severely warped, will do well enough for repairing picking cases.

Case timber should receive careful attention and be kept under cover until wanted.

The boxes should be neatly constructed, using cement coated nails of sufficient length and gauge to give enough holding power to protect the contents.

Granulated Cork

The cork should be reasonably granulated, free from dirt or coarse hard granules or chips.

It must be stored in a cool, dry place. Cork that has been used for rejected fruit should be washed in a weak solution of sodium hypochlorite and allowed to thoroughly dry before it is used again.

When packing, no trouble is too great to ensure that the cork is kept reasonably cool. Never use granulated cork that is hot or even warm.

Potassium Metabisulphite

It is essential that this fungicide should be stored in an airtight container and not be exposed to the air unnecessarily. It should be finely ground and should not be applied directly to the grape berries.

Branding and Labelling

This should be carried out in accordance with the Commerce Regulations and instructions issued from time to time by the growers' shipping agents.

One end of the grape case should be branded with the grower's name or registered number, the name of the State (Western Australia) and the name of the variety.

The grower's number and the shipping agent's symbol should also be stencilled on the flat side of the case.

The stencilling and labelling should be neatly done and the printing should be of an appropriate size.
COMMONWEALTH EXPORT REGULATIONS—FRUIT

NOTE—For the sake of brevity some provisions are omitted.

Regulations:

In the opinion of an inspector, the fruit must be:

(a) Sound, and not diseased or otherwise in an abnormal condition.

(b) Firmly packed, in accordance with a method approved by the Secretary, in packages or containers which are suitable in respect of size, nature, durability and cleanliness.

(c) Uniform in size, and

(d) Not likely to arrive at its destination in a deteriorated condition.

With particular reference to grapes the regulations state:

1. The grapes shall—

(a) be sound, clean, of uniformly good colour for the variety, and firmly attached to the stalks;

(b) not be split, crushed, wet, soft, wilted, immature, shrivelled or scarred;

(c) be free from diseased, raisined or dried berries;

(d) in regard to grapes exported from Western Australia, the following berry size shall apply: Red Prince, Canon Hall Muscat, Flame Tokay and Red Emperor shall be $\frac{3}{8}$ in. in diameter with a tolerance of $33\frac{3}{4}$ per cent. down to $\frac{3}{8}$ in. Ohanez, Black Malaga and Bridal shall be $11/16$ in. in diameter with a tolerance of $33\frac{3}{4}$ per cent. down to $\frac{3}{8}$ in.

(e) be bunches of which at least 80 per cent. shall weigh not less than $\frac{3}{2}$ lb. each and the remainder not less than $\frac{1}{2}$ lb. each.

2. The filtered juice of the grapes shall be not less than 9° Beaume at 60°F.

3. Each box shall contain one variety of grapes only.

4. The grapes in each box shall weigh not less than 29 lb.

5. Unless the Secretary permits the use of other boxes and other methods of packing, the grapes shall be properly packed in a grape box with not less than $4\frac{1}{2}$ lb. of granulated cork of a quality approved by the Secretary.

6. At the time of packing there shall be thoroughly mixed with the cork through the box not less than 10 grams and not more than 20 grams of potassium metabisulphite, or not less than 10 grams and not more than 15 grams of sodium bisulphite.

7. The grapes shall be packed in the vineyard in which they are grown or in such other places as the Secretary may approve.
8. The varieties Ohanez and Black Malaga may be exported under refrigeration to any destination and the Secretary may permit other varieties to be so exported.

9. Subject to the approval of the Secretary as to varieties, State of origin, ports of shipment and destination, grapes may be exported otherwise than under refrigeration.

10. The Secretary may at any time cancel an approval granted under this paragraph.

11. At the time of loading the grapes into the export ship, the temperature at the centre of each box of grapes shall be—
   (a) if exported otherwise than under refrigeration, not more than 40°F.; or
   (b) if exported under refrigeration, not more than 50°F.

Definitions.

For the purpose of administering the regulations the following definitions apply to grapes—

"Sound" means not overripe, not soft, not wilted, free from disease and free from excessive bruising or physical injuries affecting the keeping quality of the fruit.

"Disease" means any abnormal condition of, or in, fresh fruit, and includes any condition arising from functional disorders, or caused by, or due to the presence, operation, development or growth of any insect, fungus, bacterium or virus.

"Clean" in relation to fresh fruit means free from excessive dirt, sooty mould, insect excreta, spray residues, or other foreign matter.

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(Department of Agriculture)

Parents are reminded that applications for 1964 admission to Muresk Agricultural College close on December 31 of this year. A preliminary selection of 1964 entrants is made after the Junior results are available early in 1963.

The successful applicants then continue with Sub-Leaving, or higher studies, in 1963.

Before the course can be commenced applicants must have studied:

Junior.—
   (a) English; Maths A; Maths B.
   (b) Physics and Chemistry (or Science A and Science B), or General Science.
   (c) Book-keeping.
   (d) Others such as Geography.

Sub-Leaving.—English; Maths A; Physics; Chemistry and others.

Those who take General Science need extra Chemistry and Physics in the following year. Some prefer to take Junior Book-keeping in the same year.

Should places still exist for 1964 commencement after the preliminary selection early in 1963, they are filled in order of application during 1963, by qualified applicants.

Duration of Course.—Two years.

Fees.—Approximately £190 per annum covering full residential charges.

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