



# Weeds and drought

Drought conditions impact heavily on primary production and an unfortunate side effect of a drought breaking is usually an increase in the presence of new and existing weeds on a property. These weeds have the potential to cause further economic and production losses to an already drought-impacted farming enterprise highlighting the importance of targeted planning and prevention measures.

Since the *Biosecurity Act 2015* came into effect in 2017, producers in NSW should have implemented a Biosecurity Plan on their property. Biosecurity planning is a shared responsibility that protects our environment, economy and community from biosecurity threats such as weeds, pests and diseases. An active Farm Biosecurity Plan is an important tool for landholders to combat the threat of invasive weeds particularly during and post-drought. Combined with integrated weed management and sustainable grazing and agricultural practice, landholders are now empowered to implement best weed biosecurity management practices to minimise the incidence and impact of weeds.

## Why do weeds thrive after drought?

Drought can devastate existing vegetation, removing competition for light, nutrients, moisture and space which allows quick establishment of weeds when conditions become favourable. Drought creates dry soil conditions that prolong the viability of weed seeds. The fungi and bacteria that break seeds down need moisture to function. In dry soil, weed seeds do not break down, and remain completely viable. Weeds will germinate from the seed bank immediately after rain occurs. Drought also causes mineralisation of nitrogen in the soil, and newly germinated weeds take advantage of these nutrients.

After a drought, existing weeds on a property may spread to new areas, weed densities can increase, and new weed species may have been introduced.

## How can weeds get on to your property?

### Through supplementary feed

Drought often results in the importation of fodder and grain from both local and international suppliers, and this can bring new weeds onto a property. The following weeds are most likely to cause concern:

Table. 1.

Common heliotrope	( <i>Heliotropium europaeum</i> )
Summer burrs – Bathurst and Noogoora burrs	( <i>Xanthium</i> spp.)
Amaranthus spp.	
Caltrops	( <i>Tribulus terrestris</i> )
Thistles	
Panic grasses	( <i>Panicum</i> spp.)
<u>Mintweed</u>	( <i>Salvia reflexa</i> )
<u>Johnson grass</u>	( <i>Sorghum halepense</i> )
Wireweed	( <i>Polygonum aviculare</i> )

Other weeds of significance include:

Parthenium weed (*Parthenium hysterophorus*) from Queensland;

Bifora (*Bifora testiculata*) and bedstraw/cleavers (*Galium tricornutum*) from South Australia (both widespread in the South Australian wheat belt);

Silverleaf nightshade, wild radish (*Raphanus raphanistrum*) and spiny emex (*Emex australis*).

An important component of a Farm Biosecurity Plan is record keeping including the completion of the Introduced Livestock Feed Register and Commodity Vendor Declarations. These declarations can be requested from growers and vendors with all purchases of introduced grain and fodder. Obtain as much detail as possible about the source and quality of the fodder or grain being brought onto the property and if possible complete a visual assessment for weed contaminants. Fodder and grain from interstate and overseas pose the greatest risks of introducing new weeds on-farm.

Supplementary feed can include other items that can cause animal health issues if it has not been made well. Green Cestrum and young Sorghum could cause poisoning if contained in Hay. Animal carcasses that are accidentally incorporated into bales of hay can cause botulism.

### **Through livestock movements**

New weeds can also be introduced as herd numbers increase as part of a restocking program or when returning from agistment. Studies have shown that up to 12% of weed seeds can pass through the digestive systems of livestock and remain viable.

Under your Farm Biosecurity Plan, introduced or returning livestock should be quarantined. For best practice weed control restrict stock movement across the property for at least two weeks. Check holding paddocks for the presence of weeds germinating control accordingly.

### **Through seed and machinery**

Weeds can also be introduced to pasture and cropping land via contaminated seed during sowing and via machinery throughout the year. Sourcing seed from certified suppliers and having a weed hygiene procedure and designated wash down areas reduces the risk of spread.

### **Through herbicide resistant weed seed**

There is further risk that contaminated fodder and grain could contain herbicide resistant weed seeds - for example, annual ryegrass. Herbicide resistance is prevalent in northern and central NSW and widespread in the grain belts of South Australia and Western Australia.

## **What impacts do weeds have after drought?**

### **Livestock poisoning**

As significant rainfall is received following a period of drought, there can be an increased incidence of livestock poisoning from weeds. Stock losses are attributed to direct plant poisoning and photosensitisation. Weeds of significant importance are:

- Panic species and St Johns Wort (causing photosensitisation)
- Amaranthus species (causing nitrate poisoning and kidney failure)
- Rock fern (causing blood in urine and sudden death)
- Green cestrum (causing sudden death)
- Marshmallow weed (staggers and possible death), and
- Thistles (causing nitrate poisoning).

Other plants can cause livestock poisoning during droughts. Hay or Silage that is brought in may have a higher level of nitrate than the animals are used to which can cause pulpy kidney. Vaccination (5 in 1) prior to feeding and gradual introduction of new feed is important.

Kikuyu pastures are sometimes toxic after rapid growth post drought.

### **Increased weed susceptibility on fallow cropping areas**

In cropping areas, the immediate problem is fallow weeds, which quickly mine the soil of both valuable nutrients and moisture. Fallow weeds can be controlled by a combination of mechanical and chemical practices.

Weeds of greatest significance in cropping areas are listed in Table 1 in the supplementary feed section.

In pastoral and rangeland areas, weeds of greatest significance are:

- Fireweed (*Senecio madagascariensis*)
- Blackberry (*Rubus fruticosus* species aggregate)
- Giant parramatta grass (*Sporobolus fertilis*)
- Blue heliotrope (*Heliotropium amplexicaule*)
- Nodding thistle (*Carduus nutans*)
- Scotch thistle (*Onopordum* species), and
- St John's wort (*Hypericum perforatum*).

### **Weeds are a threat to drought recovery**

Weeds provide an additional financial impact in both production decline and cost of control, both in the short and long term. It is important to maintain vigilance so that weeds do not become a serious threat to drought recovery on a property. An accurate assessment of the situation must form the basis of an effective weed control program after drought.



## What can you do to reduce impact during and following drought

### *Restriction and Monitoring of feedout areas and access road*

Keep detailed Livestock Feeding Records by paddock and mob and carefully consider where the grain and fodder are to be fed. Feed-out areas should be restricted to one or two "sacrificial paddocks" located where regular checks can be made after each rain event for up to two years after a drought. Flat, arable areas will allow easy access for integrated weed control (mechanical, chemical, biological or grazing management). When considering herbicide resistance, it is best to avoid feeding in or near cropping paddocks. Take care not to feed livestock in catchment areas for farm dams as manure and weed seeds can contaminate water storages. All Farm Biosecurity Plans should control farm access by vehicles and farm machinery including the provision of designated wash down areas to reduce the chance of weed seeds and plant fragments hitching a ride on-farm. Road frontages should also be monitored.

### *Monitor riparian areas and water points*

Native and feral animals may also access livestock feed and stock water, increasing the likely incidence of weed spread via both manure and through water flows. Water points and riparian zones should also be monitored for two years after a drought.

### *Control weeds quickly after germination*

When rain occurs and weeds have germinated, they need to be identified and controlled as soon as possible, and well before they are able to set seed. If possible, delay sowing crops for up to a week to allow the first germination of weeds to be fully controlled. Be aware that the vegetative parts of perennial weeds, such as silverleaf nightshade and blue heliotrope, need to be controlled as well.

### *Identify any new plants*

The most important aspect of controlling newly introduced weeds is early detection and identification. Keep a close watch for unknown plants and have them identified as soon as possible. Don't let them establish and set seed.

Contact Local Land Services, your local agronomist, or local council weeds officer for advice and assistance with identifying potential weeds.

The NSW DPI Weedwise website and app is a readily accessible resource for individual weed profiles and herbicides registered for control.

**[weeds.dpi.nsw.gov.au](https://weeds.dpi.nsw.gov.au)**



*St John's Wort*



*Bathurst Burr*



*Blue Heliotrope*



## Integrated Weed Management during and following drought

Integrated weed management employs a combination of chemical, physical, biological and management options to control problem weeds, minimising costs to the farm enterprise and maximising environmental outcomes. Drought recovery planning for integrated weed management needs to begin before rain breaks arrive and may include a combination of expert advice, grazing management, herbicide programs cultivation, and biosecurity planning and record keeping.

### ***Sustainable pasture and agricultural management***

Maintaining adequate groundcover will minimise the potential for invasive weeds to take hold on non-arable grazing country following extended periods of drought. Sustainable pasture and land management based on some form of a rotational grazing system of pasture

can improve post-drought outcomes and reduce land degradation. Pasture and ground cover measurements designed to trigger livestock movements between paddocks and/or de-stocking create production, profit and environmental efficiencies for farming enterprises. Advice is available from Local Land Services including information on training courses and management guides for NSW DPI Prograze and Prograze Plus.

On arable country, one of the best weed control methods is to out-compete target weeds with equally aggressive crop or pasture species with matching growing seasons. For example, a post-drought pasture plan may include a tropical grass system, which once established, has proven a successful competitor against aggressive summer growing perennial weeds such as the deep rooted and drought-tolerant, Blue Heliotrope.



**Above:** A Blue Heliotrope infestation is depicted in a temperate pasture at left, and controlled in a productive tropical perennial grass pasture over the fence at right. Successful management of persistent weeds such as Blue Heliotrope require an integrated approach beginning with timely chemical control, followed up with the provision of a competitor with a matching spring to autumn growing season. A boost in soil nutrition can then give the pasture a head start over the weed, assisted by rotational grazing and ground cover management.

### **References**

Primefact 430 (2007) What impact does drought have on weeds?, NSW Department of Primary Industries, Orange.

Primefact 372 (2007) Weed strategies following drought, fire and flood, NSW Department of Primary Industries, Orange.

Primefact 365 (2007) Weeds – a threat to drought recovery, NSW Department of Primary Industries, Orange.



### **Further information**

For agronomy advice contact Hunter Local Land Services

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**[www.hunter.lls.nsw.gov.au](http://www.hunter.lls.nsw.gov.au)**

For weed profile, control and biosecurity duties visit NSW Weedwise website and App

**[weeds.dpi.nsw.gov.au](http://weeds.dpi.nsw.gov.au)**

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