

Sunflower Key Issues & Best Management Practice

There is potential to significantly improve yield across most of the northern cropping belt by paying attention to the key issues listed below.

CHECK 1 PRESOWING

Paddock History

Nitrogen(N) fertiliser requirements for this crop should take into account N residuals from previous crops and fallows. High grain protein levels in previous cereal crops indicates that nitrogen was not limiting in these crops and residuals of nitrogen may be available for this sunflower crop. Soil N reserves will be highest after failed crops due to drought. Fallow mineralisation, particularly long fallows may add significant quantities of nitrogen to soil nitrogen reserves. Deep soil tests (60 to 120cm), are required to give a more accurate estimate of soil nitrogen reserves at planting, before nitrogen fertiliser rates are determined.

Residual herbicides - Sulfonylureas, atrazine and other residual broadleaf herbicides used in the last two/three years may affect following sunflower crops.

Diseases and Weeds

- Problem broadleaf weeds and diseases (such as sclerotinia), which carryover in the soil should be considered when recropping this paddock to sunflower.

Stored soil water

- High yielding, high quality, sunflower crops are more reliably produced when planted on a full profile of stored water.
- Soil water available at planting can be *estimated* by using the following general values for plant available water (PAW) for various soil types:
 - **180mm** of plant available water/metre of soil for **black earth** soil
 - **150mm** of plant available water/metre of soil for **grey clay** soils
 - **100mm** of plant available water/metre of soil for **red brown earths**
- Consider developing more accurate plant available water figures for your own paddocks.

- Zero tillage and clean fallows can increase available soil moisture at planting in dry years.
- Set a target yield based on available stored soil water at planting, expected in crop rainfall and previous paddock history.

Soil fertility (see Agronomy)

N. Use deep soil tests to determine nitrogen rate required from guidelines given in the Big Black Sunflower Pack.

VAM Sunflower has a HIGH VAM requirement. Consider the likely VAM status of this paddock before planting. Long fallows, frequent tillage and non-host crops like canola, barley, canary and some wheat varieties, all contribute to reduced VAM populations. Low VAM populations will accentuate Zinc and Phosphorus responses in sunflower.

Zn. Soil test may indicate need to apply. A test strip across the centre of the crop at the rate of 10 kg of elemental Zn per ha may indicate Zn deficiency and the need for foliar application.

P. Sunflower is likely to respond if soil P is less than 10 ppm bicarbonate soil test.

CHECK 2 SOWING

(see Planting Recommendations)

- Sow on time:** Sunflower Planting Guide gives sowing time and hybrid selection for each region
- Hybrid selection:** Choose a hybrid of the appropriate maturity. Consider disease resistance and varietal characteristics which suite your region.
- Seed Size and Germination%:** Choice of seed size depends on available moisture and germination % will maximise seedling vigour. Seed treatments are highly effective (see page 9)
- Weed control:** Rotations and pre-emergent herbicides offer the best control. In-crop control of broadleaf weeds is limited. Consider the effects of residual herbicides on future crops.
- Soil Insects:** monitor levels and consider in-furrow spraying at planting.
- Presswheels and moisture seeking tines:** reduce soil insect damage and increase emergence.



CHECK 3 EMERGENCE

- Calculating your established plant population per hectare:**
 1. Plant Established/ha =
$$\frac{\text{Average number of plants/meter of row} \times 10,000}{\text{Row spacing (meter)}}$$
 2. Field Establishment % =
$$\frac{\text{Plants Established/ha} \times 100}{\text{Seeds planted/ha}}$$
- Insects:** Monitor for false wireworm, black field earwig, wireworm, wingless cockroach, scarab beetles and crickets during germination and emergence of the crop.

Inspect for cutworm damage to emerging and emerged plants for 2 to 3 weeks after planting. Monitor for early populations of rutherghlen and grey cluster bugs.
- Weeds:** Control weeds early to prevent moisture loss and lower yields.

CHECK 4 VEGETATIVE TO FLOWERING

- Weeds:** Control weeds early to prevent moisture loss and lower yields
- Insects:** Monitor rutherghlen and grey cluster bugs once a week from budding onwards. 10 to 15 bugs per bud can warrant spraying depending on soil water. (see Insect Management)

CHECK 5 FLOWERING TO LATE GRAIN FILL

- Stress Factors:** record stress periods to better understand the crop's performance at the end of the season
- Diseases:** Record major disease impact particularly those diseases like sclerotinia which can affect subsequent crops.
- Insects:** Rutherghlen and grey cluster bugs can affect yield and quality until late grain fill, so monitor regularly. Populations can change rapidly. If large numbers of Heliothis are present, consult an agronomist for species identification, spray thresholds and control strategy.

RAINFALL

- Monthly Rainfall:** Record both in-fallow and in-crop rainfall as both contribute to final yield. For detailed modelling of crop performance using APSIM, daily rainfall figures are required. Whopper Cropper is a useful guide for the probability of risks associated with climate (see Whopper Cropper)

HARVEST: Yield and Quality

- Desiccation:** Desiccation will speed dry-down and time to harvest in times of poor weather conditions, bird or mice damage. Desiccation should be carried out at physiological maturity if it is to be most beneficial. At physiological maturity the backs of the heads are yellow, bracts are brown and seed moisture content is about 40%. Harvest can commence in 7 to 14 days.
- Timing:** Do not delay harvest to 9% moisture if weather conditions or pests numbers are likely to reduce yield and quality. Harvesting can commence anytime after physiological maturity.
- Drying:** Sunflower harvested above 10% moisture content will require drying.
- Admixture:** Admixture above 4% can be refused acceptance or attract a penalty.

MARKETING

- Forward Selling:** Current varieties combined with best management practice means higher and more consistent sunflower yields. Growers can have more confidence in selling part of their crop early, rather than waiting and 'selling off the header'. In Australia it is common for sunflower markets to be stronger at planting compared to harvest, particularly for later sown crops. For example, some growers sell up to 20% after emergence, and a further 20% or more as the season progresses, if growing conditions are favourable and the market is right. This decision should be based on sound market advice and your own attitude to risk exposure.

PADDOCK OPERATIONS

- All machinery operations including planting and harvesting and all inputs associated with growing your sunflower crop should be entered here so that a paddock gross margin can be calculated.

