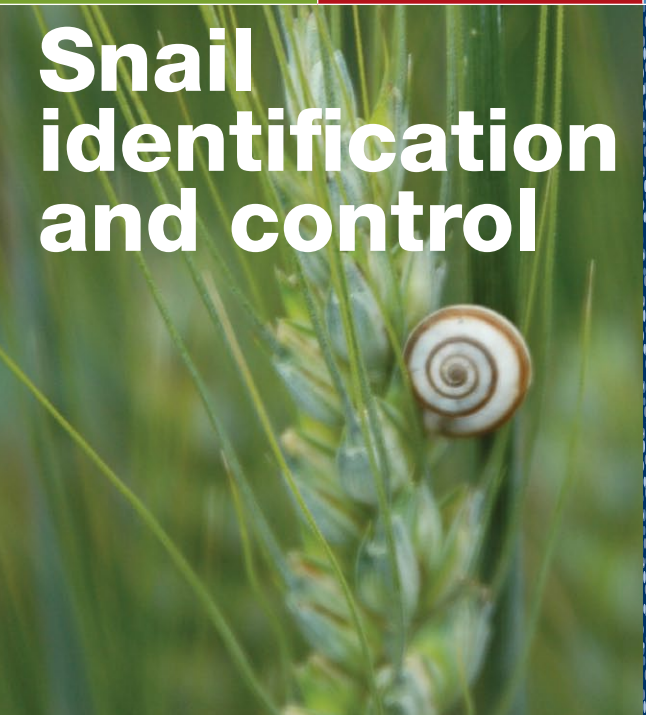
Snail identification and control



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THE BACK POCKET GUIDE

USING THIS GUIDE

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Snail identification and control

Grain contamination by round and conical snails poses a serious threat to grain exports. Strict grain quality standards for snail contamination are imposed at the silo. Snails also cause damage to emerging crops and can clog machinery at harvest resulting in delays and frustration.

Controlling snail populations is vital if grain contamination and crop damage are to be prevented. This means monitoring and managing snails regularly throughout the year.

This guide helps growers identify the snails that are pests of crops and pastures and outlines year-round control strategies.

Figure 1 Integrating control with the snail's life cycle

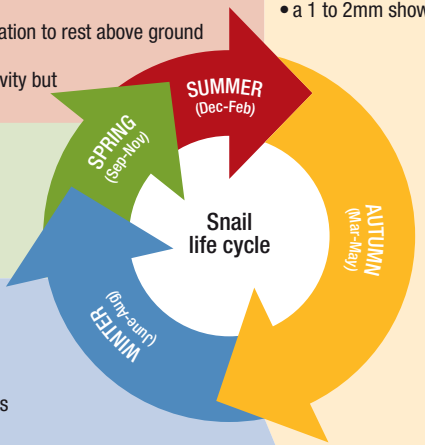
From a management point of view the life cycle of the four types of snail is very similar and can be divided into seven main phases. Applying the appropriate management at each phase in the life cycle is vital for successful snail control.

Aestivation
- prolonged periods of dryness and high temperatures trigger aestivation in late spring/early summer
- snails move up stubble, fenceposts and vegetation to rest above ground to avoid water loss during summer
- summer rains can trigger short periods of activity but no breeding occurs over summer

Feeding and growing
- snail feeding activity and movement depends on moist conditions

Juvenile snails
- juvenile snails feed and grow through winter and spring

Hatching
- hatchlings emerge from eggs about two weeks after they are laid



Movement
- rainfall and cool, moist conditions trigger snail activity
- a 1 to 2mm shower is enough to trigger activity

Maturity and mating
- snails begin feeding and their reproductive organs mature (around March/April)
- mating starts about 2 to 3 weeks after the first heavy autumn rain
- mating snails are found in pairs with the soles of their feet firmly pressed together

Egg laying
- egg laying begins shortly after mating
- egg clusters are laid in topsoil from late autumn to early spring

Figure 2 Integrated snail management cycle

All year round management of snails is required for control of large snail populations. Population details should be recorded both before and seven days after control measures are applied. Applying controls before or shortly after breeding commences is essential to minimise snail population increases.

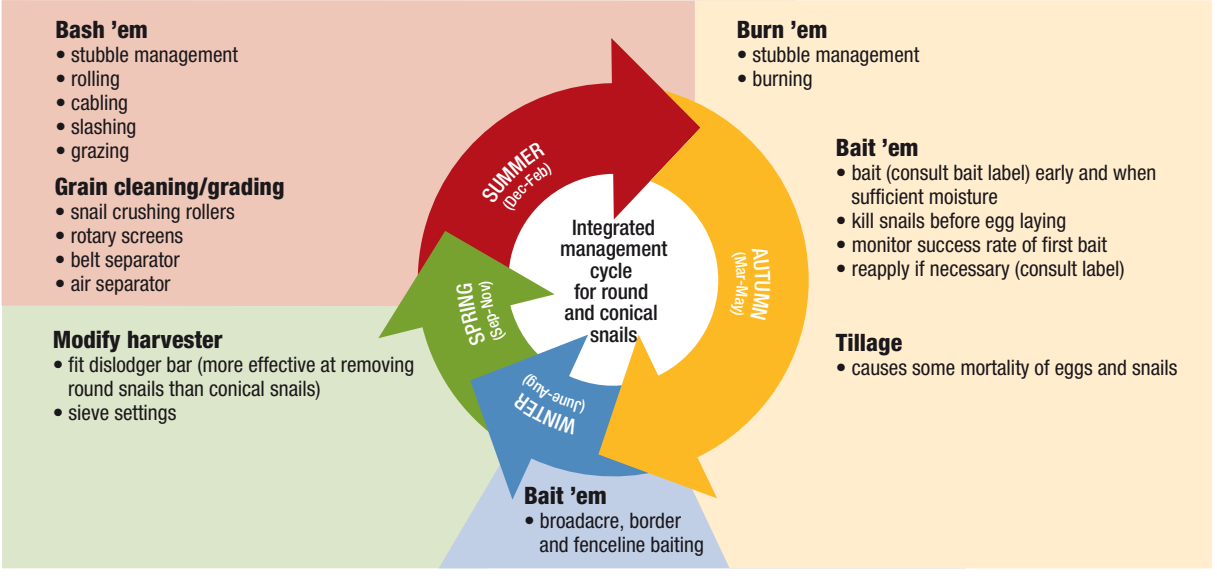
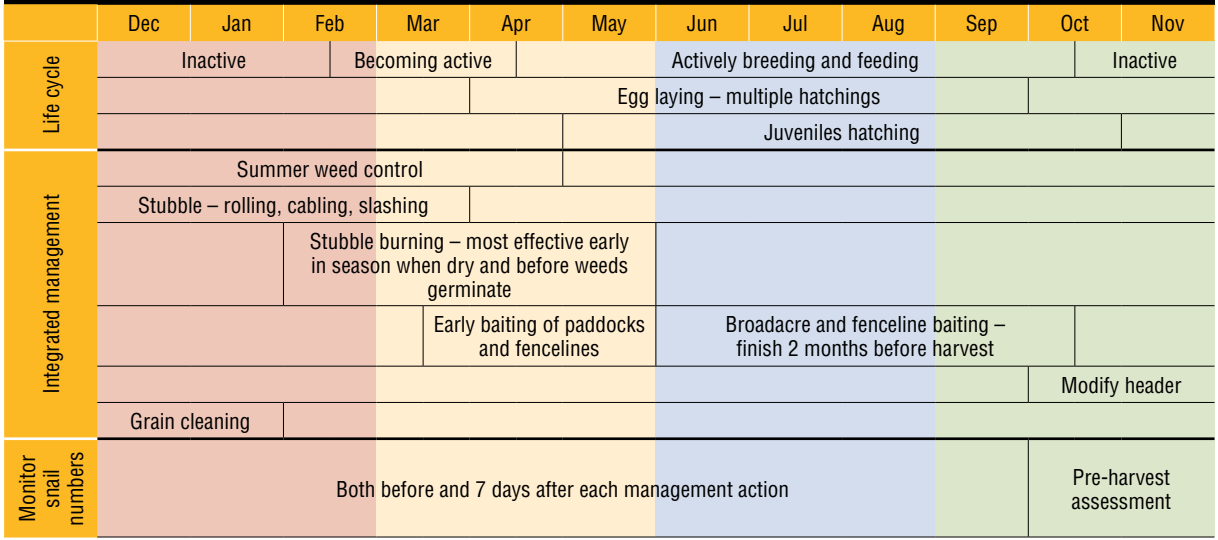


Figure 3 Integrated snail management calendar



See snail life cycle and integrated snail management cycle on previous panels.

In summer, snails go into a dormant phase.

Four types of pest snail

In Australia there are both native and introduced snail species. Introduced snails are the pests; these can be divided into two groups differentiated by shape – round or conical.

Species are found across southern Australia but not always in pest proportions. Numbers continue to rise and new areas are colonised.

Snails are proficient hitchhikers, moving between regions on transport. Farm machinery and produce such as hay should be inspected and cleaned of snails before transport.

Life cycle

All four types of pest snail have a similar life cycle. During the summer they are dormant (aestivate). Egg laying starts after snails are activated by autumn rain. Eggs are laid in the soil and hatch after about two weeks. Egg laying continues while the soil is moist. Each snail lays up to 400 eggs a year.

Vineyard or common white snail

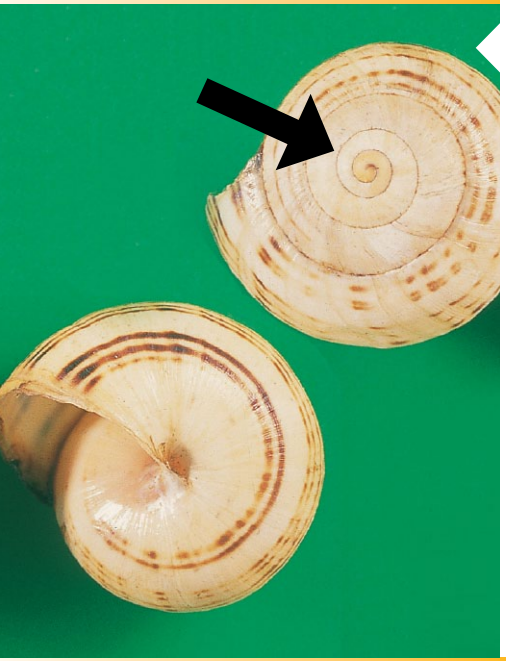
Found throughout the agricultural districts of SA, the Victorian Mallee and Wimmera. They also occur in WA, NSW and Tasmania.

The mature shell diameter is between 10 and 20mm. The coiled white shell may or may not have a brown band around the spiral. The snail has an open, circular umbilicus, as shown by the arrow. Under magnification regular straight scratches/etchings can be seen across the shell.

The snails feed on dead organic material but can severely damage young cereal, canola and pulse crops.

They are a contaminant of grain, especially when juvenile. During the summer they are found off the ground, often on plants, stubbles or posts.

Vineyard or common white snail



White Italian snail

White Italian snail

Common along the coastal areas of SA but also occur in coastal areas of NSW, Victoria, WA and Tasmania.

These snails have a mature shell diameter between 10 and 30mm. Mature snails have a coiled white shell with broken brown bands running around the spiral. Some individuals lack the banding and are white. They have a semi-circular or partly closed umbilicus, as shown by arrow. Under magnification cross-hatched scratches can be seen on the shell.

They feed on green plant material and can cause significant damage to emerging crops and pastures.

They contaminate grain. Over summer they are found off the ground, often on plants, stubbles or posts, and especially on green weeds.

Conical snail

Conical or pointed snail

The highest numbers are found on Yorke Peninsula in SA. Isolated populations are also found in other parts of SA, Victoria, NSW and WA.

Fawn, grey or brown in colour, the mature snails have a shell length of up to 18mm. The ratio of the shell's length to its diameter at the base is always greater than two.

They feed on dead organic material and have never been recorded feeding on crops or pastures.

They contaminate grain. During summer they are found under stones and stumps, as well as on fenceposts and vegetation.

Small conical snail

Small conical or pointed snail

Occur throughout SA, but most abundant in the higher rainfall areas (>500mm). Also widely spread in NSW, Victoria and WA.

Fawn, grey or brown in colour, the mature shell size is 8 to10mm. The ratio of its shell length to its diameter at the base is always two or less.

They feed on green plant material and have been recorded as a pest of lucerne.

These snails have caused grain contamination in the lower south east of SA. Over summer, small pointed snails are often found in leaf litter at the soil surface or just below surface and under stones and stumps.

Bash ‘em on very hot days.

Before embarking on snail control, monitor their numbers. See the section on *monitoring* below.

Bash ‘em

The objective of stubble management is to knock snails onto the hot soil surface and cause them to desiccate, starve and die.

Cabling, rolling, slashing and grazing are all stubble management options. They are most suited to controlling round snails as conicals hide beneath rocks.

Mechanical options should be carried out on hot, sunny days over 35°C in summer after harvest. Ideally, several hot days should follow.

Stubble management can be very effective with a 50 to 90 per cent kill achieved when temperatures exceed 35°C. Bashing is less effective in dense cereal stubbles or when green summer weeds are present.

Aim for a complete, even burn.

Burn ‘em

Stubble burning is still the most effective pre-sowing method of control, providing an even burn is achieved. Burning should not be employed across the whole farm but on paddocks with highest snail numbers. This is because of the negative effects total removal of stubble has on soil properties and the ensuing chance of erosion.

Burning is successful early in the burning season when a complete burn is more likely to be achieved. It is most effective on round snails and less effective against conicals unless rocks are turned prior to burning.

A complete, even burn can achieve a 100 per cent kill, while a patchy burn results in a 50 to 80 per cent kill.

Summer weeds should be killed before burning to improve effectiveness of the burn. Broader baiting may be required to prevent re-invasion of burnt paddocks later in the season.

Bait early to control snails before egg laying.

Bait ‘em

Whole paddock, border and fenceline baiting is most effective when rain or moisture triggers snail activity in autumn and before significant egg laying. Later baiting is less effective. Baiting must finish in late August or two months prior to harvest to avoid baits being detected in samples.

Target mature snails – round snails larger than 7mm in diameter and conicals larger than 7mm in length – as baits are largely ineffective against juvenile snails. A 60 to 90 per cent kill has been recorded for round snails and 50 to 70 per cent kill for conical snails. This depends on timing, snail activity and bait rate.

For round snail control in cereal, pulse and oilseed crops apply low rates of metaldehyde for densities up to 80 round snails (>7mm in diameter) per square metre. Increase rate for higher snail densities. For conical snails, repeated applications at a lower rate are probably more efficient than a one-off full rate. Note: registered rate varies between products so refer to product label for correct rates. Snail bait is to be used only during the establishment stages in pulse and pasture crops.

Monitoring

Snail counts should be taken across the paddock to establish how many are present per square metre.

Key monitoring times are:

January/February to assess options for stubble management.

March/April to assess options for burning and/or baiting.

May/August to assess options for baiting, particularly along fencelines.

Three to four weeks before harvest to assess the need for header modifications.

Emerging canola is especially susceptible to damage and should be closely monitored.

Thresholds for control

Round snails – 20/m^2 in cereals, 5/m^2 in pulses and canola at seeding.

Conical snails – no thresholds established.

Snails at harvest

Options exist at harvest to deal with snail-infested paddocks, but generally cause additional grain losses. Minimising straw intake, windrowing, dislodger bars, alternative sieves and auger screens can all play a part.

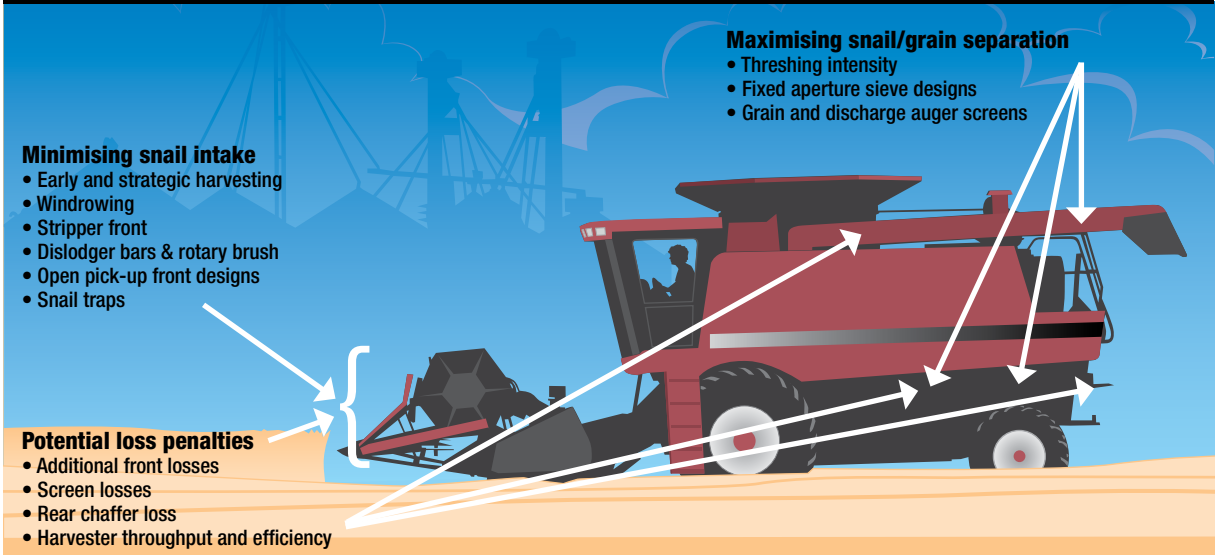
Dislodger bars or brushes fitted to the front of the harvester reduce snail intake, decreasing the amount of snails and snail muck that has to be dealt with inside the header.

These bars are most suited to large round snails located high in the canopy and are more effective when used early in the harvest season.

Replacing adjustable louvre sieves with fixed aperture screens tailored to the size of snails and grain has proved a reliable modification to harvesters.

Cleaning equipment has also been tested. Snail-crushing rollers in combination with conventional grain cleaners are effective at removing snails from grain of the same size. An inclined belt separator is an effective solution for removing conicals from canola.

Figure 4 Harvester modification options to minimise grain contamination by snails



A combination of header modifications can drastically reduce the number of snails entering the grain sample. The general trade-off will be reduced harvester throughput and/or increased grain loss.

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Grains Research & Development Corporation

Maureen Cribb,
GRDC Publications Manager
T: 02 6166 4500 E: m.cribb@grdc.com.au

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