

Grower Protocol: Using willow woodchip mulch to manage apple scab

Tree selection

Select an area of the orchard for the trial with trees of similar age and uniformity, and mark 5 trees as mulched and 5 trees as 'controls', preferably with some guard trees between them to minimise and interactions and overlapping of impact. Where possible in a sprayed system, you could do 5 mulched trees, with 2 guard trees, 5 control trees untreated, another 2 guard trees and 5 trees sprayed as usual.

Willow woodchip

Growers sourcing their own woodchip should look for young growth (>7cm in diameter) as this has higher levels of salicylic acid (SA) content. The species of willow selected should also be considered, as samples taken from the Royal Botanic Gardens Kew showed significant variability of SA between species – see table below. Where possible, use the species highlighted in green.

Salicylic Acid content of the 10 most common UK willow species

Scientific name	Common Name(s)	Salicylic Acid (mg/g FW)
<i>S. daphnoides</i>	European violet willow	3.21
<i>S. matsudana tortuosa</i>	Chinese Willow, Corkscrew	2.33
<i>S. caprea</i>	Pussy Willow, Goat Willow, Great	1.95
<i>S. fragilis</i>	Crack willow, Brittle willow	1.65
<i>S. alba 'Chermesina'</i>		1.62
<i>S. pentandra</i>	Bay Willow	0.81
<i>S. triandra</i>	Almond willow; Almond leaf	0.6
<i>S. erythroflexuosa</i>		0.38
<i>S. viminalis</i>	Basket willow/ common osier	0.21
<i>S. alba</i>	White Willow	0.2

Mulching guidelines

Directions: Add around 5kg woodchip mulch to the area under the crown in a band 0.5m either side of the tree. Leave a few inches of the base of the trunk free of mulch to allow air flow around the root collar.

Depth: 5-10cm deep, but no deeper than 10cm.

Timing: Apply the mulch in January/February (early March at the latest). The salicylic acid takes around 4-6 weeks to leach in the soil and affect the trees, this should coincide with the tree coming in to bud. If application is left too late scab will already have the chance to take hold.

There is no need to compost the woodchip, as it has been found to be effective when fresh.



Assessing scab incidence

The incidence of scab should be assessed on each of the 10 trees (5 treated and 5 controls) once in mid-summer, both on leaves and fruit. Help with carrying out assessments is available through Glynn Percival (07808 915865) at Bartlett Tree Experts. Leaves should be using the scale below:

Index	Description
0	No scab observed
1	Less than 5% of leaves affected and no aesthetic impact
2	5–20% of leaves affected with some yellowing but little or no defoliation
3	21–50% of leaves affected, significant defoliation and/or leaf yellowing
4	51–80% of leaves affected, severe foliar discoloration
5	81–100% of foliage affected with 90–100% defoliation

Sampling

Nitrogen content of leaves: Sample of 15 leaves from each tree - 5 from the top third of the canopy, 5 from the middle third and 5 from the bottom third, and from each side of the tree (select the leaves at random from within each third). Put the leaves from each tree in a separate polythene bag. You will be provided with electronic copies of labels. Print out the labels onto card and insert them appropriate into the appropriate bag. Send samples, as soon as possible after collection, and preferably on the same day to Reading University for analysis.

Yield: Give an observational comparison of mulched tree yield vs control (and sprayed tree yield if also including these in trial). If possible record the incidence (kg/ tree) of each tree at harvest.

Sugar content of fruit: 1 Kg fruit sampled for each tree, gathered from both sides of the tree and the top, middle and lower part of the canopy as per the leaf sampling. Label and place samples from each tree in separate labelled bags provided, to be sent to the Bartlett Tree Laboratory.

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