

Weed Management

Weeds should be managed in the orchard to minimise competition with tree growth and crop development. Plants are defined as weeds in fruit orchards if they:

- compete with fruit trees for water and nutrients
- interfere with water distribution
- interfere with orchard operations such as harvest, pruning and thinning
- compete with cover crops
- harbour fruit pests.

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Weed management tools

The most important goal of any weed management program is to minimise weed competition during critical periods of tree growth and crop development. In the orchard a properly maintained weed free zone (or herbicide strip) of about 1-2 m from trees is necessary.



Figure 1: Well managed weed free zone in an intensive Packham block.

The main practices growers can use to manage weeds include: good orchard hygiene, mulching, cultivation, herbicide application and competition through establishment of a permanent sod. Often these tools are combined into an integrated weed control program.

Hygiene

Good hygiene practices should aim to restrict the introduction of weeds and their spread. This may require restriction of machinery and labour movement across blocks particularly in weed infested sites and regular cleaning of equipment. Preventing seed set in weeds is important. Weeds should also be controlled in non-cropped areas of a property.

Mulching

Mulching helps to retain moisture, minimise weeds and improve biological activity in the soil. Inorganic and organic materials may be used for mulching. The mulch must be applied thickly enough to suppress weed growth and germination of weed seeds. A layer at least 2–3 cm deep should be adequate but will depend upon the density of the material used. Various methods can be employed to accumulate mulch under a tree row:

- mowing – swing-arm mowers mulch under-tree areas, and some orchard mulchers throw cuttings into the under-tree area
- growing a winter-active under-tree sod which forms a mulch after it dies
- spreading of mulch brought in from elsewhere

A thick layer of mulch may increase frost risk during early spring because it acts as an insulating layer and can prevent ground heat accumulation.

Cultivation

Cultivation destroys or buries weeds and is often considered an inexpensive control measure. However, it can adversely affect soil structure, tree root growth and can sometimes facilitate the spread of weeds if inappropriate methods are used.

Herbicides

There are many different forms of herbicides used to control weeds. Weeds should be correctly identified to ensure herbicides are correctly targeted. Growers are advised to seek local advice about herbicide options.

Permanent Sod

Permanent sods are used to suppress weed growth through competition. Permanent sods need to be able to establish effectively in order to outcompete weeds. This requires elimination of weeds prior to planting of the chosen sod mix. Permanent sod must also remain healthy, and regular slashing is important for controlling weeds within a sod.

Critical timing for weed management

Pre planting

Managing weeds before the planting of a pear block will help reduce the competitive pressure of weeds during young tree establishment. It is particularly important to control perennial weeds as these are harder to manage in established blocks than in open ground. They will also compete with any cover crops or permanent sod.

Planting of a green manure crop or permanent sod before planting can help reduce weed pressure and provides other benefits to soil structure and organic matter. It is important before planting a cover crop or sod that weeds are eliminated through either cultivation or herbicide application.

New orchards

Good weed management is essential to ensure that the growth of young trees is not stunted due to competition with weeds for nutrients and moisture. Young trees are not as capable of competing with weeds for light, water and nutrients because their root systems and canopy covers are not extensive. If weeds are not managed adequately, tree production can be delayed.

A weed free zone of 1-2 m from trees is ideal. Mulches, herbicides or short pasture cover can help suppress weeds. Any herbicide applications need to be carefully considered as they may damage young trees.

Established orchards

Weed control in established orchards is also important, even though established trees can more effectively compete with weeds. It's particularly important that the tree is not robbed of moisture or nutrients during critical periods for growth and crop development, including:

- bud burst and flowering (late winter – early spring)
- fruit set and cell division (late spring)
- fruit growth and cell expansion (summer – early autumn)
- flower bud initiation (summer)

During dry seasons weeds should be controlled in the orchard to conserve soil moisture. Weeds may also need to be eliminated to minimise frost risk in early spring, as they can prevent heat being stored in orchard soils.



Figure 2: Weeds will be competing for water and nutrients at flowering in this orchard.

Further information

These Australian and international sites may be useful for growers. However they are intended as an information source only. Any specific recommendations may be outdated or irrelevant for Australian conditions and growers should seek local advice.

Australian Resources

A-Z of Weeds: <http://www.depi.vic.gov.au/agriculture-and-food/pests-diseases-and-weeds/weeds/a-z-of-weeds>

<http://www.weeds.org.au/cgi-bin/weedident.cgi?tpl=region.tpl®ion=all>

Victoria: <http://www.depi.vic.gov.au/agriculture-and-food/pests-diseases-and-weeds/protecting-victoria-from-pest-animals-and-weeds>

NSW: <http://www.dpi.nsw.gov.au/agriculture/pests-weeds/weeds>

South Australian Research and Development Institution website providing information about weed control in orchards:

http://www.sardi.sa.gov.au/pestsdiseases/horticulture/horticultural_crops/apricots/weed_control

International Resources

Weed management in orchards: Washington State University website:

http://county.wsu.edu/chelan-douglas/agriculture/treefruit/Pages/Orchard_Weed_Management.aspx