



NORTHERN

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GRDC™ **GROWNOTES™**



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GRAINS RESEARCH
& DEVELOPMENT
CORPORATION

SUNFLOWER

SECTION A

INTRODUCTION

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MORE INFORMATION

Download the Big Yellow Sunflower Pack (BYSP), videos and additional resources at www.bettersunflowers.com.au.

(Information from the BYSP is supported by GRDC and has been incorporated into the GRDC GrowNotes - Sunflowers.)

An extensive library of sunflower information is available at <https://bettersunflowers.com.au/documents/library.aspx>.

MORE INFORMATION

A general summary of the Australian grain growing regions is available at Greijdenus A, Kragt M. (2014). [The grains industry: An overview of the Australian broad-acre cropping](#)

Introduction

A.1 Agronomy at a glance

- Always plant sunflowers into a full profile of subsoil moisture.
- Sunflowers are dependent on arbuscular mycorrhizal fungi; addition of starter fertiliser is needed in long-fallow situations
- Check past residual herbicide applications; sunflowers are very susceptible to some herbicides.
- A failed crop cannot be grazed or baled.
- Sunflowers leave very little stubble cover for following fallow period.
- Do not mix ordinary (linoleic) seed with high oleic sunflower varieties when planting or harvesting.
- Do not rotate with legumes (as they are susceptible to many of the same diseases).
- Use of insecticidal seed dressings is important.
- Sunflowers can be a useful rotation crop in cereal systems if summer grass weeds are likely to be a problem.
- There are no options for control of broadleaf weeds in-crop.
- Bird damage can be severe, particularly if paddocks are near wooded areas or waterways.
- To protect bees, avoid using insecticides during flowering.¹

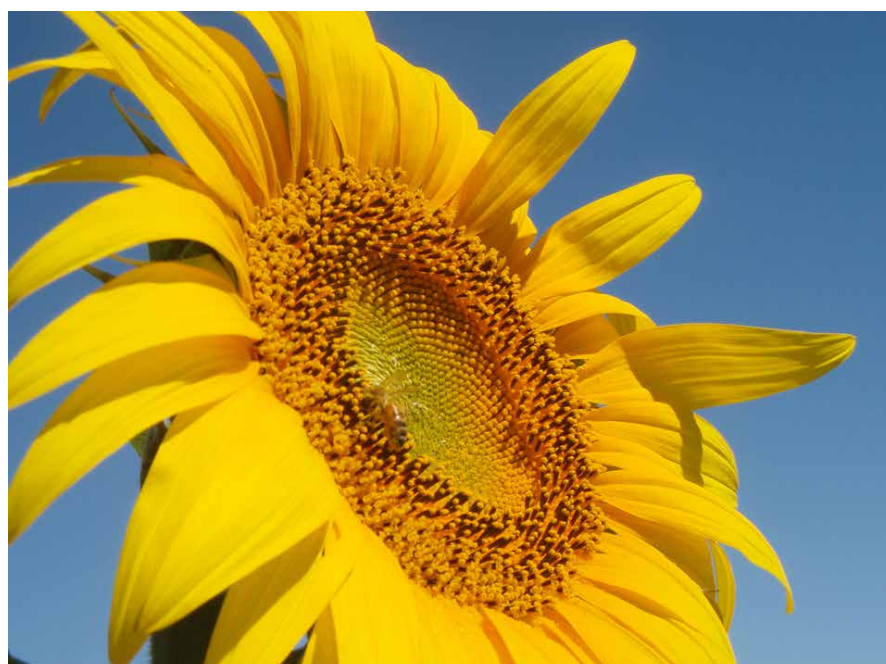


Figure 1: Sunflowers remain a minor crop and are best suited to deep clay soils with high water-holding capacities.

Photo. Drew Penberthy, Penagcon

¹ QDAF (2011) Sunflower production in Queensland. Department of Agriculture, Fisheries and Forestry Queensland, 13 Sept. 2011, <http://www.daf.qld.gov.au/plants/field-crops-and-pastures/broadacre-field-crops/sunflowers>

PODCAST

Tony Lockrey from AMPS Agribusiness in Moree discusses growing sunflowers in southern NSW. GRDC Podcast: 099 [Growing sunflowers in the south](#)

A.2 Crop overview

Sunflowers are grown for oil production, birdseed and confectionary. Dominant production areas in Queensland are the Central Highlands and Darling Downs, although there are significant crops in many other areas of central, western and southern Queensland. Usually considered a short-season opportunity crop, sunflower, when grown well, is a highly profitable crop that provides some very important rotational benefits. Sunflowers are best suited to mild temperatures, but can be grown in relatively hot areas as long as moisture is not limiting (Figure 1).

For southern Queensland growers, sunflowers are frost-tolerant to the six-leaf stage and can be sown in the spring, earlier than other summer crops. In Central Queensland, sunflower is favoured because it is a reliable producer on shallow soils and provides an option for late summer planting.²

In New South Wales (NSW), the main sunflower production region is in the north between Quirindi and Moree. Smaller areas are grown under full irrigation in the south-west around Griffith and Hillston, mainly for seed production. Opportunity-planting of sunflowers occurs in northwest NSW between Walgett and Coonamble, and in the central west.³

Sunflower remains a minor summer crop. On average, it represents about 5.5% of the total summer crop area of 1,161,000 ha grown annually in the northern region (5-year average 2013–17), compared with grain sorghum at 50% (578,000 ha) and cotton at 31% (365,000 ha).⁴ Interestingly, the split between spring (3%) and summer (2.5%) plantings of sunflower is quite evenly balanced. However, yields of late-planted sunflowers (1.40 t/ha) have been marginally higher than early-planted sunflower (1.36 t/ha) across northern NSW.

Sunflowers have a strong taproot capable of extracting water from a depth of 2–3 m in ideal situations. They are best suited to deep clay soils with high water-holding capacities. They do not tolerate lengthy periods of waterlogging without suffering yield penalties.

Sunflowers are a good rotation crop, highly suited to no-till sowing into stubble-retention situations. Sunflowers are most often sown after a long fallow following a winter cereal but the crop leaves minimal stubble cover following harvest.

Sunflowers are suitable for use in a short fallow following sorghum, or as a double-crop option provided the soil moisture profile is near full. Sunflowers are grown for monounsaturated and polyunsaturated oils, and for the confectionary and birdseed markets.⁵

A.3 Key management issues

- Determine the amount of stored water in the soil profile prior to sowing by soil coring or using a push probe. If there is <80 cm of wet soil (<135 mm plant-available water), consider not sowing sunflowers.⁶ Plant into 80–100 cm of wet soil to minimise the risk of crop failure.⁷
- Use no-till for dryland crops because no-till fallows store more soil water than conventional fallows, increasing the probability of higher yields.

² QDAF (2011) Sunflower production in Queensland. Department of Agriculture, Fisheries and Forestry Queensland, 13 Sept. 2011, <http://www.daf.qld.gov.au/plants/field-crops-and-pastures/broadacre-field-crops/sunflowers>

³ L Serafin, D McCaffery, S Thompson (2014) Sunflower. Summer crop production guide 2014. pp. 80–92. NSW DPI Management Guide. NSW Department of Primary Industries, <http://www.dpi.nsw.gov.au/agriculture/broadacre-crops/guides/summer-crop-production-guide>

⁴ ABS, ABARES 2016

⁵ L Serafin, D McCaffery, S Thompson (2014) Sunflower. Summer crop production guide 2014. pp. 80–92. NSW DPI Management Guide. NSW Department of Primary Industries, <http://www.dpi.nsw.gov.au/agriculture/broadacre-crops/guides/summer-crop-production-guide>

⁶ L Serafin, D McCaffery, S Thompson (2014) Sunflower. Summer crop production guide 2014. pp. 80–92. NSW DPI Management Guide. NSW Department of Primary Industries, <http://www.dpi.nsw.gov.au/agriculture/broadacre-crops/guides/summer-crop-production-guide>

⁷ L Serafin, S Belfield (2008) Sunflower production guidelines for the northern grains region—northern NSW and southern Qld. NSW Department of Primary Industries, http://www.dpi.nsw.gov.au/_data/assets/pdf_file/0011/249779/Sunflower-production-guidelines-for-the-northern-grains-region.pdf

- Opportunity cropping is an option in dryland areas if there is a positive seasonal outlook and good starting soil water.
- Apply nitrogen (N) fertiliser based on an N budget; use your target yield, soil test results and plant-available water at sowing. Previous crop yield and protein content can be used if soil test results are not available.⁸ The relationship between N nutrition, starting soil water and target yield is crucial. Excess N causes a reduction in seed oil content, and insufficient N will limit crop yields.⁹
- A uniform crop stand and early canopy closure are essential to maximise crop competition with weeds.
- Use effective weed control options, especially for grasses. Weed control during the first 7 weeks after emergence is critical.
- Be aware of herbicide residues in the soil. Sunflowers are particularly sensitive to sulfonylurea herbicides.
- Select high-yielding hybrids that have the desired traits for your growing conditions.
- Monitor and, if necessary, control insects, especially wireworm at establishment and Rutherglen bug and *Helicoverpa* from budding through flowering. Assess the potential for mice and bird damage.
- Become familiar with the disease pathogens of sunflower and their other hosts to assist with rotation planning and to limit the impact of diseases.
- Do not sow too late; the risk of diseases, particularly *Sclerotinia*, is higher in the cooler areas, e.g. south of Gunnedah.
- Crops sown in late January are more likely to be slow drying down. Be prepared to harvest at higher moisture contents and use aeration where necessary.¹⁰
- Sunflower can be desiccated to improve and speed up harvest.
- Sow monounsaturated sunflowers in spring preferably, and polyunsaturated sunflowers in summer (late plant).
- Sunflowers are highly suited to no-tillage.
- Weed control is critical in the first 7 weeks after emergence.
- Aim to harvest and deliver grain at 9% moisture.¹¹

A.4 End uses

The main end use for sunflower is oil, for which the receival standard is 40%. Oil production utilises two types of sunflower: monounsaturated and polyunsaturated.

In recent years, there has been a growing demand for monounsaturated sunflower oil, although an intrinsic demand remains for polyunsaturated oil.

Monounsaturated oil needs to contain >85% oleic acid. Monounsaturated oil is used for frying and margarines because of its long shelf life and high-temperature cooking stability.

Polyunsaturated sunflower receival standards require linoleic acid contents of >62%. This oil is used for margarines, mayonnaise and cooking oils.

Difficulty in meeting domestic demand in recent years has led to attractive, but variable prices. Fixed tonnage and hectare contracts help to reduce the risk of price fluctuations for growers.

⁸ L Serafin, D McCaffery, S Thompson (2014) Sunflower. Summer crop production guide 2014, pp. 80–92. NSW DPI Management Guide. NSW Department of Primary Industries, <http://www.dpi.nsw.gov.au/agriculture/broadacre-crops/guides/summer-crop-production-guide>

⁹ L Serafin, S Belfield (2008) Sunflower production guidelines for the northern grains region—northern NSW and southern Qld. NSW Department of Primary Industries, http://www.dpi.nsw.gov.au/_data/assets/pdf_file/0011/249779/Sunflower-production-guidelines-for-the-northern-grains-region.pdf

¹⁰ L Serafin, D McCaffery, S Thompson (2014) Sunflower. Summer crop production guide 2014, pp. 80–92. NSW DPI Management Guide. NSW Department of Primary Industries, <http://www.dpi.nsw.gov.au/agriculture/broadacre-crops/guides/summer-crop-production-guide>

¹¹ L Serafin, S Belfield (2008) Sunflower production guidelines for the northern grains region—northern NSW and southern Qld. NSW Department of Primary Industries, http://www.dpi.nsw.gov.au/_data/assets/pdf_file/0011/249779/Sunflower-production-guidelines-for-the-northern-grains-region.pdf

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Several alternative market options exist, including the confectionary and birdseed markets and the stockfeed trade. Oil content is not a requirement for these markets. Several buyers for these markets are located in regional centres, which reduces freight costs.

Confectionery sunflowers are dehulled and the kernels used in a variety of products including breakfast foods, biscuits, snack bars and bread. Large seed is required with a minimum of 80% of seed passing over an 8/64 slotted screen. This end-use has specific hybrid preferences, so advice should be sought prior to planting, as contracts vary seasonally.

Human consumption in the form of whole seeds is an emerging overseas niche market and involves specialty large-seeded hybrids.¹²

¹² L Serafin, S Belfield (2008) Sunflower production guidelines for the northern grains region—northern NSW and southern Qld. NSW Department of Primary Industries, http://www.dpi.nsw.gov.au/_data/assets/pdf_file/0011/249779/Sunflower-production-guidelines-for-the-northern-grains-region.pdf