



# INTEGRATED WEED MANAGEMENT FACT SHEET

# NUTGRASS

(*Cyperus rotundus*)

Nutgrass (*Cyperus rotundus*), also known as purple nutsedge, Java grass, coco-grass and red nutsedge, is a major problem for the Australian vegetable industry.

Nutgrass spreads via its underground network of tubers (nuts). The above-ground seed is sterile.

It is extremely invasive under the right conditions (warm, wet soils) and requires planning, diligence and multiple strategies to control it on Australian vegetable farms.

## KEY POINTS AND RECOMMENDATIONS

- Nutgrass is hard to manage if the tubers are not targeted
- An integrated weed management (IWM) strategy, including cultivation measures and chemical control, is the best approach for reducing nutgrass populations to a manageable level
- Good farm hygiene is extremely important
- Rotating crop planting and harvest dates are essential
- Timely application of herbicides is crucial.

## IWM STRATEGY

**The only effective way to control nutgrass is to target the dormant nuts** (Figure 1). These nuts can persist in the soil for three to five years - and even as long as ten years under ideal conditions. Nutgrass is a perennial species that is favoured by tropical and subtropical climates and warm, wet soils. Strategies for controlling nutgrass must focus on exhausting the soil bank of viable nuts by combining cultivation measures, chemical control and physical control where possible.



**Figure 1.** Nutgrass plant (non-flowering) with white coloured rhizomes and dark coloured, oval shaped nut. The dark to bright green, shiny leaves typically show a deep vein channel on the underside.

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## CULTIVATION MEASURES

**Shifting crop planting and harvest dates** to avoid the most intense nutgrass periods for non-competitive (summer) crops is vital. Nut dormancy is broken by high temperatures (33 – 37 °C). Fluctuations in soil temperatures around the rhizomes and nuts stimulate shoot emergence.



**Figure 2.** Nutgrass development impacted by crop shading conditions: Popcorn shading the nutgrass 75 days after planting (top picture) versus beetroot outcompeted by nutgrass 70 days after planting (bottom picture).

**Good farm hygiene** to avoid spreading nutgrass into clean areas is extremely important. Eradicating nutgrass patches while they are small is the best approach. In this case, hand weeding and/or spot-spraying with glyphosate or other preferred herbicides (see **Chemical Control**) may be the best options. Mark the site and keep revisiting it regularly to manage any re-growth. Hand weeding will quickly become impractical if there are more than a few tubers present.

**Nutgrass does not survive extended dry conditions.** Tillage that brings nuts to the soil surface during hot, dry conditions, will allow the tubers to dry out and no longer be viable. Multiple tillage passes are usually required with new nuts being brought to the surface each time. However, a single tillage pass seven to 10 days post-glyphosate application at the flowering stage (see **Chemical Control**), can be very effective in reducing total nutgrass populations.

**Taller crops (including cover crops)**, by shading nutgrass plants, make a big difference. Sweet corn and popcorn are good choices for heavy shading and suppression of nutgrass (Figure 2). Combining these with registered herbicides (see **Chemical Control**) would be a very effective integrated management strategy for reducing the nutgrass population to a manageable level.

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## CHEMICAL CONTROL

**Glyphosate** is a systemic herbicide and a useful tool in controlling nutgrass outside the cash crop periods of the crop cycle. **Timing of application is crucial.** Glyphosate must be applied at the flowering stage of nutgrass at high rates, equal to or greater than 1.5 kg a.i./ha. Glyphosate applied prior to the flowering stage will only kill the leaves, leaving nuts to re-sprout and grow. Repeated treatments, always applied at the flowering stage, are usually required. Nutgrass plants usually flower around four to eight weeks after emergence. Allowing nutgrass to flower does not increase the risk of spread, since seed is sterile. Water conditioners and surfactants, like spray grade ammonium sulfate and LI 700, generally increase efficacy and improve results.

**The best soil residual herbicides** for controlling nutgrass are Semptra (halosulfuron-methyl – Group B) and Eptam (EPTC, S-ethyl dipropylthiocarbamate – Group J). Semptra should be applied before the 5-leaf stage of nutgrass. It has a long soil residual and plant back restrictions for many horticulture crops. Eptam, on the other hand, has a half-life of seven days. Soil containing nutgrass nuts must be cultivated thoroughly and deeply before and immediately after applying Eptam. Apply when above-ground growth becomes evident in spring.

**Dual Gold™** (S-metolachlor – Group K) may give some suppression, especially in conjunction with taller crops that shade and compete well with nutgrass (e.g. sweet corn, popcorn).

It is worth noting that **Slasher™** (pelargonic acid), used in organic growing, might be an option for controlling nutgrass. However, it may be more expensive and less effective than conventional herbicides.

**Always read chemical labels carefully and follow the instructions precisely.**

## PHYSICAL CONTROL

**Pigs, chickens and/or geese** root up and consume the nutgrass nuts providing effective and good levels of control. Overseas literature indicates 75 pigs devoured the nuts on one hectare in one day. Australian laws require an exclusion period between animals grazing (fresh manure deposited) and planting horticulture crops. High risk crops need a 90-day exclusion period, and for low risk crops, 45 days. For more information see the Soil Wealth factsheet: [https://www.soilwealth.com.au/imagesDB/news/AHRCompost\\_producers.pdf](https://www.soilwealth.com.au/imagesDB/news/AHRCompost_producers.pdf).

**Hand weeding** is generally impractical when nutgrass has invaded the farm on a large scale, due to high labour costs. However, hand weeding may be effective in removing small, isolated outbreaks of nutgrass before these outbreaks have a chance to spread and dominate.

**Soil solarisation** does not effectively control nutgrass nuts as they are too deep in the soil and therefore buffered from solarisation heat.

*We acknowledge and are grateful for UNE's research and publication through the project VG15070 'A strategic approach to weed management for the Australian Vegetable Industry'. See fact sheet [https://www.une.edu.au/\\_data/assets/pdf\\_file/0006/235995/une-weeds-nutgrass.pdf](https://www.une.edu.au/_data/assets/pdf_file/0006/235995/une-weeds-nutgrass.pdf)*

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