

LAND MANAGEMENT

SUSTAINABLE LAND

Asparagus Strip Cropping

Main Points

To combat soil loss and protect asparagus crops, some growers use strip cropping, which is growing two crops in one paddock at the same time. The *danger period* in Hawke's Bay is during October and November when strong northwesterly winds blow across the plains.

The Problem

Many asparagus growers have felt the full brunt of strong winds on the plains in recent years. On the light Turamoe, Ngatarawa and Takapau soils, valuable topsoil was blown away by wind gusts reaching up to 90km/hr during the 1994/95 summer.

Crops were also hit hard. Asparagus spears were sandblasted as they surfaced and became exposed to the wind, making them virtually worthless. One grower lost his entire five hectare crop because of wind damage on four occasions. Each time the crop ready to be picked on that day was lost along with the following five days of crop. Total losses were estimated at \$12,000.

Shelter belts provide a long-term solution to reduce wind speed, and subsequent soil loss. Short-term measures include:

- Irrigation. Once paddocks begin to blow, trying to irrigate with a big gun in strong winds is ineffective.
- Maintaining ground cover with a cover crop.

Using a cover crop

Strip cropping has been practiced widely overseas for centuries but has never really taken off in New Zealand. By growing two crops simultaneously in the same paddock, growers minimise the amount of bare earth over a *danger period*. With asparagus, oats, barley or ryecorn can be sown between the beds.

In Hawke's Bay, the *danger period* is October-November when strong northwesterlies blow across the plains as spring crops are being planted. Ideally, the oats should be planted by mid-August to allow time for the oats to provide a ground cover before October.

Oats will provide immediate protection of the soil as:

- the root system will help bind the soil particles together.
- the foliage will act as a windbreak and reduce windspeed over the soil surface.

Topsoil and asparagus protected from wind damage



What is the best way to establish a cover crop?

What is the best method for one grower may not be for another, due to differences in soil type, surrounding shelter, availability of machinery, and irrigation. The method below has proven cost effective, and suited to non-irrigated crops in light, sandy soils.

- Sow three to four rows of oats in July @ 120kg/ha application rate between every asparagus bed. The oats can be sown in every inter-row using a conventional drill with the seed tubes over each asparagus bed blocked off. The drill should be offset from the tractor to avoid damage caused by machinery wheels running directly over the top of the asparagus.
- The oats are sprayed off at the beginning of September at least three weeks before the start of picking with two litres per hectare of Round-Up®. Every third or fourth inter-row is left standing to act as a windbreak.
- The rows left standing are worked back into the paddock along with the fern during autumn. This returns extra organic matter back to the soil.

What are the Benefits?

The reduction in crop damage will depend on how windy the growing season is. This makes it impossible to predict the financial benefit.

For reference, one grower on light, peat soils estimated they would have suffered 70% of crop damage on two occasions and lost valuable top-soil during the 1995 harvest had oats not been sown. The cost saving was valued at \$750/ha in a year which lacked the typical strong northwesterlies. Other benefits include:

- Greater soil moisture retention.
- More pleasant picking conditions.
- Extra green matter will improve soil structure when worked back into the paddock.

What costs are involved?

Oat seed – 120kg/ha @ 65c/kg
\$78/ha
Drilling – 2.5ha/hr @ \$60/hr
\$24/ha
Herbicide – 2lt/ha Round-Up @ \$15/lt
\$30/ ha
Spraying – 3ha/hr @ \$40/hr
\$13/ha
Total Cost \$145/ha

Potential disadvantages include:

- A slight increase in frost damage compared with a bare earth policy.
- An increase in insect pests harboured by the oats. To date the only reported case was the need for slug bait to be applied as a precautionary measure on one grower's block. In contrast, some growers believe a cover crop will ultimately retain more insecticide than bare ground, resulting in more effective pest control.

Alternative management

If you want a higher level of protection, or to return more green matter to the soil then every second inter-row could be left standing. The more oats left standing, the greater the competition for moisture and nutrients.

If soil movement is not a major problem, or your asparagus beds run at right angles to the prevailing wind then a protective mat of oats down every inter-row may not be necessary, and a row left standing every three to four rows would provide adequate cross-wind protection.

For further information

For further information on asparagus strip cropping, contact Hawke's Bay Regional Council Land Management staff for advice.

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