

Trial report: Enhancing young tree growth with Gibberellic Acid (ProGibb)

Stephen Tancred, Stanthorpe, Qld, 27th June 2014

Poor growth of young apple trees on dwarfing rootstocks is a common problem in Qld's shallow sandy soils and replant situations.

This trial aimed to;

1. Evaluate GA3 (ProGibb) as a plant growth regulator that can enhance growth of young trees.
2. To compare 4 and 6 applications of ProGibb.
3. To evaluate if flower removal, fruit removal and the application of extra fertiliser can enhance the growth of young trees.

ProGibb applications made	2 nd , 16 th , 20 th October 14 th and 28 th November and 16 th December
Shoot measurements taken	18 th November, 15 th December, 13 th January and 7 th May Just data from first and last assessments shown

2nd October 2013 Start of Trial



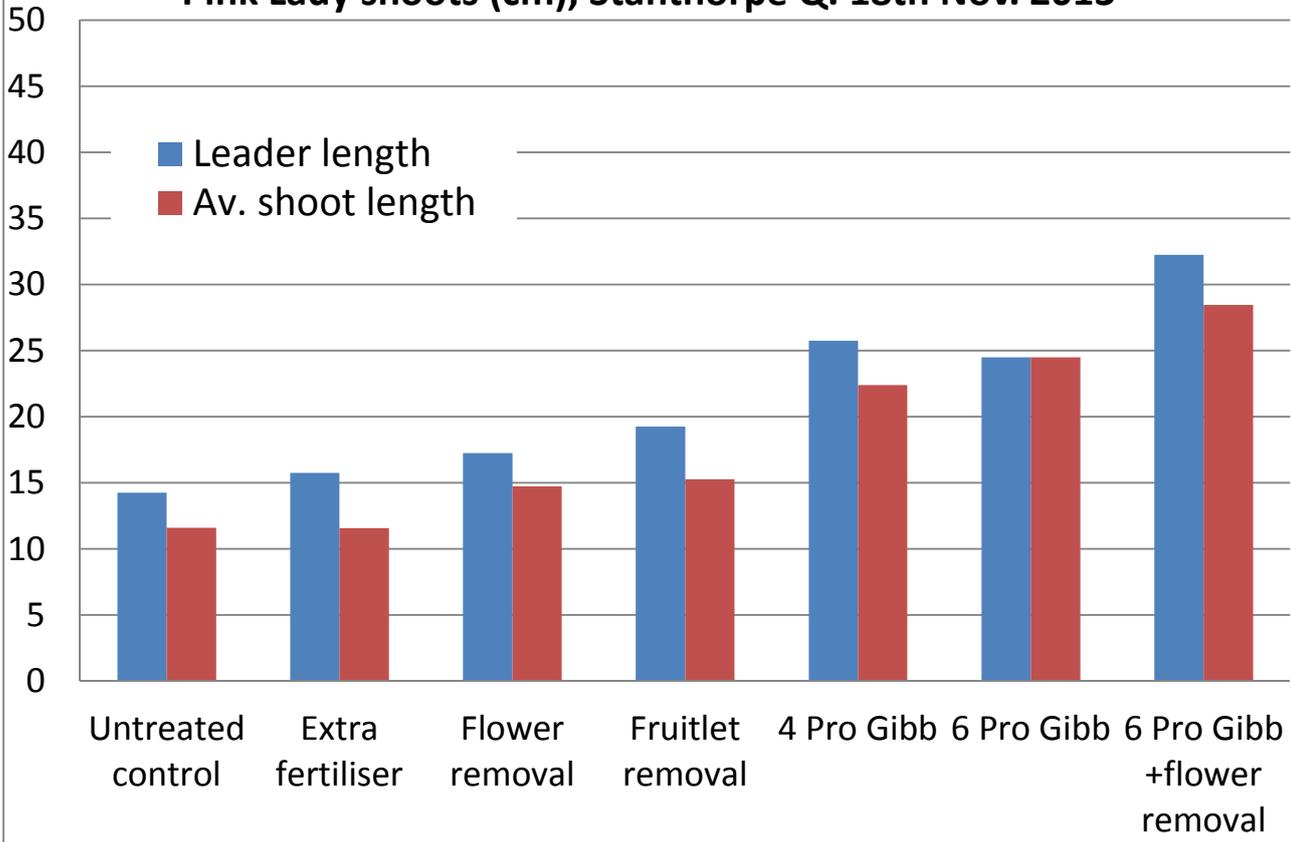
18th November 2013 - No Treatments



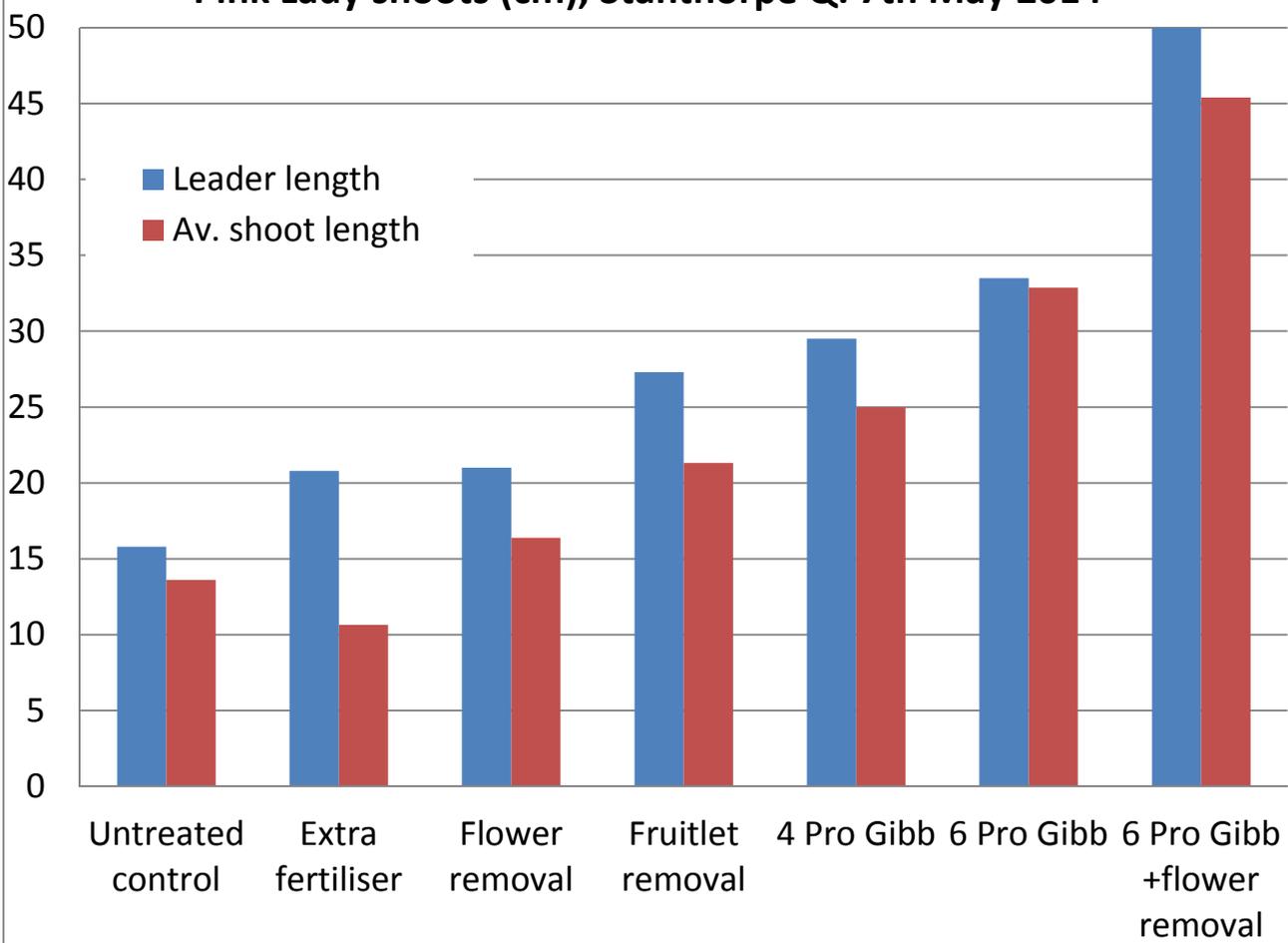
18th November 2013 - ProGibb Treatment



Pink Lady shoots (cm), Stanthorpe Q. 18th Nov. 2013



Pink Lady shoots (cm), Stanthorpe Q. 7th May 2014



Implications.

The trial was a great success in that it identified treatments that could enhance young tree growth. Trees will be able to fill their canopies faster and potentially get to the cropping stage earlier and increase early yields and shorten payback periods.

BUT the breaking of buds and growth of shoots has been by the conversion of a fruit bud to a shoot bud. Next year there will most likely be a reduced crop. Will this continue? Should ProGibb be applied for more than one year?

What did we learn?

1. We learnt that all treatments tested had some affect.
2. Applying ProGibb was more effective than flower & fruitlet removal and applying extra fertiliser.
3. Six applications of ProGibb were better than four applications.
4. Combining Pro-Gibb and flower removal was the most effective treatment.

How will this impact on the business?

- Some young orchards on dwarfing rootstocks that have “runted out” can be “kick started”.
- It may mean that more orchards are planted on dwarfing rootstocks with confidence.
- Profitability of young orchards may be accelerated.

What will we change?

There are many questions about this practice that need to be answered before it becomes a recommendation. ProGibb (GA3) is not registered for this use.

- So what is the best application rate?
- How many applications are needed?
- What are the effects on cropping in the subsequent years?
- Will a spray wetter improve performance?

What are the road blocks/obstacles to change?

We need to answer some of the questions about how to best use this product. Overseas experiences are a starting point, but local work is needed. On past experience there will be little assistance from the scientific community to solve these problems as the DPI researchers in Australia and NZ tend not to use Plant Growth Regulators in their trials. Can we get a permit for this product? ProGibb has a cost and there needs to be an economic analysis of the practice.

Summary.

In 2012-13 we conducted a trial to try and invigorate the growth of some Royal Gala on M26 that hadn't grown a large enough canopy for their age. Treatments included extra fertiliser, partial and full fruit removal, pruning leader and combinations of these. The treatments produced some extra tree growth but it was not extensive and was mainly in the bottom, rather than the top of the canopy.

In 2013-14 we expanded the trial to young Pink Lady trees on M26 that were only 2 years old and yet to fill their canopy. The treatment list was expanded to include application of GA3 (Pro Gibb), flower removal, and combinations of these. All treatments produced greater shoot growth. There were more shoots and longer shoots on the trees treated with GA3. The leader length was increased from 16 cm up to 50 cm. The average shoot length was increased from 14 cm to 45 cm. The number of shoots was increased from 32 to 49 per tree. However many questions need to be answered before this becomes a standard practice; eg what is the best application rate? How many applications are needed? What are the effects on cropping in the subsequent years? Will a spray wetter improve performance? Note that GA3 is not registered for this use.