Open Pollinated Canola for Australia: an AGT commitment to better genetics

Why did AGT decide to breed Open Pollinated (OP) canola?

About ten years ago, when it became clear that the canola breeding companies in Australia were putting the majority of their efforts into hybrid canola, AGT had lots of growers from around the country asking "When are you guys going to start breeding canola? Hybrid seed is expensive and we want OP canola with an End Point Royalty". So, in 2016 we kicked off our canola breeding programme.

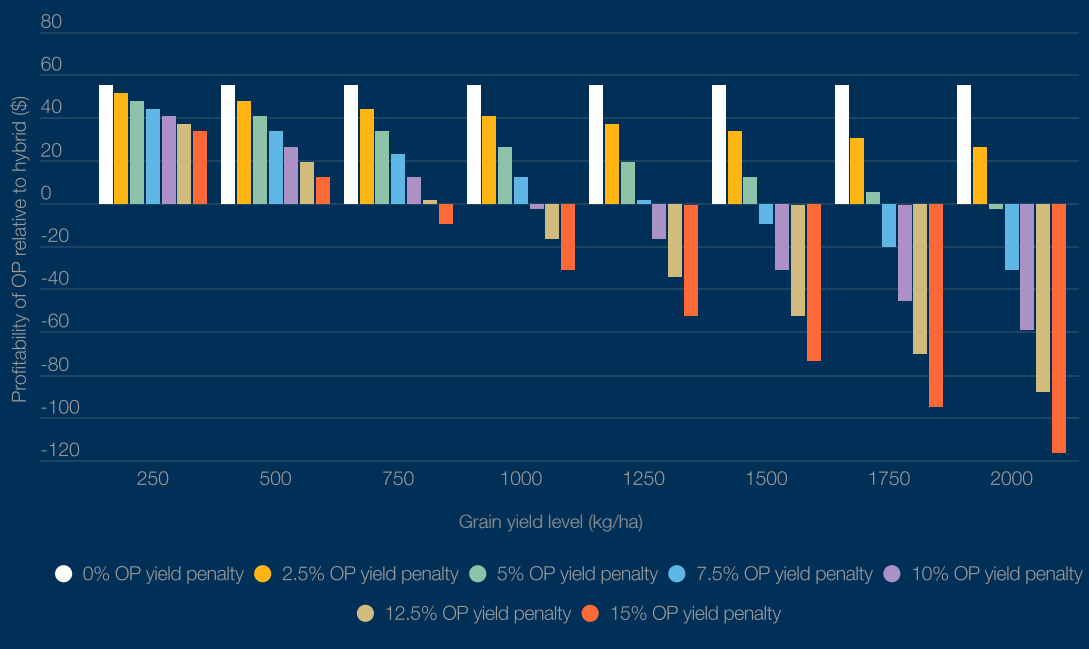
We're not arguing that hybrid canola doesn't have a place, but we are suggesting that OP canola with an EPR can provide most growers, especially those in the medium and lower rainfall zones, a lower risk and more profitable option. Why pay $50-100 upfront to access seed (if you can get it) without knowing if you will get good establishment, or how the season will finish? AGT is passionate about providing Australian farmers with improved genetics in a way that suits Australians and the Australian climate. Sure, hybrids might make sense in Europe (with their very high yields), or Canada (where they plant into snow melt), or even the higher rainfall districts of Australia, but does this model work across most of Australia where our season break is often variable and marginal?

In general, where do OP varieties have their fit?

When yields are lower, or opening rains are less certain, OP varieties show their greatest profitability improvement over hybrids. If we assume that hybrid and OP varieties are both sown at 2.5kg/ha and cost $27/kg for hybrid seed and $5/kg for OP seed (farmer retained, sized and treated) then the OP will be competitive with the hybrid alternative even if it is 10% lower yielding at 1t/ha and lower environments (calculated using the 10 year average price of $570/t), especially given the much lower up-front risk of OP varieties (Figure 1). Although these yield differences between OP and hybrid varieties are not uncommon in NVT trials and promotional data, the differences may be less than this on farm as more OP seed can be planted with limited cost. Given the average canola yield in Australia is about 1.5t/ha, there is clearly a big swag of country where OPs play an important role for growers.

Figure 1.

Comparison of OP and hybrid canola (yield penalty of OP relative to hybrid, at a range of yield levels)



What is AGT doing?

AGT kicked off its breeding programme with publicly available genetics and some international relationships. We are unashamedly focussed on yield and yield stability. Of course we are selecting for blackleg resistance, oil content, lodging resistance and shattering tolerance as well, but its yield first. We have started off with triazine tolerant and conventional canola, but hope to expand into other herbicide resistances over time.

With our strong focus on yield, AGT is already running a big breeding programme with yield plots through WA, SA, Victoria and NSW. We also have blackleg nurseries in three states and are developing an in-house laboratory for quality assessment.

Where is the breeding programme up to?

The AGT breeding pipeline is nearly full and is getting to the exciting stage of variety release now. We have three new OP varieties that we are releasing to farmers in 2022 for planting in the 2023 season. It's pretty good timing. This year (2022) is our 20th anniversary, and we are really excited to be able to celebrate by releasing these OP canola varieties. Two of our varieties are triazine tolerant.

1. **Bandit TT**$^{\Phi}$ is a very quick flowering variety similar in days to flowering to ATR Stingray$^{\Phi}$ and a little quicker than HyTTec® Trident. This has shown its best adaptation in quick season environments and lower yield potential areas. Its blackleg rating is R with fungicide treatment, and MS without.
2. **Renegade TT**$^{\Phi}$ is a quick flowering variety a little quicker than ATR Bonito$^{\Phi}$, between HyTTec Trident® and HyTTec Trophy®. Renegade TT$^{\Phi}$ picks up from Bandit TT$^{\Phi}$ in environments that are mid-yield potential. It appears to have wide adaptation. Renegade TT$^{\Phi}$ has a blackleg rating of R with fungicide treatment, and MR-MS without.
3. Finally, **Outlaw**$^{\Phi}$ is a very quick flowering conventional variety with impressive yield. In AGT trials (sadly there is no conventional NVT testing system) Outlaw$^{\Phi}$ has beaten AV Garnet$^{\Phi}$ by 15% at environments 1.5t and lower. Overall, Outlaw$^{\Phi}$ has shown yields 4% higher than AV Garnet$^{\Phi}$. Its blackleg rating is provisionally R with fungicide treatment, and provisionally MR-MS without.

This is just the beginning. We believe that these varieties can play an important role for growers, but we are shooting higher. The aim is to fight back against the push toward hybrid seed and put flexibility and resilience back in the hands of growers.

How do I get hold of seed?

If you are already an AGT grower (ie. you grow one of our wheat, barley, lupin or durum varieties) we will be in touch with you directly. We are doing this a bit differently. We're not going to make money out of seed. Not only that, but for these first varieties, the seed is our 20th anniversary gift to you. This spring, we will give you the opportunity to lodge an expression of interest in seed of our three varieties. Then, early next year we will let you know how much seed we can provide you and where you can pick it up from. It's also our way of saying "the cost of seed shouldn't stop you from having better genetics". We will make our money out of the end-point royalties at the end of the season.

So what about the naming theme?

There's something fun about swimming against the tide, putting all your efforts into something that others have decided doesn't make them enough money to continue investing in. So we figured, why don't we name our varieties with the rebellious spirit that started our breeding effort to begin with? If you've got any ideas for future names please send them through to us!

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