

Germinating ideas

Compiled by the
CSD Extension and Development Team

WELCOME to Germinating Ideas. In this edition we discuss some of the results from five years of the CSD Ambassador program. We will give an overview of the top 10 per cent of ambassador fields based on yield compared to 90 per cent of ambassadors fields.

For the past five years the CSD Extension and Development team has conducted the Ambassador program which is a collection of crop physiology data, management data and climate data from 60–80 growers from all parts of the industry.

The Ambassador program was set up as part of CSD's overall strategic goals to increase yields and grower sustainability by 2020. The collection of data from these ambassadors has gone a long way to introducing new management online tools eg. BARRY (Biometric Agronomy for Realising Representative Yield) which will help growers with management decisions into the future.

Pre-planting

The pre-planting part of the Ambassador program collects data on soil condition and crop rotation. A field score ranking is given to every ambassador field, 1 being good and 5 being poor. The top 10 per cent of ambassadors score mostly in the 1, 2 and 3 categories with no scores in the 4 to 5 categories. The other 90

per cent of ambassadors have a range of scores from 1 to 5 with a majority ranking of 2 which is good.

From a rotation perspective, the top 10 per cent of ambassadors use fewer rotational crops than the 90 per cent but most ambassadors use long fallows before planting back to cotton.

Plant establishment

Three establishment counts are done on all Ambassador crops to determine establishment percentage and also true leaf

FIGURE 1: Ambassador field condition score

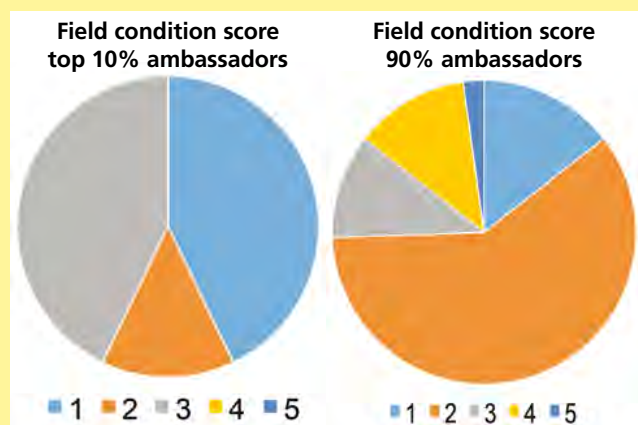


FIGURE 2: Ambassador crop rotation

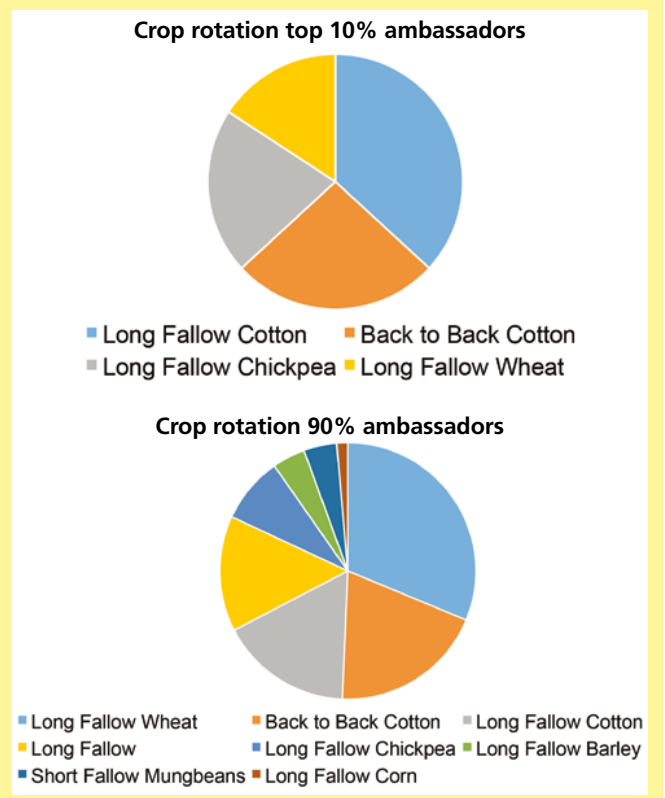


TABLE 1: Ambassador segment picking

	Final boll count	Overall boll weight g/boll	Bolls/plant	Retention 1–12	Fruiting factor	Length of season (days)
Top10% Amb	154	2.4	14.4	63.4	0.86	158
90% Amb	135	2.1	12.6	56.4	0.77	165

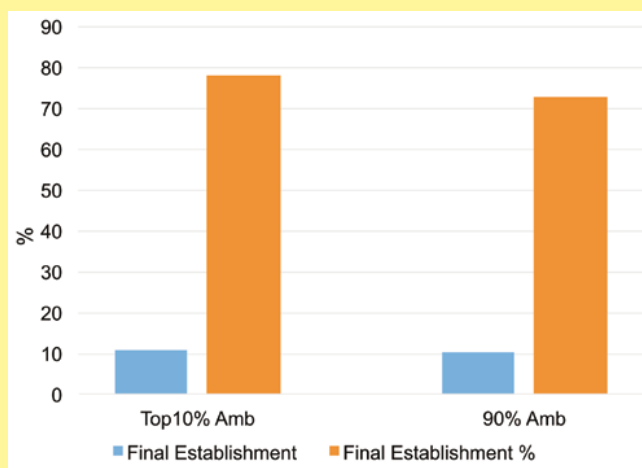
TABLE 2: Ambassador ginned yield and quality

	Yield (b/ha)	Gin turn out %	Staple (dec)	Micronaire	Strength	Manual class colour	Manual class trash
Top 10% Amb	13.8	43.0	1.20	4.5	31.3	21	2
90% Amb	11.1	42.1	1.19	4.4	31.3	21	2

production which can be assessed as plant progression or vigour early in a plants life.

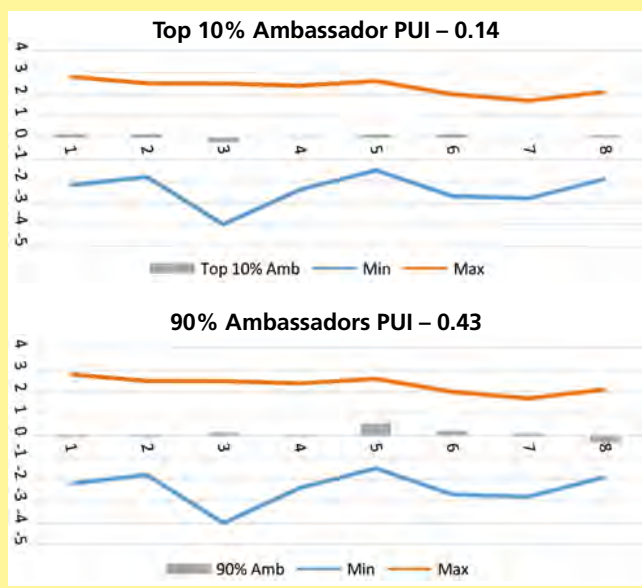
The top 10 per cent ambassadors on average establish 79 per cent of plants while the 90 per cent ambassadors establish 71 per cent. They are both similar in terms of establishment at or around 10 plants per metre. So the top 10 per cent are using a slightly lower planting rate at 12.7 seeds per metre.

FIGURE 3: Ambassador establishment



The top 10 per cent ambassadors have highly uniformed plant stands as seen in the PUI (Plant Uniformity Index) graphs. The PUI assesses the uniformity of the plant stand by individual planter units. The nearest to zero the more uniform the planter unit has sown the crop. The red and blue lines represent the outliers and most un-uniformed planter units over five years.

FIGURE 4: Ambassador plant uniformity index



First flower

First flower is an important time in the crop’s life. The top 10 per cent of ambassadors are getting to flowering eight days earlier than 90 per cent of ambassadors. They have six per cent better retention, they have two more squaring nodes at 10 and are slightly higher in NAWF at 8.3. Interesting they are developing the crop through this period with a one degree average temperature increase (24.8°C) and four less cold shock days, which would certainly help with getting to first flower earlier.

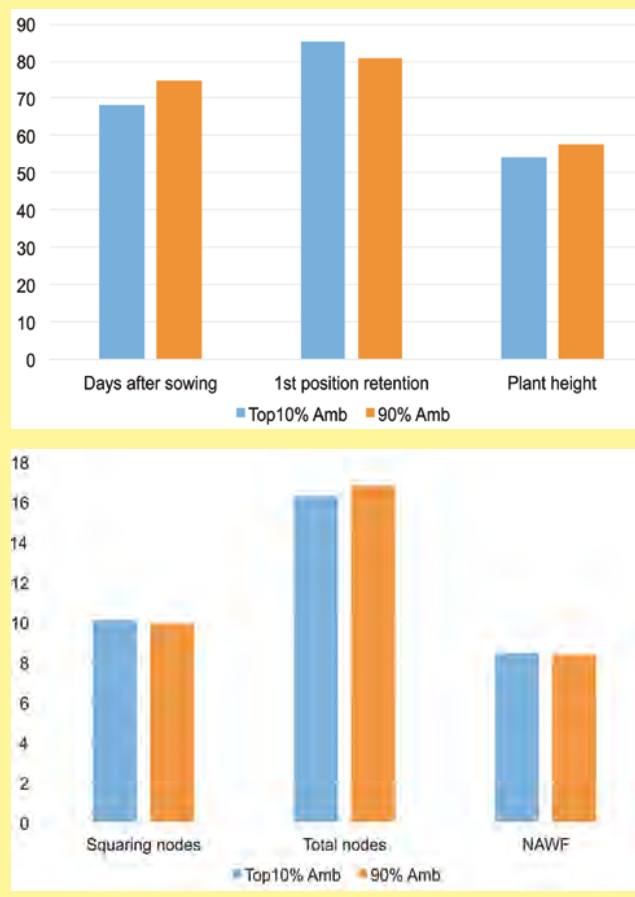
NAWF decline in the top 10 per cent of ambassadors is constant and linear while the 90 per cent ambassadors get to cutout earlier with less squaring nodes and fruit numbers. Boll progression shows a clear advantage in the top 10 per cent ambassadors.

Crop cut-out

The cutout snapshot shows similar days to get to cutout but the top 10 per cent have a longer period of flowering – 43 days versus 38 days – or an extra two fruiting nodes of flowering.

The top 10 per cent of Ambassador fields have higher retentions at 63 per cent versus 56 per cent and while the top 10 per cent had a smaller plant at flowering, they had a taller more robust plant at cut-out.

FIGURE 5: First flower growth parameters



End of season snapshot

The top 10 per cent of ambassador fields have higher boll numbers per metre at 154 versus 135 and they have heavier bolls of 2.4 grams per boll versus 2.1 grams/boll. They have an

FIGURE 6: Ambassador NAWF and boll progression

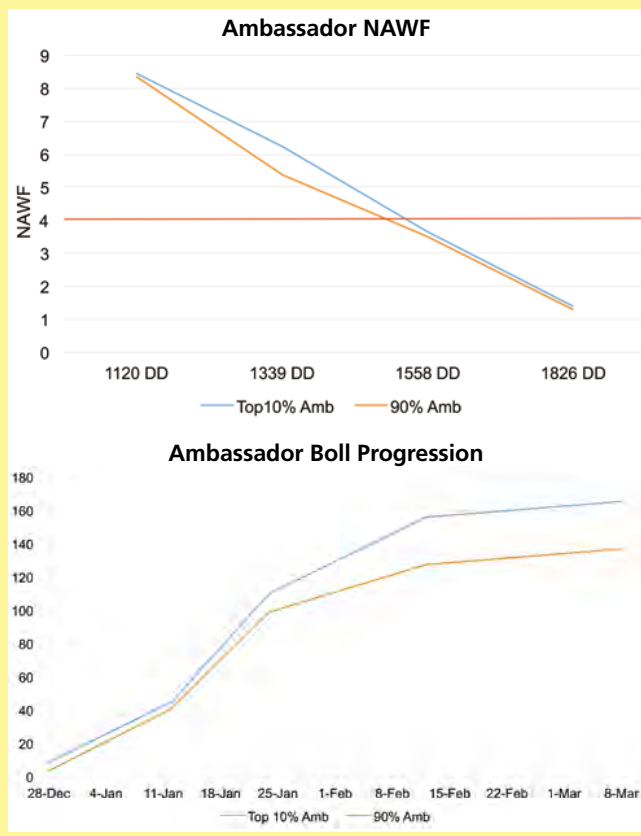
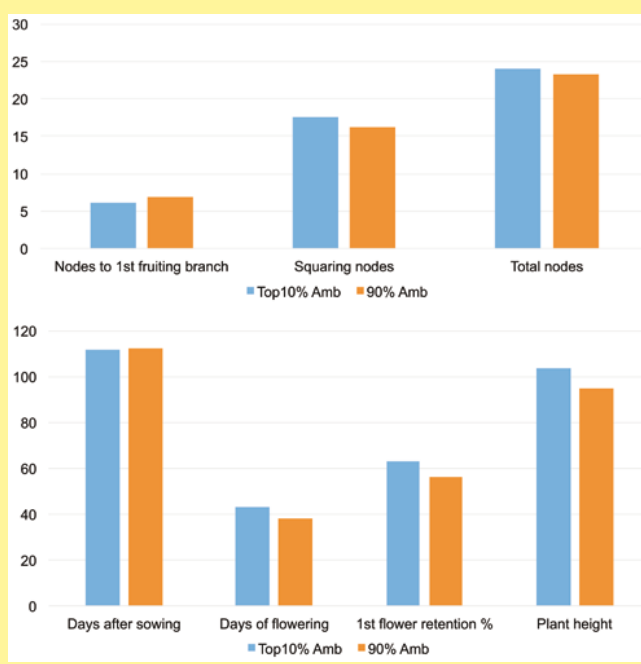


FIGURE 7: Ambassador cut-out growth parameters

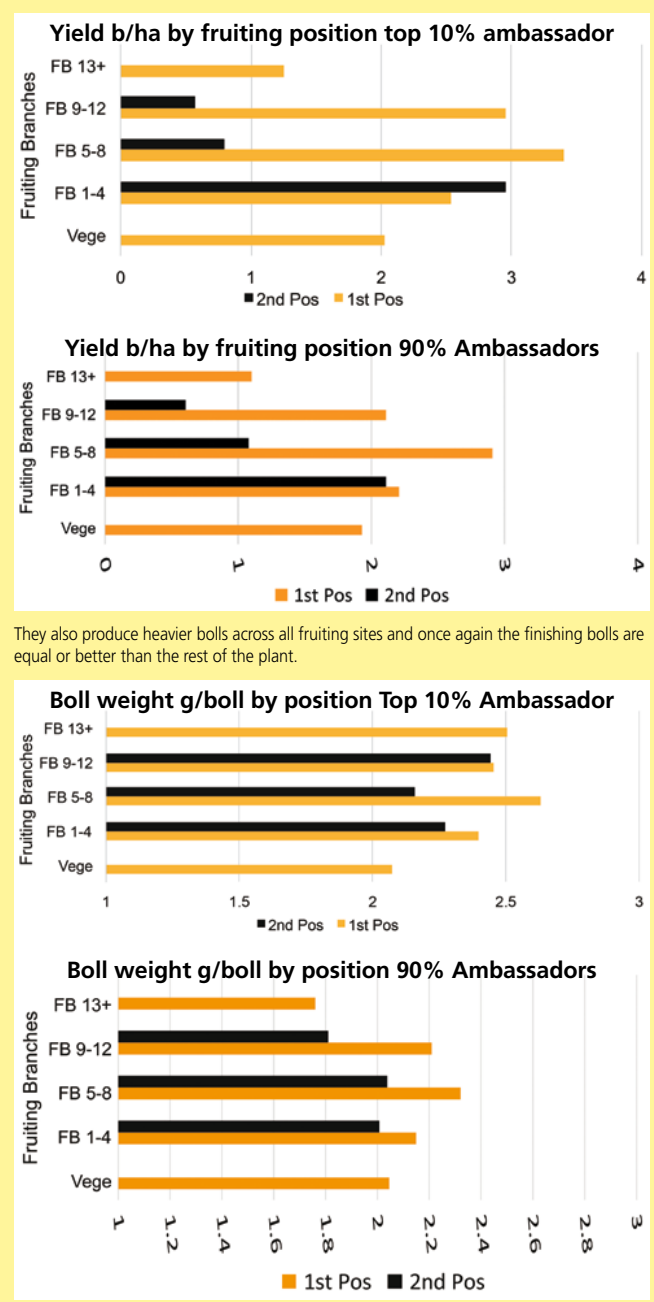


efficient plant that has more bolls per plant with a better fruiting factor and they are seven days earlier at the end of the season – at 158 days versus 165 days.

The top 10 per cent of ambassador fields place good yield on all fruiting nodes on the plant including vegetative branches, but they also have more bolls at the top of the plant from fruiting branches 9 to 13+ as seen in Figure 8.

Overall the top 10 per cent of ambassador fields yielded 13.8 versus 11.1 bales per hectare for the 90 per cent of ambassador fields over a five year period. Interesting, there is a one per cent difference in turnout from 43 to 42 per cent. A majority of the ambassador fields that have been monitored for five years are Sicot 746B3F. Potentially the extra one per cent in turnout could occur due to the earliness and efficiency of the top 10 per cent

FIGURE 8: Ambassador yield and boll weight partitioning



They also produce heavier bolls across all fruiting sites and once again the finishing bolls are equal or better than the rest of the plant.

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ambassador fields. Also there is more lint being produced per boll and potentially more fibre cells being initiated within the seed.

The top 10 per cent of ambassador fields are producing a bale of cotton with 11.1 versus 12.4 bolls per metre for the 90 per cent ambassador fields. Not only do the top 10 per cent have lower boll numbers to produce a bale they also are putting on nearly a third of a bale per day of flowering versus 0.29 bales per day of flowering for the 90 per cent ambassador fields.

TABLE 3: Ambassador yield breakdown

	Bolls/bale	Bales/day of flowering
Top 10% Amb	11.1	0.32
90% Amb	12.4	0.29

Ambassador summary

The top 10 per cent of ambassador fields potentially are being grown more efficient with the following crop factors:

- More bolls;
- Heavier bolls;
- Even spread for boll development;
- Higher retention;
- Lower first fruiting branch;
- Earlier to flowering;
- Longer flowering period;
- More squaring nodes;
- Less bolls to produce a bale;
- More bales per day of flowering; and,
- Seven days earlier in season length.

The combination of these factors has led to better overall yield, but the main question still exists. How did they do it?

All will be revealed in the next article of *Germinating Ideas* where we look at specific management of the top 10 per cent ambassador fields versus the 90 per cent ambassador fields.

For further information in relation to any of the topics mentioned in this article, please contact your local CSD Extension and Development Agronomist or visit the CSD website.

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THE 2020 harvest will mark 45 years since New Holland originally introduced its twin rotor combine in 1975, the TR70 with 145–168 horsepower. Step forward in time to today, and the 'original twin rotor' concept has never looked better. Offering four models starting with the Class 8 – CR7.90 with 449 peak HP through to the record-breaking Class 10 – CR 10.90 with a whopping 680 peak HP ensures New Holland is at the forefront of Rotary Combine performance.

Introducing twin pitch rotors

New Holland CR Twin Rotor Combines feature 22" twin pitch rotors as standard fitment. These rotors are an evolution from the original S3 design. Twin pitch rotors feature a greater number of smaller rasp bars spiralled, staggered and segmented along the entire length of the rotors. It gives the combine greater control over the threshing and separation elements whilst ensuring smoother flow through the combine in a wider range of crops and conditions. This augurs well for the unparalleled threshing capacity and grain quality produced by the CR combine harvester.

CR8.90 upgrade

In 2019, the popular CR8.90 received many significant upgrades to take it beyond its Class 8 combine status to Class 9. The addition of Tier 2 – 13-litre Cursor engine with an increase of 40 HP from FPT and fitment of the Dynamic Feed Roll (DFR) adds to the CR8.90's increased performance and growth in popularity.

Next level IntelliSense automation

During the 2019 summer harvest, New Holland's new CR Revelation combine range took automation to a new level with the award-winning IntelliSense system further consolidating the supremacy of the world's highest capacity combine.

Marc Smith, New Holland Product Segment Manager for Broadacre, said, "With more crops supported and more on the way the CR Revelation combine is continuing to set industry benchmarks adding, innovation and evolution are trademarks of these combine harvesters. Maximising throughput, minimising losses and damaged grain are some of the key aspects the proactive automation system delivers".

