

WINE Technology

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Essential reading for winemakers and viticulturalists

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Growing vines in a hostile climate



Misha's Vineyard Central Otago

sheltering the pinot noir

Proof that the wine industry has strong technology links with the fruit and horticulture industries.

A Central Otago vineyard is using shelter cloth to protect delicate pinot noir vines from the vigorous spring climate in the region.

The need to manage the fierce local winds that drive through a valley bounded by steep peaks has seen Misha's Vineyard 'borrow' wind protection techniques most often used by orchardists and horticulturalists. However, the vineyard has given those techniques a new twist, with what are being described as "impressive results".

Robin Dicey, viticulturalist at the vineyard, says the property is situated on steep eastern slopes and terraces alongside Lake Dunstan and is prone to unusually strong wind buffeting during spring and early summer. The Dunstan mountains in the north-east and the Pisa Range to the west channel a significant airflow along the valley and lake at certain times of the year.

"There are positive and negative factors

associated with wind in a vineyard. On the positive side, disease is minimized - especially botrytis, and it can also provide useful natural de-vigoration in fully established vineyards. On the negative side, it can slow canopy growth in the early years, cause damage to young vines, and therefore can increase your overall costs."

Robin Dicey says Misha's Vineyard has found a solution to mitigate the negative effects of these winds by an unusual application involving shelter cloth. Shelter cloth is generally used to protect crops from unfavourable weather conditions or pests, and is typically put up as a canopy across the top of crops.

However Dicey's idea was to stretch the shelter cloth the full length of the vineyard posts and along every fourth row to provide shelter from the young pinot noir vines.

"Prior to the installation of the shelter cloth, we were seeing leaf tatter, sandblast desiccation and general damage to the growing tips of the pinot noir vines in the exposed areas," he says.

"But just a few weeks after the shelter cloth has been erected, we saw a marked improvement in the vines as evidenced by the longer internode length and larger leaves. We know that the benefits of this meso-climate we're establishing behind the shelter will continue to provide benefits in reducing mechanical damage, and improve flowering, fruit-set, and eventually yield."

The issue of wind management was first raised during the initial evaluation of the site for Misha's Vineyard. Consulting viticulturalist Dr Richard Smart praised the high altitude location as one of the best he had seen in Otago, citing its excellent 'cool air drainage' especially given that frost is an issue for most vineyards in the area.

However he specified that the north-west facing vineyard should be established with row directions running east-west down the steep slopes, so that they were perpendicular to the wind, and that wind breaks should be installed to protect the vines and to retain warmth.



Installing the shelter cloth is very much a 'hands on' job



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When the second stage of the vineyard was planted on the most wind-prone lakefront terraces and slopes in 2005, the option of wind protection was raised again as one of the key ways of optimising vine growth in the fledgling vineyard. Dacey had become very familiar with the wind patterns on the vineyard but the site posed some issues for a natural shelter belt given its multiple levels, the steep slopes on much of the planted area, not to mention the council protection requirements of this 'outstanding landscape' zone prohibiting the establishment of shelter belts and the planting of any non-native vegetation including trees along the edge of the gullies.

The owners of Misha's Vineyard say considerations for wind protection were both practical and aesthetic. Not only did the shelter need to provide protection for the delicate pinot noir vines but also given land protection issues and the fact that the vineyard was highly visible from across Lake Dunstan, there had to be minimal visual impact.

Viticulturalist Robin Dacey considered the extensive use of artificial shelter used by the surrounding cherry and stone fruit orchards and consulted with a company which provides protective canopies primarily used by horticulturalists and orchardists. Scott confirmed that running the shelter cloth along the vineyard rows would be an effective solution for the vineyard's wind issues.

The shelter cloth selected was an HPDE monofilament which provides up to 50 per cent wind reduction. The cloth was customised in Australia to a 1.6 metre width, to match the post length but with just enough gap at the base to relieve the wind pressure. As specified, it was provided in a sand colour to blend with the surroundings.

By creating wind shelter using shelter cloth, the negative effects generally associated with natural shelter belts are minimised and they are effective as soon as they are erected. When creating natural shelterbelts of trees, often valuable vineyard land has to be sacrificed, they require regular maintenance, they provide a habitat for birds, and they often compete for water and nutrients with the vineyard unless their root structures are kept in check. Additionally natural shelter belts require time to establish.

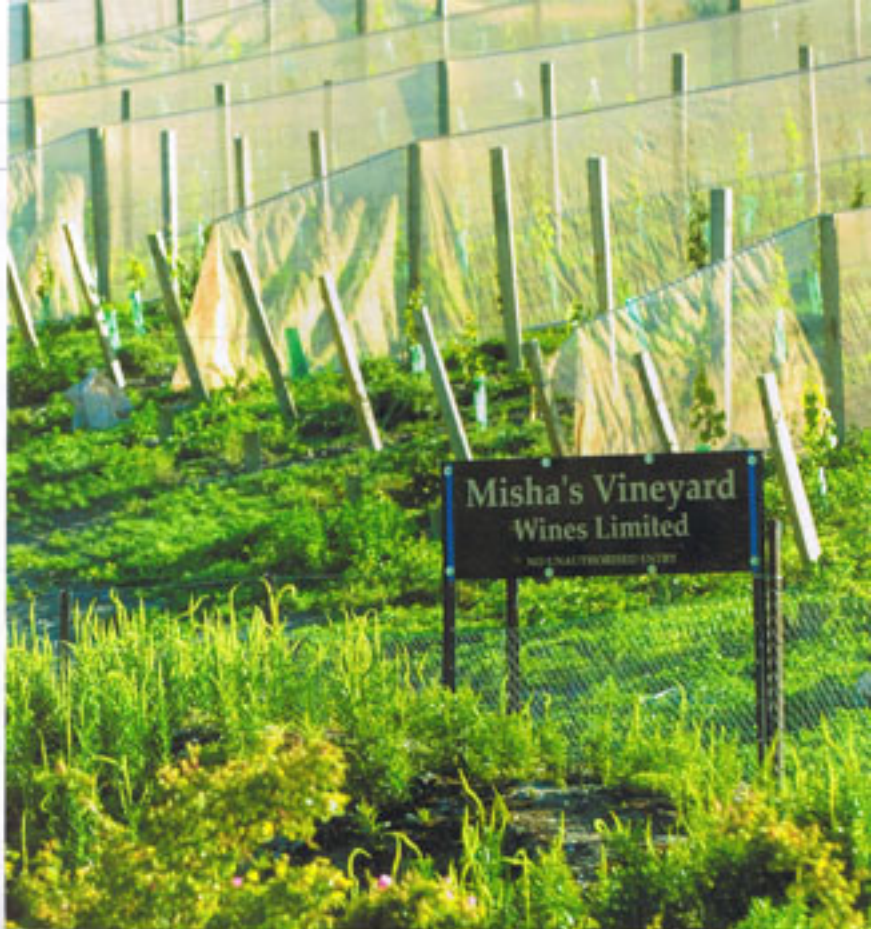
The specific benefits of erecting the artificial shelter using the shelter cloth in Misha's Vineyard have been:

- protecting the soil – the weak structure of the brown-grey earths which have a topsoil cover of schist loess, means the topsoil can easily be blown away on a windy day, and the dusty, floury soils are susceptible to wind erosion
- conserving soil moisture – less wind across the soil means less drying out and there is an improvement in irrigation efficiency
- better working conditions for vineyard staff during spring when the winds are at their worst
- better conditions for the vines during spring, particularly when they are young and requiring vigour to get them well established.

Dacey has also modified the trellis system on Misha's Vineyard to further mitigate the wind issue. It features one fruiting wire and three pairs of foliage wires instead of the usual two pairs, which provides additional canopy support for the young vines.

◀ Robin Dicey says the innovative application of the shelter cloth along the rows is a first in the area with two other vineyards already following the lead. Generally with vineyards, protective structures are primarily designed for use against bird attacks during the growing season, but the design of a structure to protect against wind is a management tool that vineyards in exposed and windy sites should seriously consider.

Established in 2004 by Andy and Misha Wilkinson, Misha's Vineyard is situated on 57 hectares of Bendigo Station, located on the north-west facing terraces overlooking Lake Dunstan. With 10 hectares planted in 2004, and a further 12 hectares in 2005, Misha's Vineyard plans further planting as well as the construction of an underground wine cellar and winery. Currently two-thirds of the vineyard is planted in pinot noir, with the remainder comprising a selection of white varieties including pinot gris, riesling, sauvignon blanc and gewürztraminer. The primary market for Misha's Vineyard wines will be Asia and the full range of wines is scheduled for launch in early 2009.



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