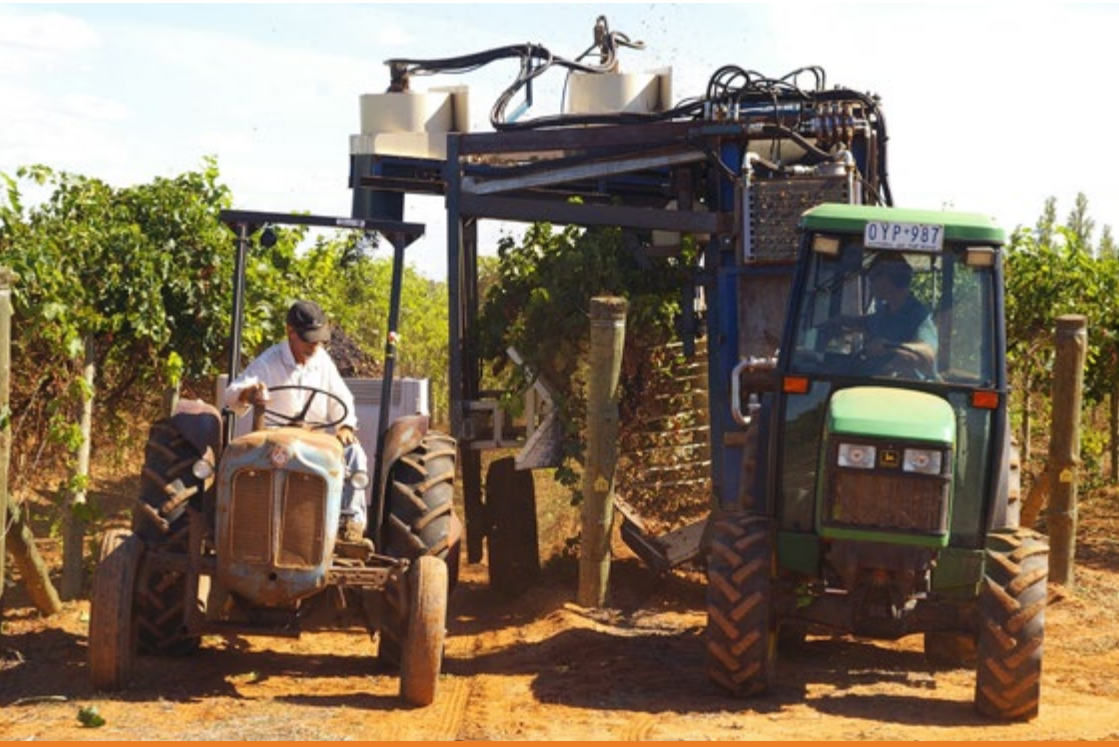
driedfruits australia



Horticulture Innovation Australia

Dried Grape Best Practice Guide

Part 1

Pre-harvest and Harvest Guide

2015

High quality, light-colored sultanas

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INTRODUCTION

Harvest is the culmination of a year's work.

A well-planned pre-harvest and harvest period offers the opportunity to maximise returns for the season's work through the production of high quality, light-coloured fruit.

However, adverse weather conditions prior to and during the curing and drying period for grapes have been a major cause of losses due to splitting, mould development and browning of fruit.

Rain events in the harvest period can result in heavy losses through penalties for mould, damaged and sticky fruit.

However, industry feedback confirms that diligent management practices and good strategic decisions in the lead-up to and during harvest has enabled some growers to produce sound quality fruit – albeit dark in colour – in even the most adverse seasonal conditions.

This Pre-Harvest to Harvest part of the Best Practice Guide presents advice and guidance on the key decisions and optimum management practices required in the period from before harvest through to the delivery of fruit to the processors. It focuses on the three major components as follows:

- Pre-harvest
- Trellis Drying
- Harvest

The guide outlines the current recommended best-practice in relation to key decision-making in the pre-harvest and harvest phase of dried grape production.

The information in this guide is based largely on industry knowledge and experience as well as a review by former Senior Research Scientist in Horticulture at DEPI Mildura Dr Karl Sommer of recent literature and research relating to dried grape production. It has been compiled with the assistance of a grower-based advisory committee.

This project has been funded by Horticulture Innovation Australia Limited using the dried grape industry levy and funds from the Australian Government.

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PRE HARVEST

Close attention to quality control needs to be maintained throughout the growing season. The pre-harvest period is busy, but quality light-coloured fruit and maximum returns depend heavily on maintaining procedures and completing tasks that allow the crop to finish and be harvested in the best possible condition. Paying constant attention to vineyard management, the running of the block, and fruit development will allow potential problems to be identified and addressed.

Quality Control

Irrigation

As the weather warms up in the pre-harvest phase, close attention to irrigation management is vital in ensuring optimum crop returns. Vines should not be placed under moisture stress at critical times of berry development – at flowering, berry set and during cell division. It is important to maintain soil moisture, mulch and/or ground cover between the rows to minimise reflected heat and mitigate risk of sunburn. Also, do not skirt or top the vines during the vulnerable stage just prior to veraison. Sunmuscats are the most vulnerable to sunburn. It is important to provide adequate moisture to mature fruit from veraison. Best practice irrigation management will also aim for a balance in the canopy to avoid excessive shading, particularly during bud differentiation.

BEST PRACTICE
Moisture monitoring technology such as tensiometers or sensors should be combined with a vineyard routine. This involves monitoring weather forecasts as well as observation of the vineyard soils and the condition of vines. These will allow anticipation of likely irrigation requirements and maintenance of appropriate soil moisture.

Pests and Diseases

Diligence in pest and disease management is critical in the pre-harvest phase. Summer heat and heavy irrigation regimes can quickly allow small infestations of pests and diseases to become major problems. Closely inspect the vineyard weekly for pest and disease issues.

Powdery mildew

Powdery mildew does not require adverse weather to cause an infection, it is considered a 'fine weather 'disease. Severe infections of powdery mildew will form fern or web-like markings on the skin of berries. As the fruit matures, it appears to be covered in ash. This infection weakens berry skins and leaves the fruit vulnerable to moulds and botrytis if adverse conditions occur.

BEST PRACTICE
Powdery mildew should be controlled and managed with routine preventative spray applications of sulphur or other preventative chemicals initially at 2, 4 and 6 weeks after budburst and further applications if required.

Downy Mildew oil spots

Downy mildew

All dried grape varieties (apart from Black Gem) are susceptible to downy mildew. Primary infection occurs when at least 10mm of rain falls and temperatures are at least 10 degrees Celsius and there is leaf wetness for 24 hours (the 10:10:24 Rule). The first signs of the disease are oily, yellow spots on leaves. Later, white downy growth develops on the lower surface of oil spots after warm, wet nights.

BEST PRACTICE
Downy Mildew can be managed with preventative or post infection sprays. Pre infection fungicides should be applied as close as possible, but prior to the infection event. Post infection fungicides are applied as soon as possible after the event.

Light Brown Apple moth (LBAM)

Although Light Brown Apple Moth appears not to cause too much damage to vine and leaf tissue, they cause problems by establishing in the centres of bunches. The caterpillars create a web-like shelter and, when feeding, damage surrounding berries. These damaged berries can cause mould development in the centre of bunches if rain occurs before summer pruning and even when sugary juices are exuded immediately after cutting. Even the application of large volumes of drying emulsion can trigger rots in the centres of badly damaged bunches.

BEST PRACTICE

A Cropwatch model is available to predict moth flights and egg hatchings. Monitor the number of egg masses on vines by inspecting the upper surface of the basal leaves and shoots. An average of one caterpillar per vine feeding within bunches warrants control. Biological control agents and insecticides can be used.

Sunmuscats affected by Botrytis

Botrytis

The grey mould Botrytis is controlled with the use of preventative sprays. Almost all Botrytis preventative chemical should have been applied before Christmas to meet Maximum Residue Limit requirements.

BEST PRACTICE

A useful strategy may be to keep one of the recommended two applications of iprodione (Rovral, Aquaflow or other brands of this chemical) to be used as a preventative spray. This chemical has a withholding period of seven days and can be kept in reserve for use if there is a rain event that may trigger a Botrytis infection. It must be noted that it is a preventative and not an eradicant, so application before a rain event is paramount.

Long-tailed Mealybug

Long-tailed Mealybug infects bunches during summer, with young Mealybugs usually emerging in November to January. If conditions are mild and humid Mealybug will breed and multiply in bunches. Although they do not cause any apparent physical damage to fruit, Mealybug exudes honeydew over berries, which acts as a barrier to the application of drying emulsion. This causes the fruit to dry slowly and become sticky. The result can be good fruit adhering to the slow-drying, sticky fruit and causing further damage to what would otherwise be good, sound fruit. The presence of ants is a good indicator of insects such as Mealybugs or grapevine scale.

BEST PRACTICE

Biological controls, such as predatory ladybirds, can be purchased for release to slow population growth. In varieties or blocks with a history of Mealybug damage, preventative sprays are necessary.

Contaminants

Contaminants continue to be a major issue for processors and cause a heavy cost to the industry. For growers, they are a significant factor in the downgrading of fruit. Elimination of contaminants depends on observing problems and controlling them in the pre-harvest period.

Snails

Snail populations can increase rapidly if controls are not undertaken. Populations spike during wet autumn and spring periods when eggs are laid on moist soil. The young snails develop on weeds and cover crops, as young foliage develops on vines, the snails migrate up into the trellis and vine canopy, then during hot weather they seal themselves onto a hard surface and remain inactive. This means control is most effective before snails move up into the canopy and the weather is hot.

BEST PRACTICE

Controls include the removal of weedy areas that can harbor large numbers of snails, disturbing egg beds through cultivation and the use of baits to control numbers. Copper sprays will also repel snails from vines, and should be applied before turning in weeds or cover crops.

Khaki Weed. Fruit contaminated by spiked weed seeds will be rejected

Spiked weed seeds

Caltrop (Californian Puncture Weed), Three-Cornered Jack, Gentle Annie and Khaki Weed all produce spiked weed seeds that contaminate dried fruit production. One plant can produce up to 1000 spiked weed seeds.

BEST PRACTICE
Maintain vineyards free of spiked weed seed plants by a regular cultivation, hand chipping or herbicide use throughout the year, but particularly in the pre-harvest and harvest periods.

Planning

Harvest action planning

The potential to maximise the returns from harvest depends heavily on the amount of preparation and planning done in the pre-harvest period. Having a comprehensive pre-harvest checklist allows for a well-planned harvest, informed decision-making at every stage – and the underlying preparedness and ability to change course if weather conditions or other factors intervene.

Regardless of any forecast rain, harvest should start at such a time as to maximise use of the hottest of the weather conditions. This will allow a rapid breakdown of the sprayed and summer pruned fruit, optimising the chance of producing high quality and light coloured fruit. When making your decision to begin harvest, consideration needs to be given to:

- The maturity of fruit and whether it will ripen further
- Variations in maturity - all patches of all varieties should be carefully tested for the progress of maturity
- The likely amount of useful drying time left towards the end of the season.
- An awareness of the usual seasonal conditions helps determine the start time of summer pruning for later maturing varieties

However, success or failure in producing high-quality dried grapes is often dependent on how the grower responds to weather conditions and other events that are outside their control and planning. There are a number of areas where pre-harvest planning can minimise the stress and uncertainty of decision-making when conditions change.

Weather monitoring

As fruit is at the vulnerable stage of near ripeness, it is important to diligently monitor forecast weather conditions. Sophisticated weather modelling now allows a high degree of accuracy, even with medium-term (seven day) forecasts. For example, the extreme and damaging weather events of 2014 were forecast for seven days before they occurred.

BEST PRACTICE
Check seven day forecasts daily. If a rain event with humid weather is forecast, assess the ripeness of your fruit and act on the most suitable of your action plans to manage your harvest.

Fruit maturity monitoring

The progress of the maturity of all varieties should be constantly monitored by patches as harvest approaches. If rainfall occurs, this awareness allows informed decision making about the best patch in which to commence any salvage summer pruning. It will also give the best indication of where to start in the ripest patch if normal circumstances prevail.

BEST PRACTICE

Although the use of a refractometer and taking single berry samples gives an indication of maturity, a more detailed sampling method is recommended. This involves taking bunch samples throughout the patch and from various positons within the vine canopy. This sample should then be crushed and the juice tested with the refractometer.

A well-prepared vineyard floor

Vineyard floor management

The vineyard floor should be prepared for drying and harvest well ahead of time. A well-prepared vineyard floor can speed drying as well as aiding efficient harvest operations.

BEST PRACTICE

The vineyard floor should be prepared in such a manner as to maximise the absorption of heat during the day and its release during the night to hasten drying or rather reduce re-absorption of moisture overnight. Avoid standing cover crops and mulch should be minimal (almost to bare earth). Bare earth absorbs most heat.

Equipment preparation

It is best to be ready to go at harvest and not making running repairs as work commences. If contractors are used, it is advisable to make early contact with them during the season to make tentative bookings for work.

BEST PRACTICE

Equipment should be serviced and ready for operation well ahead of harvest. This will give plenty of lead-time if new parts or unexpected services are required. When using contractors, follow up the initial booking by keeping in regular contact to update your situation. This will help avoid not being able to have the contractor on-site working when you need them.

TRELLIS DRYING

The adoption of trellis drying allows growers to commit large areas to drying quickly, and allows the more effective management of the process following rain events during harvest. The development of trellis drying as the most efficient and cost-effective technique for dried fruit harvesting has required the implementation of summer pruning techniques. The planning and completion of an efficient summer pruning operation at the optimum time is a key factor in maximising the quality of the dried fruit crop. It is important that everything possible is done to maximise the speed of drying, in order to minimise the time that drying fruit is exposed to the elements.

Cordon Bunch removal

Removing the unwanted cordon bunches that are not attached to the severed canes is an integral step in trellis drying. It reduces contamination of the grapes as some harvesters remove both dried and undried fruit. Cordon bunch removal is particularly required for varieties with canes that are fruitful from the base bud to the end of the canes (Sunmuscat, Carinas and to a lesser extent Sunglo). However, cordon bunch removal is also recommended in the management of sultanas that will be summer pruned. Not having to deal with cordon bunches at harvest allows a better chance of concentrating on timely cutting and wetting.

Chemical cordon bunch removal vs crown picking

The removal of cordon bunches can be done by the use of chemical or by hand. Chemical cordon bunch removal minimises the summer pruning operation, as there is no need to pay for bunches to be hand-removed and placed on the trellis during harvest. It is estimated that the cost of hand removal at harvest is about equal to the value of the fruit – resulting in no nett gain in returns.

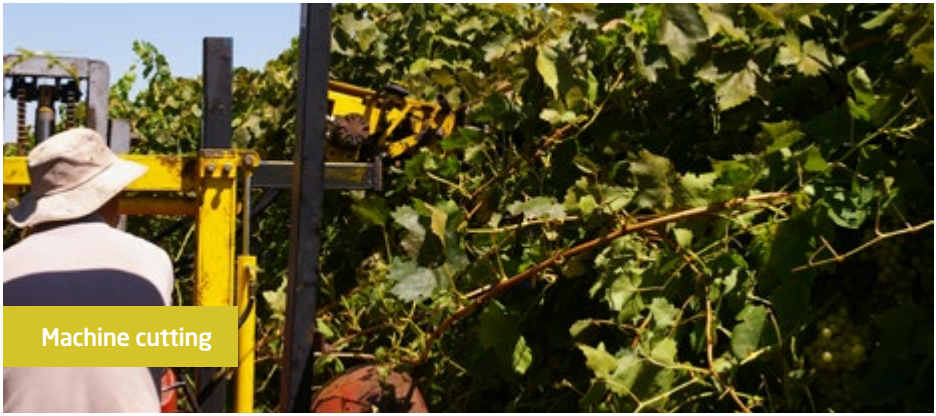
Due to the draping of the picked cordon bunches over trellis wires, fruit from these bunches generally dry slower and thus darker than the natural hanging summer pruned fruit remaining on the fruiting canes. In most cases this will reduce the colour quality of the harvested fruit resulting in a lower grade and thus lower returns.

In the event of rain, this fruit is also more vulnerable to mould infestations due to its inability to shed water unlike the naturally hanging bunches, which will most likely still turn a dark colour but will not be as susceptible to mould infections. Because of the difficulty in seeing cordon bunches for picking, and the nature of being draped over the wire, drying of this fruit is slower than the rest of the crop. This can cause a bottleneck in the harvesting of the crop because of its higher moisture content possibly delaying harvest while waiting for this fruit to dry. This delay waiting for picked cordon bunches to dry could jeopardise the whole of the remaining crop if adverse weather occurs.

Chemical application

Traditionally, ammonium nitrate was used to remove cordon bunches, but security concerns have heavily restricted the use of the chemical.

As a replacement for ammonium nitrate, calcium nitrate applied at a rate of 2.6% (w/v) can be used. Calcium nitrate is effective in burning off the unwanted cordon bunches. Target the area above the cutting zone, also spraying the replacement canes where unwanted bunches are developing. Spray when the developing bunches are at pre-bloom at the 6 to 8 leaf stage.



Machine cutting

Summer Pruning

Trellis drying requires the fruiting canes to be cut (summer pruned). This is not a full pruning of the vine, such as is undertaken in winter, but a severing of the canes to separate the bulk of the fruit bunches from the vine, while retaining at least 50% of the foliage. Summer pruning can be done mechanically or by hand. If the operation is to be completed by hand, consideration must be given to the number of people required to complete the job in the necessary time and the availability of labour. Communication with labour sources needs to commence as maturity increases to ascertain readiness and availability of workers if adverse conditions occur.

Calculating a start date for cutting

Whether hand labour or machine cutting is to be used, it is important to know how long that it will take to complete the summer pruning operation. Knowing how long the job will take to complete will influence the start date. On swing arm trellis, a machine can cut between 1 - 1.5 acres per hour (and has the advantage of being able to work at night providing there is adequate lighting installed on the tractor). A worker hand pruning can cut approximately two acres per day. (It is considered that one machine cutter is equivalent to 6-8 people hand cutting.)

BEST PRACTICE

A key factor in deciding when to start cutting is to consider when the summer pruning operations should ideally be finished for the varieties grown on the property.

Planning the harvest

Under normal harvest conditions, the ideal date to commence drying the varieties (finish summer pruning) depends on a number of factors. These include:

- Maturity of the variety
- Climatic conditions when drying takes place
- Day time temperatures
- Day length
- Night time temperatures
- Humidity day and night
- Dews and reabsorption of moisture
- The weather conditions in which the fruit will be drying

BEST PRACTICE

It is suggested that the completion dates for the summer pruning of the various varieties should be:

- **Carinas - No later than the end of February**
- **Sultanas - No later than the end of February - March 2 (beginning of March)**
- **Sunmuscats - No later than March 7 (End of 1st week of March)**
- **Sunglo - No later than March 7 (End of 1st week of March)**

These dates are suggestions only, but under normal circumstances, they provide the optimal combination of maturity, temperature and day length to give the best chance of successfully getting the fruit sufficiently dried to harvest. All other factors listed above should be taken into account when calculating commencement dates each season.

Wetting

The wetting (emulsion spray) operation is of critical importance. Good wetting involves covering all berries on all bunches with drying emulsion. This results in even drying, consistent quality and reduces blobs that not only ruin the fruit's grade, but also make harvesting difficult.

Sultanas after wetting

Wetting (emulsion) rates

Sultanas

For sultanas, the recommended wetting rate of drying oil/potash emulsion (for both Voullaires EE-Muls-Oyle and Mistrol oil) is 0.5% oil and 0.6% potassium carbonate (potash). In other words, 0.5 litres oil and 0.6 kg potash per 100 L water.

To use this recommended rate, fruit must be fully ripe and be at least 220Brix maturity. This allows the emulsion to spread around the sprayed berries. Altering the rates of oil and potash to 0.6% oil and 0.8% potash or marginally higher on less ripe sultanas may be considered to promote the early break-down of berries in the drying process. This may not bring about an earlier finish to the drying process but gives fruit the best opportunity to dry as rapidly as possible and not be inhibited by a slower break down early in the drying process.

A second spray of drying emulsion at lower rate 0.5% oil and 0.6% potash (as per instructions on the drum) should be considered to be applied as the fruit is beginning to break down. This will help hasten the drying of the fruit, and help minimise the time that fruit may be exposed to rain conditions.

Sunmuscat and Sunglo

Consideration should be given to increasing the recommended rate of 0.5% oil and 0.6% potash to at least 0.6 -0.8% oil and 0.8 - 1.0% potash for Sunmuscat and Sunglo. This is due to the difference from sultana in the skin and the wax layer. A second spray of drying emulsion at lower rate 0.5% oil and 0.6% potash should be considered to be applied as the fruit is beginning to break down. This will help hasten the drying of the fruit, and help minimise the time that fruit may be exposed to rain conditions

BEST PRACTICE

To test for the best spread of dip emulsion, dip half a berry into the emulsion mix and allow it to hang vertically. Observe the 'creep' up the berry. If the mixture does not move around the berry the rate of the emulsion may need to be altered to a higher rate to give better coverage.

Wetting application

Wetter application

All fruit should be thoroughly wet with heavy streams of high volumes of emulsion. The bulk of the spray should be directed from under the bunches to force up into the bunches rather than poured over the top of the bunch and shed off away from the centres of the bunches. A second spray at a lower rate should be applied to varieties such as Sunmuscat and Sunglo to hasten the breakdown and drying of the grapes. This application should be made as the berries are beginning to collapse and shrivel, this will also allow better penetration into the centres of the bunches.

BEST PRACTICE

Care should be taken to not over apply and increase the rate of the drying emulsion too much as it further alters the wax layer on the berries. This improves moisture movement out of the berries but, importantly, it will also mean moisture from rain and dews is more readily absorbed back into the berries, causing re-hydration resulting in slower drying and possible darkening of the fruit. Over treatment of fruit with drying emulsion can also cause the fruit to darken and go puggy in storage, thus reducing quality.

Scenarios for summer rain events

From early January, it is vital to begin careful monitoring of weather forecasts from the Bureau of Meteorology (BOM) and other weather sites in which you are confident. It is essential to plan for a number of weather scenarios to enable preparedness and consequent action when and if rain occurs.

Split sultanas

Some possible scenarios for summer pruning

The following are some possible scenarios for summer pruning varieties that are not rain tolerant, especially sultanas.

1. No rain pre and during harvest.

"Business as usual". Rainfall data shows that it is a rare occurrence to have no rain right throughout the whole harvest period. Despite the forecasts, all summer pruning should proceed with a sense of urgency to make the most of the hotter drying conditions and longer day length. This maximises the likelihood of drying high quality, light-coloured grapes.

2. Rain late January (Fruit immature, but splitting)

This scenario places growers between a rock and a hard place. Fruit will be immature but splitting has occurred. When confronted with this situation consideration needs to be given to what the potential losses are going to be – loss of weight due to lower than optimal maturity, high losses of crop due to mould and botrytis infections, moulds in bunches and defect and contamination penalties. The following table can assist in making these assessments.

INDICATIVE MATURITY TABLE					
Date	Maturity Brix	Maturity Baume	Drying Ratio	Wet Yield (tonnes/acre)	Dry Yield (tonnes/acre)
Feb 8	18.7	10.4	4.5	13.5	3.0
Feb 15	19.7	10.9	4.4	14.1	3.2
Feb 22	20.8	11.6	4.1	14.3	3.5
Mar 1	21.8	12.1	3.8	14.5	3.8
Mar 8	23.0	12.8	3.5	14.6	4.2

If the decision is made to go ahead and summer prune, priority should be given to starting with the ripest fruit, which is also likely to be the most damaged patch.

3. Rain forecast early February (Fruit near maturity)

Careful consideration must be given to the certainty of the chances and amount of forecast rain. At this stage the maturities of the fruit from across the vineyard, or at least the patches considered to be early maturing, should be known. Again, consult the Indicative Maturity Table (pages 17) showing weight gained vs Brix. Consideration should be given to summer pruning before any predicted sustained rain if there is potential for little weight loss. Do not spray the fruit with emulsion at cutting. Spraying should commence once the rain has cleared and should continue with haste until finished.

4. Rain forecast early - mid February (Fruit mature)

As with scenario three, the ripest patch or most susceptible to splitting should be summer pruned before any significant rain event. There should be no concern for weight loss due to premature cutting. Once the rain has cleared spraying should commence as soon as possible to maximise the chances of producing light fruit. Ideally, wetting should be undertaken within one day either before or after summer pruning. However, with the likelihood of humid conditions prevailing after rain, this period may be able to be extended without causing the fruit to potentially darken.

5. Rain during summer pruning and wetting

Depending on how long after wetting that rain occurs, fruit will need to be re-sprayed. Opinion is divided on when this time is. Carefully inspect the fruit, looking for bloom to re-appear on the skin. If the rain-affected fruit has 're-bloomed', spraying with an emulsion of 0.5% oil and 0.6% potash is recommended. Re spray fruit that has been originally sprayed less than 5 or 6 days before the rain Assess how much the rain has penetrated into the centre of the bunch to determine if the respraying operation is carried out using a wetting machine or spraying with side nozzles with or without air assistance.

6. Rain after completion of summer pruning and wetting

When rain occurs while fruit is still turgid, it is unlikely to darken as a result of the enzyme effect on the skin. However if this fruit is not re-sprayed (particularly that which has not long been wet) it will again re-bloom and dry slowly, resulting in a dark colour. Re-spray this fruit using the appropriate equipment, but care must be taken not to 'over do' the spraying with emulsion. Too much emulsion on the berries will promote higher reabsorption hence producing dark fruit.

7. Rain near completion of drying on vine (Fruit 25-20% moisture)

Do not panic when fruit is at this stage of drying. It is usually too wet to harvest. If fruit is harvested at this moisture level or above, berries will be broken, sugars will exude from the broken berries and the harvested fruit will become a sticky mess, with leaf fragments adhering to the berry surface. It is best to wait for the weather to clear and the fruit to dry to a stage where it is in a good condition to harvest without causing any damage to the fruit – this is somewhere around 16% - 15%. It is pointless waiting for the fruit to dry to 13% or less as it has to be an exceptionally hot and dry season for fruit to be fully dry and harvested for delivery straight off the vines into the bins.

BEST PRACTICE

It is important that, as grapes begin to ripen; regular maturity samples are taken and recorded of fruit from various patches of vines. This knowledge will assist in making decisions of when and where to start summer pruning in the event of rain.

HARVESTING

It is essential to approach harvest with a sense of urgency but not panic. Be organised and prepared. One day lost due to inaction and being caught by a rain event often seems to compound – with the missed opportunity to get fruit harvested frequently manifesting in weeks of delay.

Rotary head harvester

Planning

Harvest preparation

Monitor the weather forecasts and make good judgments based on the confidence that weather forecasting is more accurate than it used to be. When fruit is ready to harvest, be ready to start. If you have to employ a contractor, keep in regular contact so they are updated, enabling your property to be fitted into their schedule.

Once you have started harvesting, make the best of the opportunity to maximise the amount that can be harvested in the shortest time.

BEST PRACTICE
Harvest fruit that is ready - don't panic, even if weather and conditions are adverse. Potential good, sound, high quality fruit can be ruined and turned into a sticky mess with adhering leaf when fruit is harvested too early or too wet.

Timing

Waiting until the fruit is 13% moisture content or less on the vines before harvest is risky and, in reality, should not be planned for. If fruit is harvested in good weather conditions at this low level it must always be considered a bonus rather than the norm.

BEST PRACTICE

Ideally, fruit should be harvested at a moisture content of 16% or less.

Daily harvest commencement

On a daily basis, fruit is usually ready once the sun has crisped up the leaves and berry stems. Test both the leaves and stems using the best practice method outlined below. Once they are ready, harvest should commence immediately and continue into the night until dews turn the stems moist and tough making the fruit unharvestable.

BEST PRACTICE

Test the dried out leaves on the summer pruned canes. If they are not brittle and feel like a 'wet rag' fruit will not be ready to harvest. If the dried leaves crumble into small pieces when squeezed in the hand, fruit may be ready to harvest. The berry stems should then be tested to see if they are brittle and break off the bunch stem easily, confirming the fruit is ready to harvest.

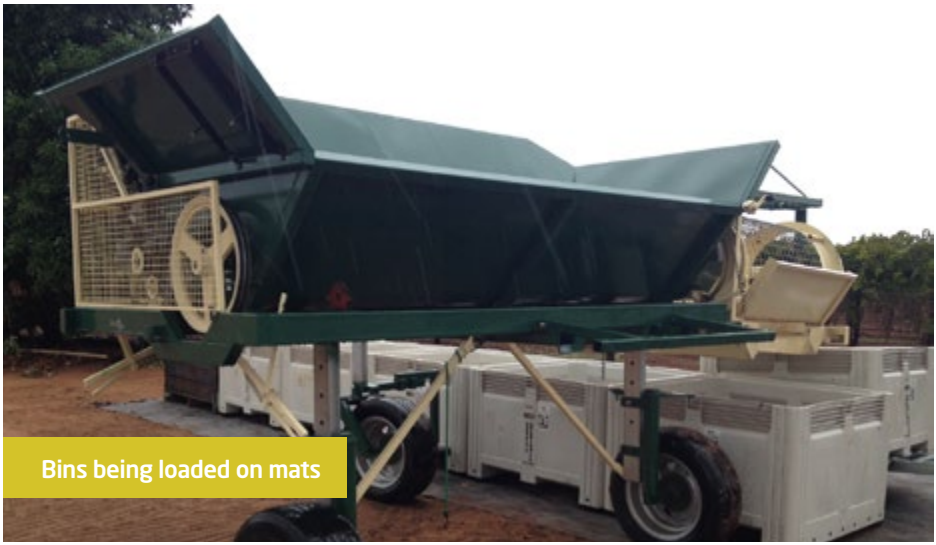
Fruit management

If fruit is harvested hot at moisture levels above 13%, care should be taken to not stand the harvested fruit, hot in bins. Even if left standing for only one day, hot harvested fruit can lose its light golden colour and turn amber or even brown.

BEST PRACTICE

If possible, growers should consider harvesting at night when the fruit has cooled. However, due to seasonal and resourcing factors, harvesting in the heat of the day is often unavoidable. Fruit that is harvested hot should be dehydrated immediately to avoid the darkening of berries.

Contaminant prevention



Bins being loaded on mats

Weed seeds

Although weed seeds such as Gentle Annie and Caltrop should have been controlled in the pre harvest phase, it is still possible for contamination to occur during harvest. Inspect the vineyard to make sure that there are no spiked weed seed plants growing under and into the vines. After harvesting do not pick up fruit from the ground during 'gleaning' (collecting fruit missed by the harvester) as prickle seeds may inadvertently be picked up with the fruit or prickles may be imbedded into the grapes.

BEST PRACTICE

Bins should not be placed onto bare soil. All bins should be loaded onto a concrete pad, a clean area such as matting or onto bearers. This will eliminate spiked seeds bedding into the bearers of the fruit bins. Any spiked seeds on bins could quite easily end up in the fruit when it is tipped into dehydrator bins. Seeds could also be dislodged when stacking bins on top of each other and end up in the fruit.

Glass

Fruit that has glass detected in it will be seized and classed as No Commercial Value (NCV). It will be destroyed.

BEST PRACTICE

Have a glass exclusion zone in storage and loading areas to ensure that glass never gets into the fruit. Ensure that any lights in storage sheds are protected and that covers are over harvester lights.

Stones

Care must be taken to avoid contaminants such as stones. Stones can get into bins and fruit when they are flicked up off tractor and trailer tyres when travelling on roads. Stones can be picked up and dropped into the fruit by poor or careless forklift operators causing the tynes of a fork lift to dive into the ground.

BEST PRACTICE

The only way to ensure stones are not picked up on fork tynes and transferred to fruit is to always load bins from a clean pad such as a plastic sheet. Ensure staff are well-trained and aware of the expectations for vineyard and fruit management during harvest.

Snails

Snails should have been eliminated in the vineyard, however, if they have been harvested off the vines with the fruit, it will be necessary to clean them out.

BEST PRACTICE

Removal of snails from fruit can be achieved by riddling and careful but costly sorting through the fruit by hand to detect and remove snails.

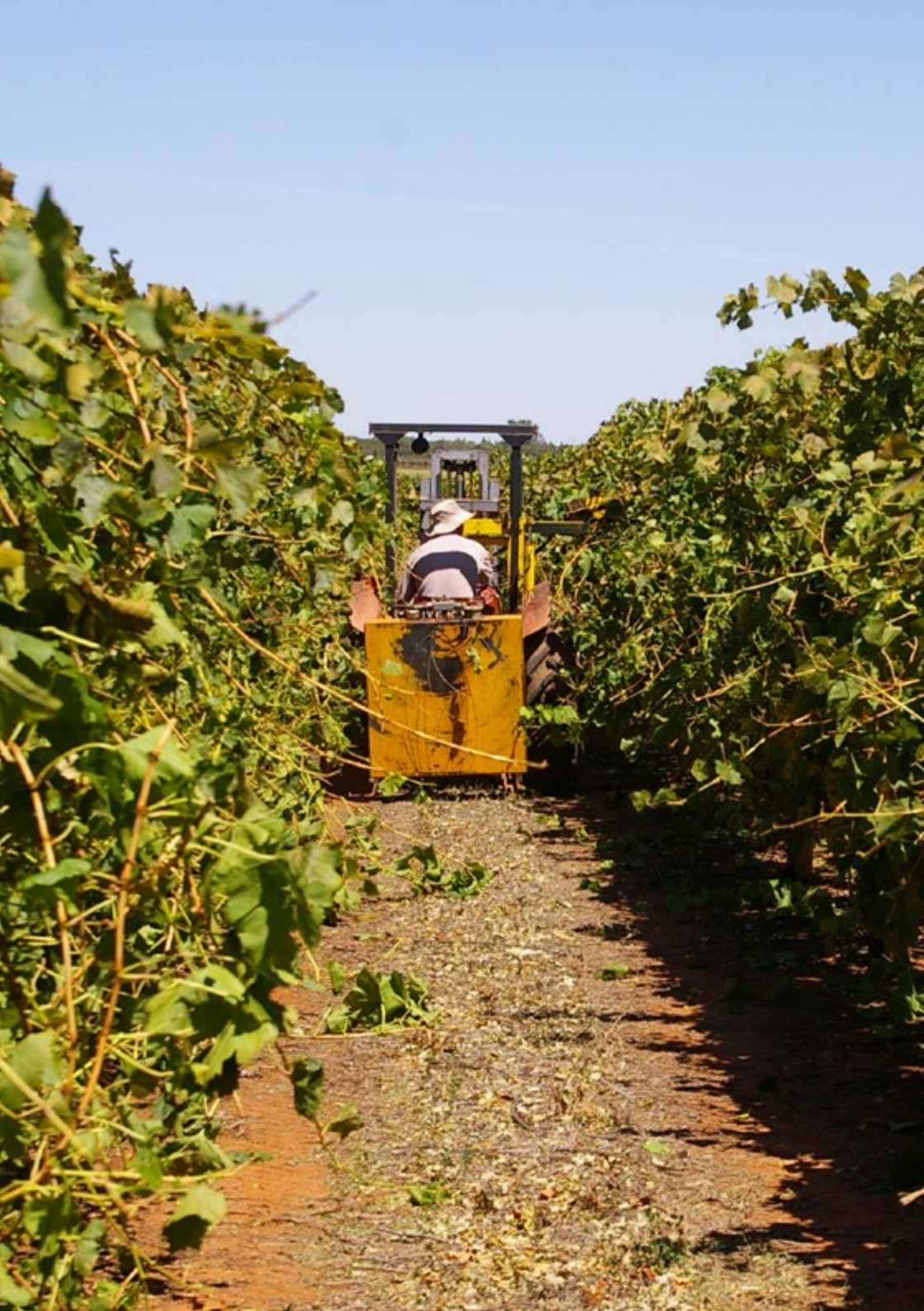
Dehydration

It is important to store fruit in bins for no more than a couple of days before it is finish dried (dehydrated). Hot fruit should be stored in bins for no longer than a day. Even in this short time, fruit may turn an amber or dark colour depending on its temperature and moisture content. It is important that once the fruit has been adequately dried that it be cooled down long enough to return it to ambient temperature. This may take as much as four hours of running the fan, forcing cool air through the fruit.

Some growers report successful removal of green tinge in fruit through careful dehydration. Anecdotally, turning the dehydrator off and letting the fruit cool down of its own accord overnight has been said to remove green tinge. However, it must be stressed that caution should be taken that the fruit does not become puggy and start to darken.

BEST PRACTICE

While dehydrating fruit, carefully monitor temperature and/or thermostat control to maintain temperatures of about 60° degrees celsius but do not exceed 60° degrees celsius as caramelisation of the sugars in the fruit may occur. This will result in the imposition of penalties when the fruit is delivered.



driedfruits australia

Horticulture Innovation Australia

Further information:

This booklet offers guidelines for decision-making at critical points in the pre-harvest and harvest phases of dried grape production. It offers suggestions for management practices that can help improve the quality of dried grapes produced.

This guide is to be read and used in conjunction with the Dried Grape Production Manual and the Spray Diary, both of which are available from Dried Fruits Australia.

More specific and detailed information and guidance on management procedures and current research is available by contacting the Industry Development Officer at Dried Fruits Australia. Growers should also seek specific information and advice from their preferred processor.