Agriculture Notes

Organic Farming: Alternatives to Treated Vineyard Posts

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David Madge, Mildura

Introduction

The trellis posts most commonly used in Australian vineyards are pine posts treated with the chemical preservatives creosote or copper-chromium-arsenate (CCA). These preservatives protect the timber against termites and wood rot. Use of these posts is of concern to the organic industry due to the lack of a safe disposal method and concerns about possible contamination of soil and crops.

Disposal of treated timber posts is a growing environmental issue.

Treated posts and organic standards

National and international organic standards vary in their approach to treated posts, but the move is clearly towards excluding CCA and creosote posts from organic properties. The current situation under Australian organic standards is that:

- Treated posts already installed in vineyards are accepted;
- CCA posts are not permitted for new or replacement use; and
- Creosote posts are prohibited by some certifiers and permitted (but recommended against) by others.

If CCA or creosote posts are the only option available for new installations, certifiers may allow their use if producers can demonstrate how crop and soil contamination will be avoided. Producers should consult the relevant certifier before making a decision on the use of treated posts.

Alternatives to CCA and creosote posts

There are alternatives to CCA and creosote posts, and some manufacturers/suppliers of alternative products are listed under 'Additional information sources'. The alternatives are often more expensive, but the added expense may be balanced by longer post life. Some important points to consider regarding the common alternatives are:

Steel. There is greater potential for damage to mechanical harvesters if solid, rigid steel posts are used. Poor durability of galvanised posts has been observed in some districts under saline conditions, such as coastal districts or areas with saline soils.

Light-construction steel vineyard posts typically have a much lower load-bearing capacity, some almost 90% lower, than the industry standard 75-100mm diameter CCA radiata pine post (Mollah 1997). These light posts are usually intended as intermediates between timber posts.

Because of their lower load-bearing capacity, trellising solely with steel posts has generally not been recommended. Some steel posts now on the market have improved construction patterns and protective coatings. These may overcome the problems related to durability and load-bearing capacity.

Steel posts may be a suitable alternative to treated timber in some vineyard situations.

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Concrete.

Concrete posts have the same disadvantages as steel in relation to harvester damage and durability under saline conditions.

Plastic.

Tests on some early recycled plastic posts showed their load-bearing capacity to be similar to steel intermediate posts, ie. almost 90% lower than the standard CCA pine post (Mollah 1997). Newer recycled plastic posts have performed adequately in a cool climate vineyard, but failed in a hot inland vineyard where prolonged high temperatures caused the posts to become flexible. Improved heat tolerance and load-bearing capacity are being addressed by further research.

Plastic posts are termite, rot and corrosion-proof. An Australian manufacturer of recycled plastic posts (Advanced Plastic Recycling; see Additional information sources) expects them to have a service life exceeding 50 years. Use of these posts would have the side benefit of reducing the amount of plastic waste going to landfill, and the posts themselves are recyclable.

Alternative preservative treatments.

Alkaline Copper Quaternary (ACQ) is a copper-based preservative treatment, that unlike CCA, does not contain chromium or arsenic. An ACQ-based wood preservative treatment has been approved under at least one Australian organic standard. Preliminary evaluations found ACQ-treated radiata pine posts to have less strength than CCA-treated radiata pine posts, but more detailed tests including field evaluations are underway. Until the strength issue is clarified, growers should err on the side of caution and avoid using ACQ-treated posts in 'high stress' vineyards, ie. those that will be high yielding, or on tall trellis, or mechanically harvested.

Untreated timber

. Some timbers can be used as vineyard posts without any preservative treatment. However, as the strength and durability of untreated timber varies greatly between tree species and types of wood, it is important to identify species accurately and use the correct terminology. The relevant terms are:

Heartwood: The dense inner core of a tree trunk or branch. Heartwood is not used for sap flow.

Sapwood: The less-dense outer layers of wood, actively involved in sap flow.

Hardwood: Tree species that produce close-grained, dense and usually dark timber. Examples are eucalypts, oaks and teaks.

Softwood: Tree species like *Pinus radiata* that produce lighter, open-grained timber.

The sapwood of most species, including hardwoods, is not durable unless it is treated with a preservative such as creosote, CCA or ACQ. The heartwood of numerous Australian hardwood trees is durable but may not be readily available to most growers.

White Cypress heartwood is considered durable, but field experience with posts sold as White Cypress has been variable and has included rapid decay and excessive splitting. These problems may be a result of confusion about tree species, or the use of logs containing too much of the non-durable sapwood.

Untreated heartwood timber from durable hardwood species makes suitable vineyard trellis posts.

The following table was compiled from information available from the Australian Hardwood Network and CSIRO's Forestry & Forest Products division (see Additional information sources), as a guide to Australian tree species suitable for use as untreated in-ground posts. This information applies to mature, slow-grown heartwood and does not necessarily apply equally to plantation-grown timber.

Table 1. Australian tree species with durable heartwood.

Highly durable heartwood (over 21 years in the ground) Note *E.* = *Eucalyptus*
Bloodwood *Corymbia gummifera, Corymbia intermedia*
Grey Box *E. macrocarpa, E. moluccana*
Grey Gum *E. punctata, E. propinqua*
Grey Ironbark *E. paniculata, E. siderophloia*
Red Ironbark *E. sideroxylon, E. creba, E. fibrosa*
Tallowwood *E. microcorys*
White Mahogony *E. acmenoides*
Durable heartwood (12-24 years in the ground)
Australian White Cypress *Callitris glaucophylla*
Blackbutt *E. pilularis*
Jarrah *E. marginata*
New England Blackbutt *E. campanulata, E. andrewsii*
Red Mahogony *E. resinifera*
River Red Gum *E. camaldulensis*
Spotted gum *Corymbia maculata*
Turpentine *Syncarpia glomulifera*
Yellow Stringybark *E. muellerana*

Certified organic growers interested in sourcing native timbers for vineyard posts should confirm with their certifier, the acceptability of potential sources in relation to environmental impacts of the timber harvest.

It should be noted that to produce heartwood posts, the sapwood is removed. This adds to the cost of the posts and is unlikely to be the most efficient use of the timber resource.

It is also important to note that the strength of round posts is directly related to their diameter. When the sapwood is removed, the resulting heartwood post will have a smaller diameter than the original post. The heartwood post may be more durable, but will be considerably weaker due to its smaller diameter.

Additional information sources

- **Advanced Plastic Recycling**
  (Posts of recycled plastic)
  Box 105
  Enfield Plaza, SA 5085
  Phone: (08) 8359 4999
  Fax: (08) 8359 4988
  email: enquiries@a-p-r.com.au
  Internet: http://www.a-p-r.com.au
- **Ausplaztik**
  (Posts of recycled plastic)
  Box 155
  Mildura VIC 3502
  Phone: (03) 5023 0533
  Fax: (03) 5023 0599
  email: info@ausplaztik.com.au
  Internet: http://www.ausplaztik.com.au/
- **Australian Hardwood Network**.
  A good source of information on timber durability ratings and Australian timber species.
  http://www.australianhardwood.net
- **Cooee Products Pty. Ltd**.
  (Alternative timber preservative treatment)
  Box 5993
  Maroochydore BC QLD 4558
  Phone: (07) 5477 0953
  Fax: (07) 5456 1474
  Email: info@cooeeproducts.com.au
  Internet: http://www.cooeeproducts.com.au
- **CSIRO Forestry and Forest Products division**
  A 'Durability Classification Chart' compiled by J. Thornton and G. Johnson is available under the 'Termites and Wood Protection' section at http://www.ffp.csiro.au/TechnicalInformation.asp#
- Mollah, M.R. (1997). *Practical aspects of grapevine trellising*. Winetitles, Marleston, S.A. ISBN 1 875 130 24 1.
- **Plastic Pole Vault Pty Ltd**
  (Plastic coated timber vine posts)
  2/15 Commercial Drive
  Dandenong VIC 3175
  Phone: 0418 322 953
  Fax: (03) 9706 4837
  Email david@plasticpolevault.com.au
  Internet: http://www.plasticpolevault.com.au/

Contacts

- **Australian Quarantine and Inspection Service (AQIS) Organic Program**
  For information on certification organisations, the 'National Standard for Organic and Biodynamic Produce' and export requirements for organic produce.
  Tel: (02) 6272 3928
  Email: organic@aqis.gov.au
  Internet: http://www.daff.gov.au/aqis/export/organic-bio-dynamic
- **Organic Federation of Australia (OFA)**
  Australia's peak organic industry organisation.
  P.O.Box 369
  Bellingen NSW 2454
  Tel: 1300 657435
  Email:info@ofa.org.au
  Internet: www.ofa.org.au

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