# THE IMPORTANCE OF SHELTERBELTS IN THE KIWIFRUIT ORCHARD

Kiwifruit vines do not tolerate wind. A good shelter system should keep wind speeds under 3 metres per second, especially during vine establishment. A multitude of physiological stresses occur when appropriate shelter has not been put in place; these include smaller leaves, an increase in susceptibility to Psa infection, slower cane growth, and damaged trunks. Shoots are prone to blowouts in Spring and early Summer once vines are established, and the delicate skin on fruitlets during this growth cycle is prone to scarring. Excessive wind during flowering can also compromise pollination. Shelter aids in healthy vine growth, privacy, and reduces spray drift.

## NATURAL SHELTER

| Pros | Cons |
|---|---|
| • Low establishment costs<br>• Can provide biodiversity<br>• Visually appealing<br>• Tolerates strong winds<br>• Requires well-drained soil<br>• Frost hardy<br>• Mitigates spray drift | • Often harbour pests and disease<br>• Annual maintenance costs of hedge trimming<br>• Competes with vines for nutrients, sunlight, and water<br>• Root pruning sometimes required to minimise root competition<br>• Prolonged establishment<br>• Consumes productive land |

## ARTIFICIAL SHELTER

| Pros | Cons |
|---|---|
| • Instantly established<br>• Increased light = increased photosynthesis, less disease pressure<br>• No resource competition<br>• No root trimming, pruning etc<br>• Reduced pests and diseases<br>• Overhead hail netting can create a uniform microclimate, leading to earlier production returns<br>• Increased space for additional planting, increasing revenue<br>• Less damage and scarring to young fruitlets | • Expensive<br>• Visually unattractive<br>• Impact on bees, yet to be confirmed<br>• Can restrict some orchard activities<br>• Low under vine shelter can trap cold air and cause frost damage<br>• Undervine shelter can block access from row to row<br>• Limited lifespan of around 15 years |

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| **Pittosporum**<br>- Loves the wind, grows near the sea<br>- Makes an attractive hedge<br>- Life expectancy around 20 years<br>- Needs a rich soil<br>- Grows up to 6m<br>- High risk of Leafroller<br>- Evergreen | **Cryptomeria**<br>- Growth- 2m per year<br>- Visually aesthetic<br>- Grows up to 20m<br>- Requires well-drained soil<br>- Frost hardy<br>- Not susceptible to scale<br>- A main contender for hosting various bird species, this can be remedied with open and trim canopies<br>- Flowers non-toxic to animals | **Casuarina**<br>- A study has shown its relative resistance to Psa or the virus' inability to multiply?<br>- Loves coastal conditions<br>- Evergreen, and drought resistant<br>- Grows app: 2m per year<br>- Resistant to *Phytophthora* root rot<br>- Frost sensitive |
| **Willow**<br>- Hungry for water<br>- Heavy pruning required<br>- Competes with vine roots<br>- Highly susceptible to scale, stinkbug and Armillaria<br>- An excellent option for holding together erosion-prone soil not shelterbelts in an orchard | **Poplar**<br>- Excessive growth<br>- Roots grow close to the surface, spreading across orchard or paddock to the next row of poplars<br>- Harbour undesirable birds<br>- Once established, challenging to remove<br>- No longer recommended for use in orchards<br>- Can be used to aid establishment | |

## When to inspect shelter for pests

- Two Spotted Mites – look for yellow or white spotting on damaged leaves in February
- Sparrows and Finches – keep shelter open and trim, Cryptomeria is a haven for birds
- Leafroller - December – inspect/remove all surrounding host plants
- Passion Vine Hopper – life cycle can be interrupted in early November and found on natives such as mahoe, wineberry, and pigeonwood. Weeds such as blackberry and privet.

## New shelters?

- Alders (*Alnus* species) fix atmospheric nitrogen, and they are not in competition with the planted crop, continually adding nitrogen to the ecosystem through leaf litter
- Roots grow deep, so there is no competition
- They grow straight and side branches are easy to prune
- Can withstand harsh winds