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Capeweed and its management

DPIRD-64

Capeweed (*Arctotheca calendula*) is a prostrate, stemless, sprawling annual herb that germinates during autumn and winter. In Western Australia (WA), competition from 7 to 90 capeweed plants per square metre in a wheat crop can reduce crop yield by 28 to 44% and net return by 25 to 76%.

Identification and attributes

Latin name - *Arctotheca calendula*

Distinguishing features

- Capeweed is a prostrate, stemless, sprawling annual herb that germinates during autumn and winter.
- It has hairless, club-shaped cotyledons (seed leaves).
- The first 2 leaves grow as a pair, are spear-shaped, and may be scalloped.
- Subsequent leaves grow singly and are deeply lobed with a rounded apex.
- Leaves are succulent, the upper surface is hairy, and the lower surface is covered with a mat of white hairs.
- Solitary 'daisy-like' flower heads are brilliant yellow (ray florets) with black-purple central disc florets.
- Seeds are covered in pink–brown fluffy, woolly hairs.



Image 1: Young seedling capeweed, showing the difference between the cotyledons and the first true leaves. Photo – Alex Douglas



Image 2: Capeweed flowers have bright yellow petals (rays) and a black centre. Photo – Rod Randall, Department of Primary Industries and Regional Development

Biology

This species favours 'false breaks'. Low-rainfall events lend themselves to capeweed germination before other species, because the woolly seed cover attracts moisture and reduces desiccation.

It can also survive periods of drought better than most crops and pastures, so a dry period following germinating rains increases the proportion of capeweed.

Autumn rains induce germination of capeweed if the soil surface remains wet for a few days. Subsequent rain and residual soil moisture continue to support growth of seedlings, which will persist through winter crops if not killed before crop sowing.

Secondary dormancy, a combination of embryo and seedcoat-based dormancy, may be initiated by low winter temperatures. Long-term dormancy is dependent on regional adaptation. In WA, more than 95% of capeweed seed from the southern agricultural area germinated on the soil surface at the break of season. Only 5% of seed from the northern agricultural area germinated during the first year, and 75% in the second season, with 20% remaining dormant for more than 2 years. Dormancy cycled to favour autumn germination.

Why is capeweed a weed?

Capeweed competes with crops (cereals, canola, and pulses) for water, nutrients, and likely light, resulting in yield reduction. Plants emerging during early autumn become large before the crop is sown and compete strongly with the crop. A plant at rosette stage can be as big as 600 millimetres (mm) in diameter and can outcompete any other plants shorter than capeweed plants.

Such large plants are difficult to control with herbicides. They are often transplanted during sowing and their re-emergence with crop plants can lead to population levels that decrease crop yield.

In WA, competition from 7 to 90 capeweed plants/m² in a wheat crop can reduce crop yield by 28 to 44% and net return by 25 to 76%.

A capeweed plant growing under favourable conditions can produce up to 4000 seeds.

Capeweed is often associated with scouring in sheep and can also cause nitrate and nitrite poisoning of livestock, particularly ruminants. Nasal granuloma may occur in cows that inhale air with high concentrations of capeweed pollen for long periods.

Herbicide resistance

Although there are no cases of resistance in WA, capeweed has developed resistance to diquat and paraquat (Group 22) in Victoria, and 2,4-D (Group 4) in South Australia.

Integrated weed management

There are many tactics that could be considered when developing an integrated plan to manage capeweed. These include herbicide tolerant crops, inversion ploughing, delayed sowing, pasture spray-topping, and using herbicides.

Table 1 Tactics that should be considered when developing an integrated plan to manage capeweed (*Arctotheca calendula*)

Tactic name	Likely % control (range)	Comments on use
Herbicide tolerant crops	90 (80–95)	Good control can be achieved in triazine-, imidazolinone-, and glyphosate-tolerant crops.
Inversion ploughing	90 (50 to 98)	Use skimmers to ensure deep burial of seed. Not suitable for some soil types.
Delayed sowing	60 (50 to 90)	Works best on undisturbed paddocks.
Fallow and pre-sowing cultivation	60 (20 to 95)	Requires drying conditions following cultivation. Transplants are common in wet conditions. Burial of seed will lead to dormancy.
Knockdown (non-selective) herbicides for fallow and pre-sowing control	80 (70 to 99)	Good control of actively growing unstressed weeds. Poor control of early germinated weeds that have lost leaves due to early season drought.
Double knockdown or 'double knock'	90 (80 to 99)	Better control of hard to kill plants and those in dense infestations.
Pre-emergent herbicides	75 (70 to 85)	Diuron and picloram provide good control

Tactic name	Likely % control (range)	Comments on use
Pasture spray-topping	70 (30 to 90)	Graze heavily in winter to ensure uniform flower emergence. Graze or respray survivors.
Selective post-emergent herbicides	90 (80 to 99)	Clpyralid provides good control, especially of hard to kill plants. Limited control options in leguminous crops. Spray grazing is good for pastures.
Renovation crops and pastures – green manuring, brown manuring, mulching and hay freezing	90 (80 to 99)	Graze heavily in winter to ensure uniform flower emergence. Graze or respray survivors.
Grazing – actively managing weeds in pastures	50 (30 to 80)	Rotationally graze pastures and use spray-grazing with MCPA or 2,4-D, if necessary, in clover-based pastures. Flumetsulam plus diuron provides reasonable control in many other legume-based pastures.

Contact us

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More information

[Integrated Weed Management Manual](#) | Grains Research and Development Corporation (grdc.com.au)

[WeedSmart](#) | WeedSmart (weedsmart.org.au)

Refer to the department website at dpird.wa.gov.au for more information about the following:

- Crop weeds
- Summer weeds
- Herbicides

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