

Primary Industries, Water, and Environment

Service Sheet

PRODUCED BY THE DEPARTMENT OF PRIMARY INDUSTRIES, WATER, AND ENVIRONMENT

Revised 11/02
10/00
Agdex 648

Crow Garlic (*Allium vineale* L.)

Crow garlic, a plant closely related to cultivated onion and garlic is found in a number of agricultural areas throughout the State. It occurs as a weed of pasture, roadsides and waste areas. Once established on heavy soils it is particularly persistent and in such situations is a serious problem.

Originally a native of Europe and South-West Asia it is now established in the US, New Zealand and Australia. In Australia it occurs principally in Victoria but smaller infestations occur in New South Wales, Western Australia and South Australia. It is widespread in Tasmania but infestations are typically localised and small.

Identification and Life Cycle

In any population of crow garlic two kinds of plant are found: 1) vegetative plants which produce leaves only; 2) flowering or scapigerous plants which produce, as well as leaves, a scape or stem at the tip of which the flower head is formed.

Vegetative plants out-number flowering plants. They produce two or three long, slender, hollow, blue-green leaves, cylindrical in section with a shallow groove on the upper surface. By maturity one soft central bulb and one or two hard

offset bulbs are formed at the base of the plant (F in illustration).

Flowering plants (A in illustration) are larger than vegetative plants producing four or five leaves and a single scape which is up to one metre in height. The scape is smooth, cylindrical, with a center partially filled with discontinuous pith. The flowering head is at first enclosed in a papery spathe (membrane surrounding the flower) which in summer bursts open to reveal the flower or, in the case of Tasmanian plants, bulbils (B). Flowering heads may produce flowers, bulbils, or a mixture of the two - but in Tasmania flowers are rarely produced. The umbel of bulbils may be single, or up to four umbels may form in the one head, bearing a total of up to 300 bulbils. The bulbils (C), enclosed in a thin, papery, straw-coloured sheath are about the size of a grain of wheat.

At the base of the plant a single soft white offset bulb (D), is produced inside the innermost leaf-sheath, and outside the outer sheath about six hard straw-coloured offset bulbs are formed (E).

Each type of bulb and the bulbils are capable of developing into a scapigerous¹ plant during the next season but in most cases the hard offsets remain dormant for

¹ Scapigerous - bearing a scape or stem. In most plants this would be a flowering plant but in Tasmania crow garlic rarely produces flowers and the term 'flowering plant' would be misleading.

up to six years. Most of the plants growing from hard offsets and from bulbils are vegetative whereas flowering plants develop from central bulbs or soft offsets.

Germination starts in the autumn and vegetative growth continues slowly through to spring when the growth rate increases. At this stage the reserve of nutrients in the bulb is at a minimum and the plant is most susceptible to disturbance.

Dispersal

An increase in numbers in an established infestation is due largely to germination of the central bulbs and offsets - bulbils apparently having little effect. Spread to new areas may occur from bulbs, offsets and bulbils being scattered by cultivation, movement of topsoil, in mud on agricultural implements or on the feet of stock; by bulbils being carried along by heavy rains, in hay or, more rarely, by bulbils as an impurity in seed grains or pulse.

Economic Significance

In addition to its ability to compete with crops and pasture, crow garlic is also significant as a weed due to its production of allyl sulphide, giving it a strong garlic smell.

Milk and meat products from stock grazing infested pastures become tainted and unfit for sale. To avoid such tainting milking cows should not be allowed access to contaminated pasture and stock for slaughter should be taken off contaminated pasture two weeks before slaughter.

In cereal crops the ripe bulbils are harvested with the grain and cannot be removed either by the header or by subsequent cleaning. The crop is, as a result, unsaleable for malting or flour-milling.

The seed and bulbils of crow garlic are declared in some countries and may be an impediment to export.

Integrated Management

Control programs should combine a number of options such as cultivation, appropriate crop rotation and herbicides. Your key objective should be to prevent new bulb formation in spring while exhausting existing bulbs over the autumn-winter period.

Cultural control

Autumn sown cereal cropping favours the spread and increase of crow garlic. Bulbs, bulbils and offsets are scattered by the cultivations preceding sowing and the life cycle of the garlic coincides with that of the crop.

An acceptable and practical approach to reduction of an infestation is a program of spring sown cereal cropping. Where possible cultivations should extend from winter through to spring (the earlier cultivations stimulating germination and breaking dormancy in hard offsets, and the later ones damaging the plants when their reserves of nutrient are exhausted). Later cultivations may be replaced with the application of an effective herbicide.

To minimise further spread, always work from the clean end of a paddock into the infested area. Machinery should be carefully washed down before leaving the affected area.

Ensure the best growing conditions are provided for the crop or pasture to maximise competition.

Chemical control

Cereal Crops (Barley, triticale and wheat)
In cereal crops, low volatile 2,4-D esters (600 g/ formulation) can be applied at rates

ranging from 0.47 - 5.9 L/Ha. For specific rates the product label should be consulted. Lower rates will lead to suppression only.

Low volatile 2,4-D esters can be used in conjunction with autumn cultivations and spring sown crops to maximise the effectiveness of your control program.

As 2,4-D can cause severe damage to horticultural crops up to 10km distant, a permit to use 2,4-D is required for use outside the period between 15 May to 15 September. Permit applications can be obtained from the Registrar of Pesticides, Department of Primary Industries, Water and Environment, Hobart.

Products containing metsulfuron-methyl can also be applied in cereals at 5-7 g/ha + wetting agent to crow garlic at the 1-2 leaf stage. Metsulfuron is particularly effective on bulbous species. Specific rates vary according to product labels. Metsulfuron should be used with caution and is not suitable for all cereal varieties. As metsulfuron has residual activity, plant back periods apply to following crops. Always check the label.

Non Crop / Non Agricultural Land

In these areas dicamba products at 22 L/Ha or 1.5 L / 100L water will achieve reasonable control. Applications of these products should be made during spring prior to bulb formation and flowering. Addition of a wetting agent is essential. Repeat application may be necessary if dormant bulbs start shooting.

Dicamba products at the rate specified are non-selective and are **not suitable for use in pasture or crops**. They will damage trees or shrubs where their roots reach the treated area.

Herbicide recommendations are made subject to the product being registered for that purpose under relevant legislation. It is the users responsibility to check that registration or an off-label permit covers the proposed use. If in doubt, check with the Registrar of Chemical Products, Department of Primary Industries, Water and Environment.

Pasture Both metsulfuron-methyl products at 15 g / Ha and low volatile 2,4-D esters (600 g/ formulation) can be used in tolerant pasture situations to control crow garlic. Metsulfuron can severely damage perennial and annual ryegrass pasture.

Low volatile 2,4-D ester can be applied at rates ranging from 0.47 - 5.9 L/Ha. For specific rates the product label should be consulted.

Both products will cause extensive damage to clover and should not be used where clover retention is desired.

Metsulfuron-methyl products should be applied during July/August when bulb exhaustion has occurred. Addition of a wetting agent is essential.

Status under the *Weed Management Act 1999*

Crow garlic is a declared weed in Tasmania, largely due to its potential impacts on agricultural productivity. As such, its importation, sale and distribution are prohibited. In addition, because its occurrence across Tasmania is not yet large, all land holders are required to eradicate this plant from their properties. The legislative requirements for this declared weed are specified in a statutory weed management plan available from the DPIWE.



Bee Careful !

Some herbicides are toxic to bees. As a general rule, avoid applying herbicides when and where bees are foraging. Always read the label. **Note:**

Table 1. Herbicides suitable for crow garlic control in NON-CROP situations, and recommendations for use

| Herbicide (Active ingredient) | Commercial product (Content of active ingredient) | With-holding Period prior to grazing | Boom Rate (per hectare) | Spot Rate (per litre) | Comments |
|-------------------------------|---|--------------------------------------|-------------------------|-----------------------|---|
| Dicamba | 200 g/L | N/A | 22 L | 1.5 L | Addition of surfactant essential. Dicamba at this rate is non selective and not suitable for use in pasture or crops. |

Table 2. Herbicides suitable for crow garlic control in PASTURE situations, and recommendations for use

| Herbicide (Active ingredient) | Commercial product (Content of active ingredient) | With-holding Period prior to grazing | Boom Rate (per hectare) | Spot Rate (per litre) | Comments |
|-------------------------------|---|--------------------------------------|-------------------------|-----------------------|--|
| Metsulfuron | 600 g/kg | NIL | 15 g | - | Will severely damage clover. Can cause severe damage to young perennial and annual ryegrass pastures. Apply July/August. Addition of wetting agent is essential. |
| 2,4-D ester | 600 g/L | 7 days | 0.47-5.9 L | - | Will cause severe clover damage. For specific rates consult the product label. |

Table 3. Herbicides suitable for crow garlic control in CEREAL CROP situations (Barely, triticale and wheat) and recommendations for use

| Herbicide (Active ingredient) | Commercial product (Content of active ingredient) | With-holding Period prior to grazing | Boom Rate (per hectare) | Spot Rate (per litre) | Comments |
|-------------------------------|---|--------------------------------------|-------------------------|-----------------------|---|
| 2,4-D ester | 600 g/L | N/A | 0.47-5.9 L | - | Lower rates will lead to suppression only. Check label for cultivar tolerance. |
| Metsulfuron | 600 g/ kg | N/A | 5-7 g | - | Apply at to crow garlic at 1-2 leaf stage. Check cultivar tolerance and plant back periods on product label. Addition of wetting agent essential. |

ALWAYS CHECK THE PRODUCT LABEL



- A. Scapigerous plants bearing a single head of bulbs.
- B. An umbel of two heads of bulbils.
- C. A bulbil. The outer sheath is splitting to reveal the purplish bulbil inside.
- D. The base of a scapigerous plant at the end of the season. The outer tunic has been removed to reveal the soft offset bulb and two hard offsets.
- E. Hard offsets clustered around the base of the plant shown in D before the removal of the outer tunic.
- F. The base of a vegetative plant at the end of the season. A soft central bulb and one hard offset have formed.
- G. Hard offset bulbs.