Feeding smoke tainted grapes to stock

AWRI webinar

27/02/2020

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Agriculture Victoria
Rutherglen

Some livestock feeding considerations…..

- Is it safe – toxicity, MRL's etc
- What does it actually provide ?
  - Energy, Protein, Fibre
  - What performance can it deliver
- PRICE, PRICE, PRICE
- Is there consistency of supply
  - Starting lambs/calves on a new feed takes time
  - In emergencies a short term/high volume option may work…….
  - More often, it's a 49d lamb, 70d cattle program
- Can I 'handle' it, storage and feeding

Are grapes safe to feed……

No mention of issues in ‘TOXICOLOGY FOR AUSTRALIAN VETERINARIANS’ – Ross A. McKenzie

(they do discuss kidney damage to dogs consuming grapes – but nothing from a ruminant perspective)

- Is there a ‘Commodity Vendor Declaration’ ?
  - If not, would have to limit use to animals not immediately destined for slaughter ie breeders
- High sugar content may lead to acidosis (like fodder beet), careful introduction to stock ‘likely’ critical. Limit initial access

Cost comparisons

- Most common source of energy is grain
  - ‘Common’ grains Barley, Triticale, Wheat - $350/tonne
  - in the order of 90% DM
  - ‘give or take’ 12 MJ ME/kg DM
    - both important when costing feeds

$350/tonne = 900kg of DM

900kg DM * 12 MJ ME/kg DM = 10,800 units of energy/purchased tonne

35,000 cents / 10,800 units of energy = 3.24 cents/MJ

Cost comparisons

New feeds need to be cheaper than 3.24 cents / unit of energy

Whole grapes – ‘probably’ 10% DM and 12.5 MJ ME/kg DM

100kg DM * 12.5 MJ ME = 1,250 units of energy
@ 3.24 cents/MJ * 1,250 = 4,050 cents for fresh tonne of grapes

Grain at $350 = Grapes at $40/tonne

A few key comparisons

	Cost	MJ/kg DM	DM	MJ/t	Cents/MJ	Equivalent 'fresh' grape price
Barley	$350	12	90	10,800	3.24	$40
Hay	$280	8.5	80	6,800	4.00	$50
Silage	$200	9.5	46	4,370	5.00	$62.50
						(1250 units of energy * c/mj)

- Grapes could be very low protein…..
- Would limit their application, not so suited to young or lactating stock

Taking transport out of the equation may help……

- Transport costs not helping
- No energy in water, yet expensive to cart

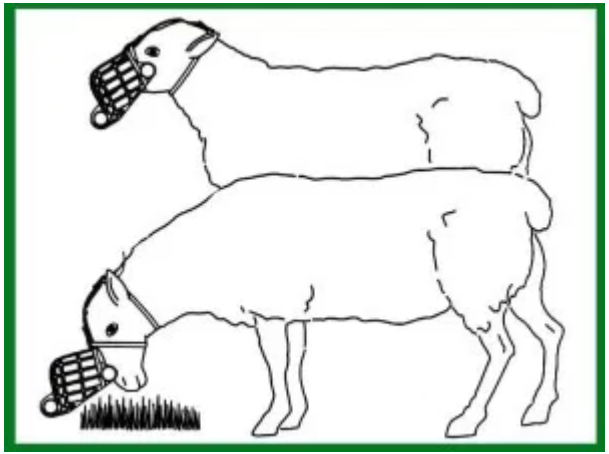
IF, 24t on a truck, $15/t cartage = $360

(21,600kg grain v 2,400kg grape)

2c/kg DM grain v's 15c/kg DM grape

- But damage to the vines
- Reduced carbohydrates to energy stores – cost next year

The WineBAA……



https://onpasture.com/2017/12/18/sheep-can-now-safely-graze-vineyards/

Final thoughts (from the livestock perspective)

- It appears safe (careful induction)
- The feed quality is attractive

  high energy = high growth

- Limitations are real
  - Needs to be around $30/t
  - Transport may be prohibitive
  - ‘Browsing’ may give later impacts
  - Handling on farm may be an issue

Biosecurity considerations for the transport of smoke affected grapes

Part of AWRI Webinar: '*Options and considerations for unharvested fruit in vineyards following smoke taint*'
27 February 2020

Suzanne McLoughlin
Vinehealth Australia

WHAT YOU NEED TO KNOW

Movement of smoke-affected winegrapes

- Same considerations as for non-smoke affected winegrapes
- Range of requirements to understand and comply with to reduce the entry, establishment and spread of pests, diseases and weeds

- Regulated endemic pests
- Movement conditions
- Other considerations (e.g. transport, bins, farm-gate hygiene)
- Where to go for help

VINEHEALTH AUSTRALIA

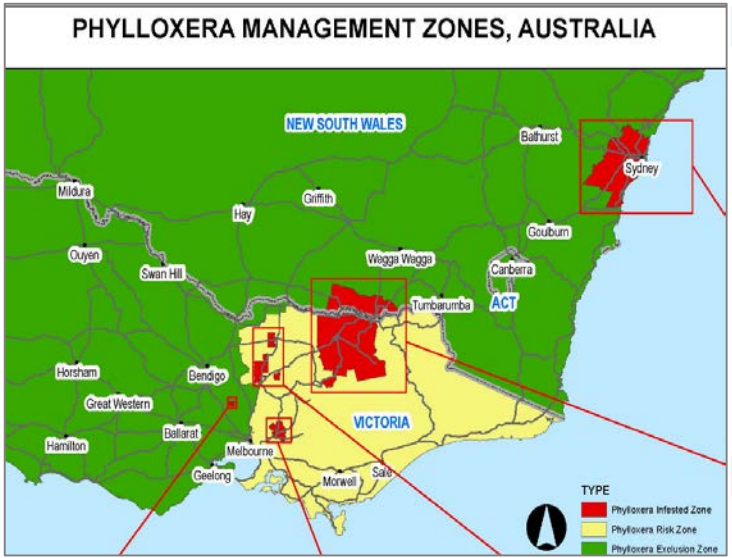
REGULATED ENDEMIC PESTS FOR THE VITICULTURAL INDUSTRIES

- Three key pests present in parts of Australia, actively managed to control spread
  - Management targets the pests and vectors of spread
- Phylloxera most important for market access for winegrapes

Grape phylloxera	Queensland fruit fly	Mediterranean fruit fly
		
Parts of VIC, NSW	QLD, VIC, NSW, NT	WA

PHYLLOXERA MOVEMENT CONDITIONS

Prohibited or conditional movement of phylloxera risk vectors between three Phylloxera Management Zones



https://vinehealth.com.au/tools/maps/phylloxera-management-zones/

Regulated

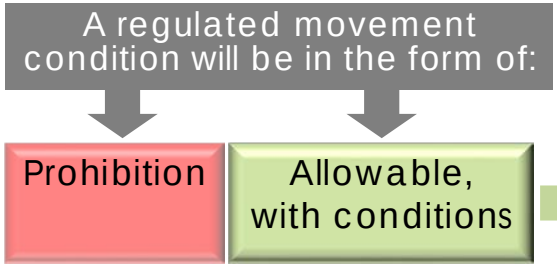
- Grapes (wine, table)
- Grape-related products (juice, must, marc, wine)
- Machinery, equipment, vehicles
- Planting material
- Diagnostic samples

Non-regulated

- People (footwear, clothing)

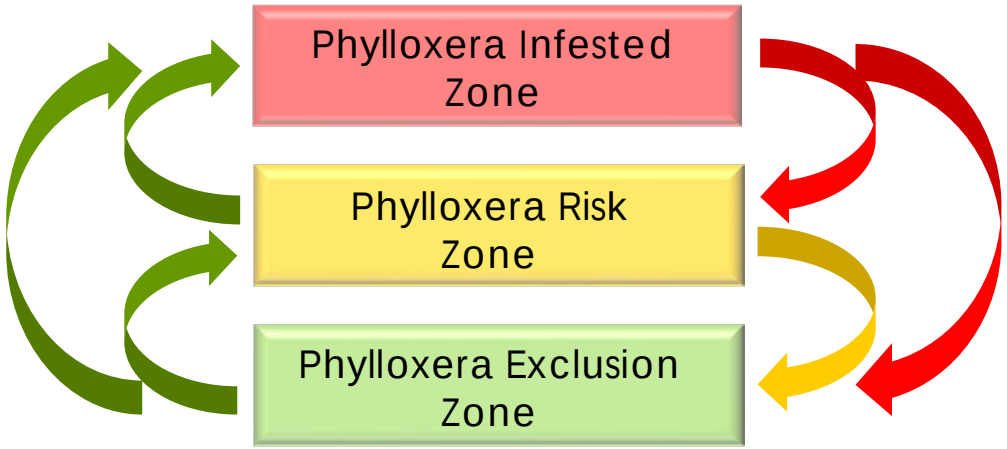
PHYLLOXERA MOVEMENT CONDITIONS

- Movement conditions are established and managed by state biosecurity departments
  - Differ between states
- Refer state Plant Quarantine Standard/Manual, or equivalent
- Comply with receiving and sending state movement conditions



- Cleaned of soil and plant material
- Treated using a prescribed method
- Consigned to prevent spillage
- Approved route of travel
- Spillage management plan
- Biosecurity documentation
- Register as an importer
- Inspection on arrival

PHYLLOXERA MOVEMENT CONDITIONS - WINEGRAPES



OTHER CONSIDERATIONS WHEN MOVING WINEGRAPES

Organising and receiving transport (trucks and bins)

- Ask for movements in last 21 days
- Arrive clean of soil and plant material (including vehicles)
- Load on hard-stand area away from vine rows
- Drivers not to enter vine rows

Image courtesy Sagasser Transport

Moving between blocks

- Harvester hygiene to address
  - Potential for pest and disease spread
  - Smoke-affected grapes
- Harvester washdown between blocks and vineyards
  - Pick clean to dirty

ACCESS THE RIGHT HELP

For exact movement conditions, contact state biosecurity departments

https://vinehealth.com.au/regulation/movement-regulations/

Have this information handy:

- What material you want to move
- When
- Quantity and number of consignments
- Location from
- Location to

Biosecurity SA Market Access
Catherine Klaer
(Senior Plant Biosecurity Officer)
(08) 8207 7814

Agriculture Victoria Plant Standards
(03) 8401 6900 or 136 186

Plant Biosecurity NSW Dept. Primary Industries
Bev Zurbo
(Senior Industry Liaison Officer)
(02) 6938 1976

The Australian Wine Research Institute

Options and considerations for dealing with unharvested fruit in smoke-affected vineyards webinar.

February 26, 2020.

Tony Hoare, Senior viticulturist

The Australian Wine Research Institute

“Managing smoke-affected vineyards where fruit is not harvested for winemaking”

Questions ?

The Australian Wine Research Institute

Unharvested winegrapes due to smoke taint can cause problems for the following season.

- Besides being unsightly and attracting vinegar flies, what are the main considerations of managing a vineyard with an unharvested crop?
- How does the unharvested crop influence the following season's crop?
- What are the options of removing the crop cost effectively?
- Why is the timing of fruit removal important?

⬆ Disease pressure

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- Unharvested fruit is colonized by fungi which use sugars and amino acids from “leaking” berries as a nutrient source.
- Inoculum is produced which then over Winters on canes and leaf litter and can increase disease pressure for the following season – especially Botrytis.
- Removing unharvested fruit before disease occurs reduces the risk of infecting canes, spurs and leaves with fungal pathogens.
- The cost of removing the fruit can be offset the following season by not having to use additional controls for disease and avoiding lost income from potential winery downgrades for diseased fruit.

Canopy management

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Post harvest vine care influences budburst, vine growth and yield for the following season;

- Maintain a healthy canopy through adequate soil moisture and the application of post harvest nutritional supplements. – avoid defoliation.
- Avoid leaf loss from Downy mildew infections and insects by maintaining preventative control program until leaf fall.
- Avoid increased disease pressure for the following season and beyond by preventing Powdery mildew infection with a preventative control program.

Post harvest care of grapevines

The Australian Wine Research Institute

Link to factsheet

⬆ Pruning costs

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- Unharvested bunches slow pre-pruning machinery and hand pruning.
- Barrel pruners and cutter bars become clogged by “sticky” unharvested bunches. Speeds can be slower resulting in increased costs to the grower.
- Mechanical pre-pruners do not remove the majority of bunches and these then add to the cost of hand pruning.
- Pruners are slowed by the presence of bunches through additional cuts to remove bunches and the sugar also covers pruning equipment and covering spurs.

<u>Cost analysis</u>

Additional costs of hand pruning unharvested vineyards is estimated at $0.05 - $0.10/vine or an extra $167 (ex GST) per Ha in an average vineyard (3 x 2m spacing).

This equates to a 10 – 20% increase in pruning costs.

Harvesting for distillate

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- Smoke-tainted grapes can be used for spirit production.
- The process of distillation of wine made from smoke-tainted fruit separates glycosides from the spirit. Remaining volatiles can be removed by carbon fining if desired by the distiller.
- In general, small distilleries lack the equipment to process grapes to wine.
- Tarac technologies in Nuriootpa, South Australia are purchasing grapes and wine for distillation. Offering $110 per tonne for grapes delivered.

<u>Cost analysis to offset harvest costs</u>
Harvesting costs total $975/Ha (estimate)
Freight $30/T (estimate)

Harvest and freight costs are 100% offset @ 12T/Ha ($110/T)

OR at 10T/Ha (Taking into account no additional costs at pruning - $167/Ha benefit).

Tarac technologies – T's & C's

The Australian Wine Research Institute

Grape Supply

- **Price is $110 /ton FIS (delivered Samuel Road)**.
- Baume >12^0.
- Payment Terms - Tarac will pay 30 days at the end of the month.
- Delivery Address - Samuel Road, Nuriootpa. Tip trucks or semi-tippers only. We are not able to handle grape bins.

Supply of Wine Processed from Smoke Affected Grapes

For example, supplying grapes as fruit from PIZ zones in Victoria is prohibited. An alternative would be to process fruit into juice and ferment for transport as wine.

- Tarac Technologies can pay **7 cents/Lt + GST FIS (delivered to Nuriootpa, SA) for wine >13.5% alcohol**.

This is a brief overview of a fermentation program for distillation –

- No SO2 additions in the vineyard or the winery.
- Red and white juice can be co-fermented. No skin contact.
- No acid additions or fining additions required.
- Free Run + Pressings
- Clean, quick ferment.
- Ferment to dryness < 2 g/L RS.
- >13.5% Alcohol.
- Send unfiltered, including lees.

Contact; Greg Jackson (Sales Manager) greg.jackson@tarac.com.au or M: +61 437 266 625

Compost

The Australian Wine Research Institute

- Grapes can be machine harvested onto the midrow or undervine by removing harvester fish plates. Harvesters can usually operate at faster speeds depending on the condition of the grapes and the canopy.
- Grapes harvested onto the vineyard floor are easier for livestock to graze, especially sheep.
- Grapes will decompose and become incorporated into the soil over time.
- To increase the rate of decomposition midrows and undervine can be cultivated to mix the grapes with soil or covered with straw, composted or green mulch.

Timing of fruit removal by machine harvester

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Considerations

- Harvest-ready winegrapes are easiest to harvest from vines. Harvesting at minimal berry shrivel will maximise the speed of machine harvesters and capture maximum yield.

- Over-ripe fruit and shrivelled fruit, especially fruit infected with Botrytis can have weakened attachment to bunch stalks and drop infront of machine harvesters and not be collected by the harvester.

- Dehydrated or raisined fruit will require slower harvester speed which can lead to potential damage to canes and increased defoliation through faster beater rod speeds. Vineyards with Autumnal foliage or severely defoliated vines can also predispose canes and dormant buds to damage from machine harvester beater rods. Fruit in this condition can also be lost through harvester fans and due to low extraction rate and high level of ripeness it is unlikely to be useful for distillation.

Take home message; The decision to harvest should be made earlier rather than later.

AWRI resources

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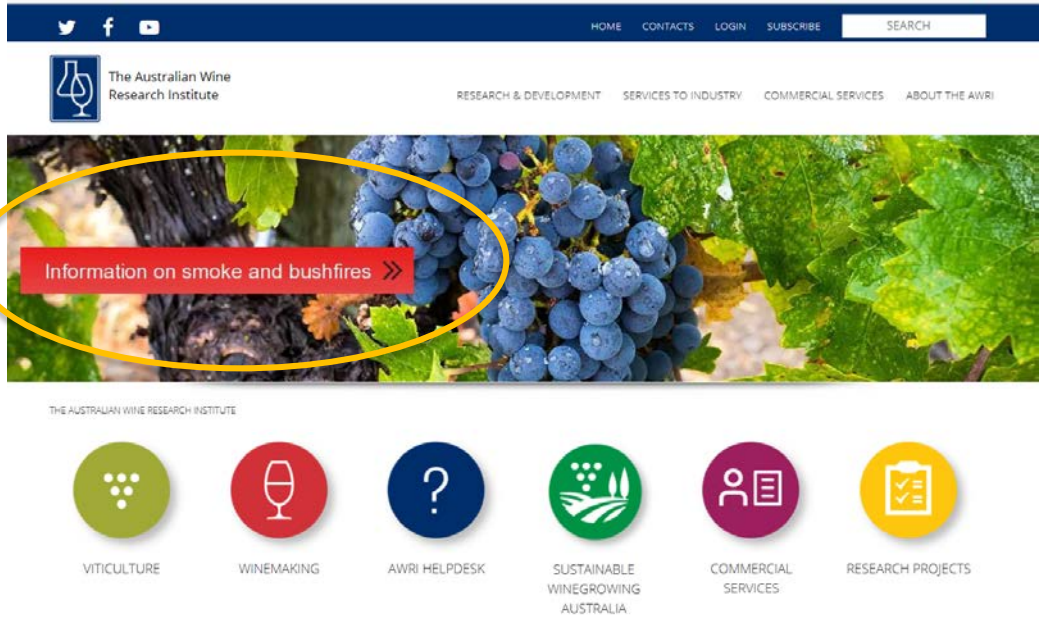

[Link to website]

The Australian Wine Research Institute

Fact Sheet
VITICULTURE

Managing smoke-affected vineyards where fruit is not harvested for winemaking

Background

The exposure of vineyards and grapes to smoke may result in wines with undesirable sensory characteristics, such as 'smoky', 'burnt', 'bacon', 'medicinal' or 'ash', commonly described as 'smoke tainted'. Analysis of grapes approximately two weeks prior to harvest maturity can confirm whether or not a vineyard has been affected by smoke. If high levels of smoke markers are found in grapes, growers may choose not to harvest those blocks for winemaking. Once the decision not to pick has been made, there are a number of factors that should be considered in managing the block, to maximise its potential for the following season. It's important to note that there is no risk of carry-over of smoke taint from one season to the next.

Deciding whether or not to remove unwanted fruit from vines early

A key decision to be made when managing a smoke-affected vineyard is whether or not to remove the fruit early or leave it on the vine until pruning. It may be tempting to avoid the up-front cost of fruit removal; however, early fruit removal is likely to be the most cost-effective strategy in the long term, for a number of reasons:

- **Disease** – If fruit is left on the vines over winter, this will increase the level of inoculum in the vineyard in the following season, increasing disease risk.

Updated February 2020

Wine Australia resources

The Australian Wine Research Institute

Wine Australia

Wine Australia

Mental Health Resources

Government Support

Business Support

Donations

Fundraising and support activities

Link to website

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