

Weed Control in Peanuts in the Top End of the NT

(Arachis hypogaea. L)

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Weed management in peanuts should incorporate a number of weed control options, termed integrated weed management (IWM), which aims to:

- maximise the competitive ability of the crop;
- reduce the reliance on herbicides; and
- minimise weed seed set.

Eradication of a weed is usually impossible; reducing the numbers to manageable levels is an achievable aim. Weed management is a multi faceted operation. It involves several stages, including pre-crop and in-crop phases, and should also be aligned with a management plan for the whole property. A sound IWM strategy involves adoption of a range of management techniques, attention to machinery cleanliness and the prevention of potential seed transfer via livestock, and the use of chemical and non-chemical weed control both during and after crop production.



Photo courtesy of Pat Harden, Peanut Company of Australia

Figure 1. Peanut crop in the Katherine region

The plant stand in this crop is consistent, healthy and weeds have been minimised through an effective weed management strategy.

In order to decide on a weed management strategy, a thorough investigation of the likely weed threat and correct identification of problem weeds is essential. This must be completed some months before a crop is planted. Weed type and density will vary from one property to another and even between paddocks. Keeping records of weed types and your experiences in trying to control them is recommended and is very valuable information for future weed control. The most common weeds in peanuts are listed below, and an effort should be made to recognise these weeds in order to make strategic management decisions.

COMMON WEEDS IN PEANUTS

Table 1. Common weeds in peanuts in the Katherine/Daly region

Common name	Botanical name
Cavalcade	<i>Centrosema pascuorum</i>
Summer grass	<i>Bracharia</i> spp.
Windmill grass	<i>Digitaria</i> spp.
Sida	<i>Sida acuta</i>
Hyptis	<i>Hyptis suaveolens</i>
Senna	<i>Senna obtusifolia</i>
Phasey bean	<i>Macroptilium lathyroides</i>
Goat's Head Starburr	<i>Acanthospermum hispidum</i>
Caltrop	<i>Tribulis</i> spp.
Pigweed	<i>Portulaca</i> spp.
Ipomea	<i>Ipomea</i> spp.
Native gooseberry	<i>Physalis</i> spp.
Sesbania pea	<i>Sesbania cannibina</i>
Various native grasses	<i>Eragrostis</i> spp., <i>Sporobolus</i> spp. and others

PRE CROP CONTROL

Weed control should ideally begin in the season prior to planting peanuts. This can be achieved by strategies such as planting a suitable rotation crop, cultivation, and use of a green manure crop or through chemical control. In some situations weed pressure is low and control is relatively easy and cheap.

If weed pressure is very high it may be necessary to defer cropping and adopt a weed control strategy, depending on the weed spectrum, which aims to reduce the high weed burden prior to the cropping phase. High levels of broadleaf weeds may require a smother crop such as a grass for one or more years, which also enables the use of a range of selective broadleaf weed herbicides.

Once the cropping area has been prepared for planting, weeds often emerge before sowing starts. These weeds must be controlled prior to the application of a pre emergent herbicide, which is not designed to control existing weeds (see pre emergent herbicides). A non-selective herbicide such as glyphosate can be used to control emerged weeds prior to planting. Glyphosate is often compatible with pre-emergent herbicides and so can be mixed to avoid duplication of applications.

'IN CROP' CONTROL

Peanuts are prostrate plants that do not compete well with taller weeds. They are slow to fill the interrow spaces and in some situations fail to fill the interrow at all. An adequate plant stand is the initial and critical 'in crop' weed management tool. Provide the crop with the best start you can by carefully managing the initial establishment period. This means that particular attention must be paid to seed delivery, accuracy of planting, nutrition and all the factors that influence crop growth. A synchronous flower set is critical for high quality and yield. Some chemicals could potentially disrupt flowering and so herbicides should be applied before the main flower set, which usually occurs in weeks six to eight. Inter-row cultivation is possible for early weed control, however it is not

usually recommended in dry season irrigated crops. This is due to the long growing season; also the disturbance of the soil surface will most likely result in stimulating further weed emergence. Refer to “Growing peanuts in the Top End of the NT” Agnote No. C 9 for more information on factors that influence growth.

‘In crop’ chemical control can be divided into use of pre emergent or post emergent application of herbicides. Weeds that emerge through the pre emergent herbicide can often be controlled using selective post emergent herbicides. Weeds that are not controlled at this stage will impede the early growth of the crop and cause problems with the harvest.

PRE EMERGENT HERBICIDES

Pre emergent herbicides provide suppression of selected weeds prior to and during crop emergence. A thin layer of chemical binds to the soil particles. As the susceptible weeds emerge they absorb the chemical and are either severely inhibited or killed. Heavy weed pressure requires use of a pre emergent herbicide for effective weed control. Combined with a post emergent herbicide strategy, this provides a dual action against weeds.

- Effective incorporation and binding is difficult in some soils and under some conditions. Pre emergent herbicides that do not require incorporation or that can be watered in are easier to apply.
- Maintaining the correct soil moisture during application is important. Apply to moist soil and allow time for the chemical to dry and bind to soil particles before applying large amounts of irrigation. Try to avoid heavy storms where possible.
- Mulch levels and soil type will affect the performance of most pre emergent herbicides. Mulch can interfere with the binding process to soil particles. Rates may need to be adjusted in minimum tillage situations.
- Choices include Treflan®, Dual®, Stomp®, Spinnaker® and Flame®.



Figure 2. Peanut crop in the Douglas Daly region

The area of crop on the left of Figure 2 had pre emergent Dual® applied at 2 L/ha. The area in the right of the photo did not receive any pre emergent herbicide, resulting in much higher weed pressure. This level of weed competition would result in significant crop losses.

POST EMERGENT HERBICIDES

Observation of the number and type of weed seedlings present is very important as the crop and weeds emerge. Practise to identify weeds at emergence. Check to see if they are the same weeds described in an earlier paddock monitoring. These initial observations will help when planning a post emergent weed control program.

Post emergent herbicides are applied to both the crop and the weeds after they have both emerged. The selective action of the chemicals kills or suppresses the weeds through the disruption of certain metabolic pathways. The crop either has a different metabolic mechanism or is able to tolerate a certain amount of disruption.

- If post emergent chemicals are used as the sole method of control, there is a risk of poor weed control if weather or some other factor affects the spray. In most situations they are best used in combination with a pre emergent application.
- Do not apply post emergent herbicides that affect broadleaf weeds during the main flowering period. This is usually around weeks six to eight.
- Determining an appropriate post emergent strategy can be complex. There are many options and combinations of options. The best strategy is to seek local knowledge and advice to determine an appropriate post emergent herbicide formulation. Local agronomists, DBIRD weed specialists and chemical companies are good sources of information.
- Choices include Blazer®, Basagran®, Gramoxone®, Legumex®, Falcon®, Fusilade®, and Verdict®.



Photo courtesy Pat Harden, Peanut Company of Australia

Figure 3. A peanut crop after the post emergent spray has been applied. The crop is quite healthy whilst virtually all the weeds have been killed.

WHEN TO SPRAY?

Judging the correct stage of weed development to apply herbicides is as important as deciding what chemical to use, particularly when using post emergent herbicides.

Pre emergent chemicals must be applied before the crop emerges. When applying post emergent herbicides there is a trade-off between letting the initial weeds get larger and therefore more difficult to kill, or waiting for the slower emerging weeds to germinate. Allow the largest weeds to get to optimum stage, which is the three to five,

leaf stage. Apply post emergent herbicides and then allow crop competition to control later emerging weeds. Ensure post emergent herbicides (especially for broadleaf) are applied before the main flowering period (six to eight weeks). Ensure other aspects of management are conducive to maximum growth. Refer to “Growing peanuts in the Top End of the NT” Agnote N° C9 for further information.

The best results are obtained by ensuring weeds (and the crop) are well watered and actively growing. This will ensure maximum uptake of the herbicide. Irrigate (if available) one day before application. Allow 12 hours for the canopy to dry before applying herbicides. Delay further irrigations for 24 hours after application.

Adverse weather will affect the activity of the herbicides; high temperatures, rain, and strong winds should be avoided if possible. Herbicides are most effective if applied early in the morning or around dusk.

WHAT HERBICIDE CAN I USE?

Table 2. Commonly used herbicides that are registered for use in peanuts in the NT

Registered name	Active ingredient	Concentration	Pre or post emergence	Broadleaf or grass control
Spinnaker®	Imazethapyr	240 g/L	Pre or post	Both
Flame®	Imazapic	240 g/L	Pre or post	Both
Stomp®	Pendimethalin	330 g/L	Pre	Both
Dual®	Metolachlor	720 g/L	Pre	Both
Treflan®	Trifluralin	400 g/L	Pre	Both
Gramoxone®	Paraquat	200 g/L	Post	Non selective
Legumex®	2,4-DB	500 g/L	Post	Broadleaf
Blazer®	Acifluorfen	224 g/L	Post	Broadleaf
Basagran®	Bentazone	480 g/L	Post	Broadleaf
Falcon®	Butoxydim	250 g/L	Post	Grass
Fusilade®	Fluazifop-P	212 g/L	Post	Grass
Verdict®	Haloxypop	520 g/L	Post	Grass

GENERAL INFORMATION

The risk of adverse weather must be considered before application. Pay attention to the minimum absorption period before rain as stated on the label. It can be very difficult to control weeds once they have only partially absorbed some chemical due to a rainfall event. Hot or windy weather should be avoided.

It is important to check that the herbicide is registered for use in peanuts.

Before mixing two herbicides, check to see if they are compatible. The mixes mentioned in this Agnote are compatible.

Read the label regarding the use of appropriate wetters/stickers, test the water periodically for pH and calcium levels. Specific additives may be required to compensate for poor water quality.

Chemicals have an optimum rate of carrier (water) to effectively cover the weed leaf surface. Generally speaking the larger the weed and or canopy, the more carrier will be required. Modifying spray patterns for optimum leaf coverage can enhance uptake of the spray.

Due to the genetic variation within weed populations, the unique climatic conditions experienced in the NT and variations in soil, it is likely that some experimentation will be required to find a weed strategy that is tailored to a specific situation.

Weed populations are dynamic and vary within the season and from year to year in their vigour, fecundity (ability to produce seed) and growth habit. For these reasons the efficacy of herbicides may vary from year to year.

Competition from the crop is an important factor in weed control. Gaps in the crop will quickly fill with weeds regardless of the chemical strategy used. Attention to crop uniformity will assist greatly with weed control.

Quarantine between areas is important; weed seed transfer in or out of the paddock is not desirable.

When handling and spraying herbicides the operator should always follow normal safety precautions. Read the label carefully before opening the container, and follow the instructions. Protective clothing is essential and includes a facemask, rubber gloves, long-sleeved shirt, long trousers and covered footwear. All containers should be thoroughly rinsed, and all operations should be carried out with care to avoid spillage and spray drift.

SOURCES OF INFORMATION ON WEEDS

There are many other sources of information that could assist you in identifying weeds and recommended controls, such as the Infopest® CD, PrimeNotes® CD (available from DPIFM Publications) and the Kondinin group publications.

Web sites are also useful, such as www.weeds.org.au This site contains a search engine that covers many other weed web sites.

Two very useful publications are “Weeds the Ute Guide Northern Grain Belt Edition” by Peter Wood, Michael Cahill, Ginevre Marlow and Nev Douglas, published by the Farming Systems Institute, Department of Primary Industries, Queensland, Toowoomba and “Plants of the Northern Australian Rangelands” by Tim Wheaton published by the Northern Territory Government printing office

DPIFM agronomists are familiar with local weeds and would be happy to help with identification and recommendations for control.

CONCLUSION AND RECOMMENDATIONS

The most universal herbicide strategy assuming **high** weed pressure (if **no** purple nutgrass sedge, *Cyperus rotundus* is present) is to:

- Ensure no weeds are present at planting (using cultivation and/or glyphosate).
- Use 2 L/ha of Dual® post plant, pre emergence, incorporate with a light irrigation (5-8 mm). If high levels of *Senna obtusifolia* are present then apply 4 L/ha of Stomp® instead of Dual®.
- Do not inter-row cultivate at any time.
- At three to four weeks after emergence apply broadleaf weed control. Use 1 L of Blazer®, 1 L of Basagran®, 1 L of Legumex® mixed together plus 2 L of Hasten® per hectare. Basagran® is optional if no *Sida* spp are present.
- If high levels of *Senna obtusifolia* are present then include 200 to 300 mL/ha of Gramoxone® to the above mix.
- Apply 150 mL per hectare of Verdict 520® **or** 1 L/ha of Fusilade® if grass control is required.

If nutgrass (*Cyperus rotundus*) is present, serious consideration should be given to the management strategy for that paddock for any crop. Peanuts are not recommended in a paddock with high levels of nutgrass. If low levels of nutgrass are present use of imazadolinine (Flame®/Spinnaker®) herbicides as a post emergent spray would assist with suppression.

CONTACTS FOR FURTHER INFORMATION

NT Department of Primary Industry, Fisheries and Mines
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WARNING

Legal restrictions in the NT prohibit the feeding of any foliage (leaves, stems) from the peanut crop including the use of grazing, hay and residues to feed livestock if chlorothalonil has been applied as a fungicide against leaf diseases at any point during the growing season (read the label on the fungicide packet).

Please visit us at our website:

www.nt.gov.au/dpifm

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