

Sorghum and Dryland Cotton

The pros and cons

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Key words

sorghum, cotton, dryland, cropping systems, grower experience, rotation

Take home message

There are benefits and downsides to both crops. They need to fit your farming system and longer term rotational plan.

Background

We have been trying to grow half our summer rotation to sorghum and half to cotton for several years. Our rotation is four or five years based on soil type. Heavier black soils four year and the lighter slope country five years.

- Black soils: wheat, barley, fallow, sorghum/cotton
- Lighter country: wheat, legume, wheat, fallow, sorghum/cotton.

The primary reasons we grow both sorghum and cotton in a planned rotation:

1. Our long-term rotation helps minimise disease, manage weeds and improve nutrition
2. The ability to capture rainfall during different periods of the summer
3. Spreads our workload of farming operations.

Sorghum

Sow in September to take advantage of wet winter harvest period (2021 a classic example).

Pros

- Provides good crown rot and winter weed break
- Early sorghum plant works well with double crop into chickpeas
- Sorghum generally suits our conditions weather and soil conditions, hot dry summers except at flowering
- Sorghum has a strong coleoptile and is good at pushing up out of the ground even in tough conditions. It can be sown relatively deep and pressed firmly
- Sorghum is more attractive now than a few years ago because Chinese buying has improved pricing compared to barley and wheat. China is using the sorghum to make Baijiu known as a Firewater spirit, which is a national drink in China. It is also being used as a gluten free food.
- Relatively simple to grow, generally one insect spray (possibly two), but no disease problems. It just needs rain
- Generally, sorghum is relatively easy to harvest, although we have found 'stay green' varieties tricky with spray out timing so have veered away from these.

Cons

- Struggles with heat and dry periods around flowering
- Temperatures over 40 degrees, especially hot winds can cook the grain in the heads, with the result being poor yield or high screenings
- Can be difficult to control grasses if they are not under control at planting, especially on wider row spacing.

Numbers: Sorghum benchmarking past six years not including 20/21

- Average yield 2.6t/ha
- Direct costs \$514/ha
- Gross margin: \$206/ha

Cotton

Find a good agronomist

Two key decisions:

1. Need to decide early if planning to strip or pick cotton. If stripping, keep the crop short and therefore Pix regularly if the season is good
2. Row configuration super single, single skip or double skip.

Bollgard® and Roundup Ready® has made the management significantly easier, with the agronomist generally able to give a weeks' notice before a spraying for sucking pests, compared to about 6 hours when growing conventional cotton with Heliothis.

The application of glyphosate over the cotton to control weeds especially in dryland has made growing wider row configurations and managing summer grasses significantly easier. Non Roundup Ready cotton was much harder. Shield spray is very time consuming, tricky and there are few registered products.

Pros

- With cotton we try to use tillage to help delay chemical resistance build-up
- Great crop to bolster our regional economy. The average direct growing costs over the past six years were \$1,125/ha
- We aim to sow in early November, straight after winter crop harvest to take advantage of summer rains in January and February. This does not always work out. The year before last was too dry to sow and last year too wet, which meant we ended up planting late in mid-December
- Provides a good break for crown rot and winter weeds
- Tap rooted crop is great for helping break up any hard pan you might have. An easy way to tell if a hard pan exists, is to pull some plants out after picking/stripping and see if the main root is straight or has a 90-degree bend
- Cotton positively affects soil performance for subsequent crops. I have found it has given old farming paddocks a new lease of life
- The 748 Bollgard plant can put a large amount of yield on a small bush from a good rain event. Yield potential is very high if it can receive rain at the right times.

Cons

- Cotton has a weak coleoptile especially the new Bollgard varieties and is very tricky to get a good strike. It needs good conditions and ideally a shower of rain after planting, but not heavy rain that would pack the soil down and cause the crop to struggle to push through
- Cotton suffers from long fallow disorder (depleted levels of soil mycorrhiza inoculum that can lead to deficiencies in P and Zn due to poor root uptake) as we found last year after the drought in 2019 with very little stubble cover. The cotton came up but sat there for what seemed like a month and did nothing. Some plants even died for no particular reason. It was very disheartening; the best-looking plants were beside weeds like fleabane. Very strange. Even this year I am seeing similar scenarios
- Expensive crop to grow which increases your risk of a larger loss if things go wrong
- Trying to kill the cotton slashing, mulching and root cutting, then chisel or blade plough
- Cotton marketing can be tricky. The premiums and discounts can be ugly, especially if there is more than one problem like last year where we had colour, leaf and micronaire issues
- Working - this year we are so far behind due to prolonged wet conditions, the paddocks are embarrassing with the cotton out of control over winter harvest. We can't get the chisel plough through it due to blocking up
- In dry years cotton takes a lot of moisture out of soil at depth, it does not leave a lot of stubble cover and it takes a lot of rain to fill the profile back up.

Numbers: Cotton benchmarking for the past six years (not including 20/21)

- Average yield 2.2 bales/ha
- Direct costs \$1,125/ha
- Gross margin: \$152/ha

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