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Berry Big business: Commercialisation/bulk production of Berry Species

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Summary

We spend a lot of time talking about the art of plant breeding, and if you haven't already picked up Plant breeders are a passionate group of artists at that. Without these plant breeders we are likely to be a much smaller industry today.

So, as I am sure you can observe from my robust physique, I am a strong fan of Edible plants and their fruits. Coincidentally but completely unrelated, this has ended up being a factor in propelling my career choices and so I find myself in the wonderful world of berries.

INTRODUCTION

Australia has a robust berry industry with the majority of the production made up of three separate sub categories; strawberry (*Fragaria*) or the humble blueberry (*Vaccinium corymbosum*) or raspberries and blackberries (*Rubus*), - the crop that keeps me up most at night!

In 2021, Horticulture Innovation Australia produced a Strategic Investment Plan for the period 2022-2026. Sourced from this berry SIP we have the following. There is an annual production of over 110,000 tonnes giving a farmgate production value north of One Billion dollars. The *Rubus* section was $216 million which is an increase of over 450% increase in the volume of production over the last eight years.

New Varieties

With the bulk of our berry cultivars coming from international sources, quarantine plays an important part in the Australian berry industry. Australia is an island with many of the world's agricultural pests not present. Hence it has very strong border controls. Anyone who understands the process particularly around Berries and or high-risk imports will know it is expensive and slow, but all for the important reason of protecting the wider Australian environment and primary industries.

The process of plant importation requires patience and time. The are many required treatments prior to export and after arriving in Australia. The time period can be as long as three years in Post Entry Quarantine (PEQ).

I am pleased to report that the quarantine process timeframe for many berry imports has been reduced due to improved testing techniques using every bodies favourite COVID testing method – PCR.

This new testing technique saves substantial cost, and gives importers faster access to commence the cultivar introduction and commercialisation process.

The source of new varieties can be summarised as follows:

Strawberries – There are several successful national breeding programs and many cultivars coming from foreign breeders.
Blueberries – Cultivars coming from increasing number of foreign breeding programs.

Raspberries and blackberries – New varieties are nearly exclusively imported form international breeding programs.

Fun facts aside, the berry sector raises its fair share of challenges. Providing quality planting material that performs every step of the growing cycle is front and centre. As common as the next comments may be to a room of propagators or plant production specialists, they are always worth review especially in high value industries.

Important: Handle with Care

Our plant breeders introduce a fresh new cultivar, what should be done do to ensure the new cultivar can be introduced in the most efficient and rapid way. The key points here are really a KISS principle KEEP IT SIMPLE SHERLOCK and really should apply for most parts of our businesses.

1. Work with reputable partners.

Good material starts with good material and comes from good growers. This is particularly important when importing new material from overseas. Being true to type is critical.

If an overseas IP management firm has not undertaken the appropriate cultural and management practices negative impacts can flow from delays completing establishment in quarantine all the way through to complete failure. Poor plants shipped will generate more investigation by authorities and can make plant establishment in PEQ much harder and riskier.

One potential risk is o receive genetic off types. This is usually something that may not be discovered until well through the overall commercialisation process at which point extensive dollars will already have been outlaid. The initial plants may well be the basis of a whole industry and incorrect forms can cause problems for decades.

2. Cleanliness is next to godliness.

Once you have the material on your site, you must, must, MUST treat the plants with the respect they deserve. We maintain our foundation material in an environment that is insect screened, concrete floored and with added supplemental lighting. There is genus specific fertigation mixes that are regularly tested and adjusted to give optimal performance.

How does that relate to cleanliness? A plant that is grown in optimal conditions is more able to withstand any health pressure that may and WILL arise. Biosecurity Protocols around staff and visitor movements and clean pre entry practices are key, much like we would expect in laboratory conditions. The aim is to ensure no diseases nor other pests enter nor exit the facility. I should also note the importance of keeping backup material in off-site locations, for protection against bushfire flood or other catastrophe. For plants under PEQ this can be an issue and may even involves locations overseas.

3. Know the Minor details.

When it comes to importing, breeding, selecting or other similar practices there are a range of criteria that determine performance. In working with the new ones it is important to understand what you are looking at/for. For berries these are just a few of the differences within a genus and even species group.

Strawberries - Day length - Neutral vs. short day vs. long day.

Raspberries/Blackberries - Primocane vs. long cane v Double cropper.

Blueberries - Northern Lowbush vs. Southern High bush

Once the plants exit PEQ then it is time to bulk up the plants in readiness for release. The above criteria are some of the factors you need to consider when planning out a propagation program. There are many others.

I know of at least one Plant Breeder who sees their selections as their children. Each needs to be coaxed into growing and showing how they differ. As a propagator we need to be the teachers, ask any good teacher how little Johnny behaves in class they can confidently tell you a raft of things you may not already know about little johnny. When working on a new cultivar you really must know the fine details, in order to push the maximum potential out of your material.

4. Understand the end consumer.

As a berry propagator you have two customers; your grower and the final retail buyer who actually eats or use the berries. The above selection may be targeted at the end consumer, but you have to satisfy the

grower as well. A high level of pressure comes from our customers, the commercial fruit grower. It's a bug bear of mine, but when the grower has a problem, even one that has no link to any of our processes, we may get the blame for the performance or should I say, lack thereof. It is critical that we understand all the aspects of our new plants and how they grow. The post sale support can be crucial in ensuring return business, or maintenance of your reputation and this is reliant on a complete understanding of how your new plant performs.

Conclusion

Importing and commercialising new varieties is a complex process that has room for great success but also large pitfalls. Something like being in small business. I hope that if nothing else, this presentation may be a good reminder of things to think about in your business if you work in the commercialisation/multiplication/bulking space.