

What impact does drought have on weeds?

Andrew Storrie

Agronomist Weeds, Emergencies & Strategic Response, Tamworth

Tony Cook

Technical Officer, Emergencies & Strategic Response, Tamworth

The implications of drought on weeds are twofold – dry soil conditions prolong the longevity of the weed seed banks; and the import of fodder and grain potentially brings new weed problems onto the farm.

Longevity of weed seeds

Dry soil conditions prolong the longevity of weed seeds because the fungi and bacteria that attack seeds need moisture to grow. Weed seeds such as black bindweed can last up to seven years in the soil under dry conditions. The viability of weed seeds is also not affected – it is just like having the seeds in a paper bag in the cupboard.

Long dry spells, such as drought, also lead to the mineralisation of nitrogen which can be quickly used by weeds following rain. In cropping situations this should be addressed immediately to prevent soil nitrogen being wasted on weeds rather than utilised by the crop.

When a rain event occurs and weeds have germinated, the weeds need to be identified and controlled by spraying and/or cultivation well before weed seed set. If possible, it would be advisable to delay sowing of crops up to a week to allow the first germination of weeds for full control.

Be aware that the vegetative parts of perennial weeds, such as silverleaf nightshade and blue heliotrope, need to be controlled as well as controlling seed set. Seeds are often the main method of dispersal between districts.

Key points

- The importation of fodder and grain potentially brings new weed problems onto the farm.
- Be alert for new weeds, especially on areas where stock have been fed. If possible, restrict drought feeding to a sacrifice area.
- Have new weeds identified and control them to stop seed set.
- Dry conditions prolong seedbank life.
- Identification and control are important for two years after the drought

Table 1, below, shows the longevity of the seeds of 38 weed species.

Factors affecting seedbanks

Soil moisture

Seeds require a certain moisture level to germinate. Fungus and bacteria attack seeds in the soil but these micro-organisms require moisture to grow. Therefore dry soil conditions will extend seedbank life.

Predation

A range of animals feed on seeds in the soil. Mice readily feed on large seeds such as wild oats and melons. Parrots and cockatoos also feed on a wide range of seeds remaining on the soil surface, while ants can heavily predate small seeds such as grasses.

Burial depth

Seeds that remain on the soil surface are more prone to predation and are also more likely to germinate with small rain events. Large fluctuations in soil surface temperature will break the dormancy



Table 1. Longevity of the seedbank of different weed species, assuming no replenishment.

Weed common name	Botanical name	Seed life
Annual ryegrass	<i>Lolium rigidum</i>	Short
Barnyard grass	<i>Echinochloa</i> spp.	Short
Bathurst burr	<i>Xanthium spinosum</i>	Medium
Barley grass	<i>Hordeum leporinum</i>	Short
Black Bindweed/climbing buckwheat	<i>Fallopia convolvulus</i>	Medium
Bladder ketmia/wild cotton	<i>Hibiscus trionum</i>	Medium
Capeweed	<i>Arctotheca calendula</i>	Medium
Cobbler's peg/farmer's friend	<i>Bidens pilosa</i>	Short
Common heliotrope	<i>Heliotropium europaeum</i>	Long
Corn gromwell/white ironweed	<i>Lithospermum arvense</i>	Medium
Cowvine/peachvine	<i>Ipomea lonchophylla</i>	Medium
Deadnettle	<i>Lamium amplexicaule</i>	Medium
Dwarf amaranth	<i>Amaranthus macrocarpus</i>	Short
False castor oil/thornapples	<i>Datura</i> spp.	Medium
Fleabane	<i>Conyza</i> spp.	Short
Fumitory	<i>Fumaria</i> spp.	Long
Horehound	<i>Marrubium vulgare</i>	Long
Khaki weed	<i>Alternanthera pungens</i>	Short
Liverseed grass	<i>Urochloa panicoides</i>	Short
Melons	<i>Citrullus</i> and <i>Cucumis</i> spp.	Medium
Mexican poppy	<i>Agemone ochroleuca</i>	Medium
Mintweed	<i>Salvia reflexa</i>	Medium
Noogoora burr	<i>Xanthium pungens</i>	Medium
Paradoxa grass/phalaris	<i>Pharlaris paradoxa</i>	Short
Paterson's curse	<i>Echium plantagineum</i>	Long
Pigweed	<i>Portulaca oleracea</i>	Medium
Prickly lettuce	<i>Lactuca serriola</i>	Short
Quena	<i>Solanum esuriale</i>	unknown
Saffron thistle	<i>Carthamus lanatus</i>	Long
Silverleaf nightshade	<i>Solanum elaeagnifolium</i>	Long
Skeleton weed	<i>Chondrilla juncea</i>	Short
Sowthistle/milk thistle	<i>Sonchus oleraceus</i>	Short
Tarvine	<i>Boerhavia dominii</i>	Medium
Turnip weed	<i>Rapistrum rugosum</i>	Long
Variiegated thistle	<i>Silybum marianum</i>	Long
Wild oats	<i>Avena</i> spp.	Short
Wild radish	<i>Rhaphanus raphanistrum</i>	Long

Weed common name	Botanical name	Seed life
Wireweed	<i>Polygonum aviculare</i>	Medium
Yellow vine/cat-head	<i>Tribulus terrestris</i>	Medium

Source: Tony Cook, Northern Weed Research and Development Unit.

* Short-lived seeds (80 to 90% gone after one year, if no replenishment). Moderate-lived seeds (50 to 80% gone after one year, if no replenishment). Long-lived seeds (<50% gone after one year, if no replenishment).

of 'hard' and dormant seeds. Germination of some seeds is also influenced by light and oxygen levels.

Seed that has been buried by cultivation or stock hooves or fallen down cracks are in a more stable environment, and less likely to germinate.

Importation of weeds

The transportation of both fodder and livestock increases the risk of weeds being introduced into your local area.

The following weed species are most likely to cause concern:

- Common heliotrope (*Heliotropium europaeum*)
- Summer burrs – Bathurst and noogoora burrs (*Xanthium spp.*)
- *Amaranthus spp.*
- Caltraps (*Tribulus terrestris*)
- Thistles
- Panic grasses (*Panicum spp.*)
- Mintweed (*Salvia reflexa*)
- Johnson grass (*Sorghum halepense*)
- Wireweed (*Polygonum aviculare*)
- Parthenium weed (*Parthenium hysterophorus*)

Some of the weeds above may already exist in your area but need to be monitored and managed as they may pose problems in the future.

A significant rainfall event will germinate any weed seeds, so careful attention must be paid to all feeding out areas. It is preferable that these feeding out areas be restricted to make it easier to implement weed control measures.

Native and feral animals may also be accessing any available livestock feed so there needs to be close monitoring of water points.

Animals introduced onto a property, either in a restocking program or returning from agistment, can also introduce weeds.

Several studies have shown that up to 12% of weed seeds eaten can pass through the gut of animals and remain viable.

Control measures

Closely monitor all feeding areas and watering points for up to two years after the drought.

Identify all weed outbreaks – even if it is only one plant. Your local District Agronomist can assist in identification.

Implement a control program – either spraying or cultivation.

An accurate assessment of the situation and a well planned long term strategy will form the basis of an effective post-drought weed control program.

Further information

Primefact 365 *Weeds – a threat to drought recovery.*

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ISSN 1832-6668

Replaces Agnote DPI-433

Check for updates of this Primefact at:

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Job number 7322