Saffron Thistle

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Common and scientific names

Saffron Thistle

*Carthamus lanatus* Linnaeus

Origin and distribution

Saffron thistle is native to the Mediterranean region and western Asia. It has spread widely to other temperate areas including North and South America, South Africa and New Zealand, but is considered an important weed only in Australia, where it has been declared noxious in all States.

Saffron thistle was naturalised in Victoria by 1887, and was first proclaimed noxious in 1890. It is now particularly common in cereal cropping areas of the Wimmera, Mallee and northern districts. It favours areas with an annual rainfall between 500 mm and 875 mm and is mainly a weed of cultivation and pastures.

Seed buried in the soil can survive for over 10 years but rarely germinates at depths below 5 cm. Most seed germinates within 3 years of release but the seed has complex dormancy characteristics.

Description

Erect, often much-branched annual, commonly to about 1 metre, but sometimes taller.

**Stems** - Usually single in the basal part of the plant, branching in upper half, stiff, ribbed, pale, covered in minute dense hairs.

**Leaves** - Rosette leaves to 20 cm long, stalkless, stemclasping, narrow, triangular, deeply divided with narrow lobes, each lobe terminated by a strong spine. Stem leaves shorter, rigid, stem clasping and armed with stout spines.

**Flowers** - Solitary, stalkless, and egg shaped, yellow, surrounded by spiny bracts, borne at the ends of the branches.

**Fruit and Seeds** - Seeds are brownish-grey, 3 mm long with a four-angled base, sometimes with a pappus of stiff bristles. Each flower head produces 10 to 16 seeds.

**Roots** - Unbranched tap root.
The problem

Saffron thistle is very hardy, very rigid and prickly, and has little value as a pasture species. Smaller rosettes are grazed by stock but once the plant grows taller it is avoided. It competes with other plants for moisture, light and nutrients, restricts access and contributes to vegetable contamination of wool. Spines cause injury to stock, particularly to the mouth, around the eyes, and to hooves, and predisposes animals to diseases such as scabby mouth and pink eye. Infestations of saffron thistle in grain crops can cause yield reductions of up to 70%. Saffron thistle is a host for fungus diseases which affect safflower and cotton. Saffron thistle is closely related to safflower, *Carthamus tinctorius*, and has been widely cultivated as a source of oil and yellow dye.

Similar species

Saffron thistle is closely related to safflower, *Carthamus tinctorius*.

Flowering period

Early summer.

Life cycle and reproduction

Seeds mostly germinate in autumn and the plant is present mainly as rosettes over winter. The flower stem elongates in spring. Bees pollinate the flowers.

Dispersal

Although the saffron thistle seed has a pappus for wind dispersal, the large size of the seed means it is not carried very far. The pappus allows seeds to float in water. Initial dispersal in the Mallee and Wimmera was largely via water-borne seed. Seed and seed-heads can attach to the coats of animals and other fibrous materials and may be dispersed in this way. The seed can be difficult to separate from that of wheat but is now days effectively screened out. Contamination of grain has resulted in its introduction into new areas.

Saffron thistle has been widely cultivated as a source of oil and yellow dye.

Management program

Some control methods described in this note are only effective if used in combination with other control options as part of a long-term management program.

If used in isolation, these methods do not effectively destroy the plant, allowing it to re-shoot or continue to grow. Authorised officers from DPI or DSE may direct landowners to undertake specific
control activities to ensure methods are used that are capable of destroying plants and preventing their spread.

Where directed to do so, landowners must use the method or methods as directed by the authorised officer. In most cases the landowner will be able to choose from a variety of options appropriate for use in their particular situation.

**General approach**

Effective management of saffron thistle requires an integrated approach employing a combination of control measures.

The overall aim of the saffron thistle management plan should be to prevent new infestations, reduce current infestation (in a logical sequence) and rehabilitate areas where control activities have occurred. A key part of the program is to exhaust the soil seed bank using a combination of chemical, cultural and mechanical practices. Continuous cropping for three years plus herbicidal control has been suggested as the most practical method of control.

In areas where saffron thistle is an important weed, the management program should be part of a whole farm plan or an area plan [e.g. refer to regional strategies]. Treatment works should be scheduled for the most appropriate time of the year and provision made for long-term follow-up work including an inspection schedule.

**Specific actions**

**Cultivation**

Cultivation was the main method of control before the advent of useful herbicides. Repeated cultivations are necessary because soil disturbance brings seeds to the surface where they can germinate. Initial deep ploughing to bury seed, followed by shallow cultivation to destroy seedlings and the planting of cereals under sown with pasture species is effective for large infestations.

**Slashing**

Mowing and slashing before the plants are mature is an important management element. To prevent seed formation it should be carried out before the commencement of flowering. Immediate follow-up control is required to prevent further flowering.

**Pasture development**

Saffron thistle tends to out-compete other plants in low nutrient soils but unlike many other thistles, it has a negative response to fertilisers. Annual application of superphosphate can markedly reduce the density of plants. Establishment of strong competitive pastures will largely eliminate saffron thistle, if overgrazing is avoided.

**Grazing**

Sheep grazing encourages the weed and cattle grazing is of little value in control. Long term use of goats can significantly reduce plant density. Spray grazing in combination with sheep grazing at several times the normal stocking rate has provided effective control in Western Australia.
**Chemical treatment**

Chemical (herbicide) treatment can be a key part of the saffron thistle integrated management plan to assist in depleting the soil seed bank reserves. It is desirable to use it in combination with grazing, fertilizing and cultivation practices.

The Australian Pesticides & Veterinary Medicine Authority (APVMA) is responsible for the assessment and registration of agricultural and veterinary chemicals in Australia. As chemical products are registered on a daily basis and renewal of these registrations are undertaken each financial year, there is much change in the registration status of products each year. The APVMA information is available at: [http://www.apvma.gov.au/](http://www.apvma.gov.au/)

The Chemical Standards Branch (CSB) of the Department of Primary Industries provides information on agricultural chemicals registered in Victoria and their uses. Enquiries will be referred through the Customer Service Centre on 136 186. Information can also be obtained by visiting the CSB website: [www.dpi.vic.gov.au/chemicalstandards](http://www.dpi.vic.gov.au/chemicalstandards)

*Under Victorian legislation there are controls on the use of agricultural chemicals. It is the responsibility of the user to be familiar with these controls. These responsibilities are outlined in Agriculture Note AG0520: "Responsible use and handling of farm chemicals".*

Farm chemicals are registered for specific uses. Each chemical has a 'product label', which documents the approved use and the approved rate of use within each State of Australia. This label is important in determining the appropriateness of chemical use.

*Choose only products registered for use on saffron thistle in your particular situation. Read the product label carefully and follow all label instructions.*

Your chemical retailers can provide information on registered chemical products that are available in their store. They can also supply a 'material safety data sheet' which outlines the health and safety issues associated with use of a product.

*Legal use of some restricted chemicals requires the user to possess an Agricultural Chemical User Permit (ACUP). Other chemicals have restrictions on their use in Agricultural Chemical Control Areas (ACCAs). Information on ACUPs, ACCAs and other chemical information can be found at the website: [www.dpi.vic.gov.au/chemicalstandards](http://www.dpi.vic.gov.au/chemicalstandards)*

Use a product containing active constituents or combinations of active constituents that are registered for use in Victoria to control saffron thistle in the particular situation in which you need to use chemical control.

**Further advice**

- Contact your local landcare or friends group for further assistance and advice.
- Call the DPI/DSE Customer Service Centre on 136 186.
- Contact your local DPI Pest Management Officer for advice on local programs.
References


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This Information Note was originally developed by Ian Faithfull, Ross Williamson and by Melanie Martin, DPI, August 2006.

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