

# **Apple and Pear Variety Study Tour**

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Montague Fresh

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## APPLE AND PEAR VARIETY STUDY TOUR

### PROJECT AP12702



The Australian Apple industry is currently enduring its most difficult time in history. Returns to growers are at record lows. Consumption is at a very low 5.6 apples per week or 291 apples per year. These are purchased by the main grocery buyer who buys 91% of the apples. (Source HAL BDRC Jones Donald Study 2011)

The trip to New Zealand in March 2013 was a great success. The timing of the trip was to coincide with the harvest of Smitten. While the focus and purpose of the trip was to view SMITTEN the tour also provided the group with an insight to a number of new varieties available to growers in Australia. These new varieties aim to provide consumers with a better eating experience or something compelling, unique and engaging

such as unique skin or flesh colour or unique flavour, in the hope that the industry can increase apple consumption.

To ensure that assessment of the varieties observed was considered by all areas of apple growing, post harvest care and handling, packing and marketing was considered, the tour included growers from a number of growing regions including Stanthorpe, Gippsland, Yarra Valley and Goulburn Valley and representatives from all the areas of the production and marketing process including Post Harvest Quality Control, Packing, Marketing and Proprietary Management.

It is expected that the tour will result in the development of variety assessment profiles for each variety, Business Plans for each variety that growers have shown interest in growing commercially in Australia and tree orders from growers.

### **Expected outcomes and how they were achieved**

I think many participants went to New Zealand not knowing what to expect from Smitten in particular. Smitten was perceived as having some timing advantages however crunch, flavour and colour were not expected to be as good as they were.

The expectation from the Montague Team was that a profile of several varieties would be developed for dissemination to the industry and the formal business and marketing plans be developed for each of those varieties. This would provide a foundation for growers across the country to assess the varieties suitability for growing both in their given region and its suitability to their own business model.

The varietal profile information was gathered and much of that is available within this report and within the attached varietal profile presentation.

The next step is to develop the business and marketing model for each variety including how, when where and why we Montague Fresh see each variety positioned in the Australian Market.

### **Results of discussions**

Below are reports written by individuals on the tour;

#### **New Zealand Trip Report Notes – Rowan Little**

Willowsbrook Orchard

Block 1:

- 12 year old Sci Fresh trees
- 3500 x 18 kg packed cartons per annum
- 65tonnes per hectare
- Fruit size 97 - 104. Average: 100
- Row Spacing: 3.5 x 1.2
- Vigorous M9 Stocks
- Hail in 2013 resulted in an adjusted thinning program.
- Est. Harvest: 18 – 20<sup>th</sup> March
- Wood removed in years 7 – 8
- No Retain used this season.

Block 2:

## Envy 3<sup>rd</sup> leaf

- Powdery mildew
- Somewhat overcropped
- Good to graft
- 2<sup>nd</sup> leaf : 6 – 8 tonnes / hectare
- Don't overcrop in the early years
- 3<sup>rd</sup> leaf: 35 tonnes of quality fruit.
- Can thin quite late but better to thin pre-Christmas
- Block to yield 60 – 65 tonnes/hectare this season.
- Will bi-annually bear
- Fruit eating quality drops dramatically if overcropped.
- 8 – 19 fruit per TCA
- Large fruit average 83 count
- Smallest fruit blocks – average count 90.
- More vigorous stocks can lead to biannual bearing
- Overcropping results in muddy red foreground color
- Trees need lots of feeding to maintain leaf quality and avoid development of powdery mildew
- At maturity should yield 80 – 100 tonnes / hectare
- Harvest timing: first pick with final pick of Jazz(tm). Similar to Pink Lady

## iHort Property (formally Ingles)

150 hectares: Jazz(tm), Envy(tm), Fuji, Gala, Granny Smith, Pink Lady(tm)

### **Envy Plantings:**

- 12000 trees
- Planting spacing: 3.2 x 1.1
- Variable quality trees
- Netting has created less russeted fruit and shinier
- Very hungry for magnesium
- Don't over crop
- Need to allow trees to settle into crop cycle
- Very little training required – no pulling down of limbs
- Long skinny branches, spaced over the tree.
- 14 day picking window
- 3 picks: Day: 1,7,14
- Use extenday for color development
- 2006 planting
- 120 – 130 fruit per tree.
- Av. Count on trees at 2 years is count 70.
- Difficult to thin chemically
- Will use a carbryl and cylex mix for thinning.
- Lower water rate for thinning.
- 4 x GA47 for russet
- Very mildew susceptible
- Have tried some root pruning over flowering. 1 ft from tree on both sides but achieved poor results.
- For fruit management it may be an option to remove king bloom.

### **Jazz(tm) Plantings:**

- Variable row width
- Planted bench grafted trees
- 2<sup>nd</sup> leaf = 30 apples per tree, 5<sup>th</sup> leaf = 220 apples per tree. Believes optimum crop load is 170 apples per tree.
- Ideal tree no. per hectare: 2700
- Packed out in 2012: 56 tonnes / hectare
- Harvest date: 17<sup>th</sup> March
- Uses overhead sprinklers but must be careful not to wash of chemical treatments.
- Pre harvest drop on Jazz(tm) can be associated with tree stress recommends watering heavily right up to harvest.

### **Ian Palmer – Envy**

- 3 years of fallow before fumigation
- Row 1 – 13 on clonal M9, row 14 onwards on Cepiland
- Don't over crop too early – grow strong bottom arms on trees
- Russet is suspected to be caused by wet cool conditions in spring. Dry conditions during flowering results in less russet. Suggests keeping air moving to keep fruitlet dry.
- Spacing 3.3 x 1 m – Cepiland could be further apart
- Manage leaf quality better – very heavy feeder.
- Will stop growing once cropped
- Yield: 120 – 130 fruit- 85% packout.
- Color on fruit in singles very good.
- When in doubles / triples – color not as intense.
- Don't respond well to chemical thinning sprays.
- Thinning December: late January (rubbish + shaded)
- Pigme fruit resulting from chemical thinning
- Limited pollination – almost self fertile, 3 pollinator per row.
- Heavily prone to mildew when young.
- Fruit size does not seem to vary by rootstock.
- Stressed trees will get mildew
- Lots of foilier magnesium
- Prove to black spot early
- Not a strong tree – need a wire
- Potential for 6000 cartons per hectare but will quality diminish at this number?
- Goal of production: 100 tonnes / hectare
- Currently undertaking 3 picks per season – goal to achieve 2 picks.

## **Simon Easton Orchard**

### **Envy:**

- Purchased Block 2008
- Kiku on CG 202 planted and grafted in the same year
- Prolific feeder
- Lack of tree training required
- Powdery mildew on young trees
- 6 metre posts
- 3 picks but 1<sup>st</sup> pick 70%
- Easy to thin on CG202 with no pollinators – late cylex and ATS
- 80 packed tonnes per hectare at 4<sup>th</sup> leaf.
- No russet in 2013 year
- 1<sup>st</sup> and 2<sup>nd</sup> leaf very large fruit
- 3<sup>rd</sup> leaf fruit starts to reduce in size
- Count 80 average
- 130 pieces of fruit per tree on average
- Starch plate 2 to harvest
- Background color more important for harvest maturity
- Stem punctures a slight issue
- 35 cents per tree to prune
- 85 cents per tree to thin.

### **Jazz(tm):**

- Aiming for 60 tonnes / hectare
- 220 fruit per tree was too much dropped the average size to 120 count.
- 185 fruit per tree is the best option, will achieve 105 average.
- 92% packout
- Need to feed trees a little more on Jazz(tm)

### **Kona Orchards:**

- Joint venture ENZA & Maori tribe
- 125 k Envy Trees
- Planted Nov – Dec.
- 32 tonnes/hectare 2<sup>nd</sup> leaf
- CG202 rootstock – 90 tonnes / hectare after light crop in year 1.
- Preference for Cepiland stock over M9 for Envy.
- Need to let tree mature to carry crop.
- \$95,000 per hectare total cost for planting.
- Will stop growing very quickly when cropped.
- Average size on a mature crop is count 90.
- Have done a little work with root ripping.
- Craig Hornblow suggested M106 planted at 3.3 x 1 would work for Envy in Australia.

## **Plant and Food Field Day**

- Richard Volz, plant breeder.
- T34
- Results of stage 3 plots – 50 tree sites
- 3.5 x 1.25 with M9 stocks at 3<sup>rd</sup> leaf
- Matures with Gala
- Bright Pink-red color similar to Pacific Rose
- Colors early but has variation in red intensity
- Average color 75% of surface area on 2<sup>nd</sup> leaf
- Very little russet, some in calyx end.
- Open calyx
- 8.7 – 9 kg firmness at Harvest
- Balanced tart and Cherry flavour. Moderate, acid flavour.
- Some consumer sampling in Asia revealed acceptance similar to Fuji.
- Flower the week before Gala
- Yield and fruit size the same as Gala. 3<sup>rd</sup> leaf 25 tonnes / hectare.
- Average packout 86%

### **Disorders:**

- Susceptible to core rots – before and after harvest 1 – 25% core rot.
- Internal browning at 16 weeks – 40% in one orchard.
- Biennial bearing a slight problem.
- Resistant to scale
- Some mildew resistance
- Susceptible to fire blight and European canker.

### Smitten at Compass Packing:

- Misshapen fruit on young trees
- Good color – 75%
- 47,000 trees – 2008/09 planting.
- Can harvest with a yellow background.
- 10 – 14 days before Gala
- A little greasy to touch
- 15 – 16 brix
- Some browning in Asia after despatch to customer
- Difficult to thin chemical and secondary thinners required.



**Smitten (tm)**

- Difficult to thin, has spent up to \$5000 per hectare
- Not a massive cropper
- Harvest maturity judged primarily on background color
- 50 – 60 tonnes / hectare at full production
- 117 average size. Generally small.
- Some misshaped fruit which may be caused by lack of pollination. This tends to improve with age.
- Tree growth will stop once the trees are cropped
- Long flowering window.

**Ambrosia:**

- M9 Rootstock
- 3.3 x 0.8 planting
- 3 picks in 10 days
- 4<sup>th</sup> leaf: 4000 cartons / hectare
- Ripens very quickly
- Extend day laid 10 days before harvest
- Careful not to overcrop and lose fruit condition.
- Harvest 15<sup>th</sup> March.
- 80 – 100 count goal
- Sugar: 13 – 14 up to 17
- Easy to thin. Can drop too many.
- Susceptible to scald. Need to step cool like Jazz(tm) and don't force draft cool.
- 2.8 starch at harvest
- 60% of fruit at first pick.
- Must pick quickly, will go alcoholic if over mature
- Store well with Smartfresh
- Vent rooms for with fruit held for CA or Smartfresh.
- Must tree train in the early years
- Rots can develop if stems are broken.

Richard Hoddy:

**Smitten(tm)**

- 2 main challenges: Thinning and fruit size
- Misshape can be managed through better pollination. Try Manchurian crab.
- Harvest 2 weeks before Gala
- 3<sup>rd</sup> leaf 60 – 70 tonnes per hectare
- Slight greasy feel.
- Prone to russet

**Ambrosia(tm)**

- Harvest middle March
- This season he pruned late at full bloom – should have been done earlier.
- Tops a little light

- Easy to thin.
- 60 tonnes / hectare in 4<sup>th</sup> leaf.
- Robust leaf, easy to manage.
- Harvest timing very important
- Minimum colour – 30%
- Background color cream / green
- 2 picks – 85% of fruit.
- Prone to black spot.

#### **Divine:**

- Pick with Pink Lady
- Smartfresh to store
- Prone to Pit
- Full red like Smitten
- Not heavy growers
- Stem end russet
- Scab resistant
- Halve the number of fungal sprays.

#### **Plant and Food:**

#### **Smitten:**

- Smitten on M9, 7 year old trees.
- Week site for development – shallow soil
- 1.5 starch for export. Can pick up to 3 without greasiness.
- Color comes when vigor is managed
- 10 firmness.

#### **A330R19T37:**

- Full red variety – like red delicious.
- Pacific Beauty x Akane
- Good cropping trees
- Quite flat
- Mild sweet with some starch
- Texture 'softer' need Smartfresh

#### **A268R20T93:**

- Full red apple
- More elongated than T37 and smaller
- Jazz x Fuji / Pacific Rose
- Early to mid February harvest
- More acidity with some sugar
- Soft scald susceptible.

### **Red Flesh Apples:**

2 types:

1. Red skin with red flesh all through the season. Acid flavour with thick skin.
2. Pink core at Maturity.



### **Honeymoon / Lemonade**

- Conical in shape
- More acidity than Golden Delicious
- Lasts 6 months in storage
- Yellow skin with blush
- Heavy production and large size
- On MM106 rootstock.
- Some mixed maturity – green through yellow with blush.

### **Prevar Pears:**

3<sup>rd</sup> generation hybrids

### **P267R223T080**

- Ripens last week of January
- Sun blush with yellow background.
- Barlett dominant flavour
- Mixed maturity on the tree.
- Heavy yield
- Flre blight resistant.



## **P265R225T009**

- Red skin 100%
- Dull sheen but will brighten when ripe
- Storage for 24 weeks
- Scuff resistance
- Sweet flesh and fine texture
- Stage 2 planting now being conducted in Australia
- Red Bartlett x Hosui x Nijisekki x Chinese Pear
- Crunchy – thicker skin and sweet.
- By 10 weeks will have more European characteristics
- Not a prolific cropper. Plant and Food to conduct research to improve yield.



## **IFO Rootstocks**

- M9 – M106 vigor
- All stocks have royal gala grafted to them.

### **Resistance to disease**

- Fire blight – some with total immunity to Fire blight.
- Woolly apple aphid
- Phytophthora
- May be tolerant to replant disease
- Total of 7 rootstocks.
- 2 to very susceptible to fire blight like M9
- 5 offer resistance.
- 3 rootstocks now being moved to commercial testing.
- Selection 5: M9 type offers superior color and firmness of fruit.
- Selection 7: Vigorous M26.



Below are picture so Smitten taken from the Montague Test sites

Batlow Fruit eat exceptionally well



Batlow SMITTEN



Harcourt SMITTEN



Narre Warren SMITTEN

**Assessment of varieties viewed and suitability for packing:**

**SMITTEN:**

- Appeared to be a firm and sturdy variety that would be suitable for efficient packing.
- Extensive misshapen fruit among younger trees could potentially cause problems with performance during packing.
  - The misshapen fruit seen in SMITTEN is not easily sorted using our defect sorting technology.
  - The odd shape of fruit may also inhibit transfer along the grading process as fruit may not roll evenly.
  - Orchard managers believed that misshapen issues settle with age of tree.
- All growers in New Zealand suggested that SMITTEN is picked 10-14 days before Royal Gala
  - This would be a good fit for our packing schedule as there is plenty of additional capacity at this time of the season.
- Trial trees from Harcourt and Goulburn Valley suggest that Smitten would be picked 10-14 days after Royal Gala in Victoria, which is distinctly different to the information we obtained in New Zealand.
  - If Smitten was picked after Royal Gala in Victoria there would still be capacity in existing packing schedule for this fruit.
  - A clash with the timing of picking and packing of SMITTEN may arise as recommendations from ENZA suggested that for best Brix results coolstore was required before packing.
- To best fit the existing packing schedule, a Smitten program running from the beginning of February through until the middle of March would be preferable. Due to large number of other varieties being picked in late March/early April, packing capacity would be decreased at this time.
- Size of the fruit seemed to be acceptable for the Australian market and it is expected that a high percentage of fruit from the crop would land within the main supermarket count sizes of 60's through 82's. A reasonable amount of prepacks would also be expected.
- General appearance of the fruit on 5 year old trees was acceptable. A nice red colour blush against a green-yellow background would be attractive enough to consumers.
  - The fruit from 4 year old and younger trees did have tendency to show increased levels of the striped red blush rather than block red as well as the evident misshape issues, which could contribute to poorer packouts in the initial years of packing.
- Crops tended to be free of large amounts of defects with growers reporting decent packouts.
- As the NZ market is driven by export, there have not yet been large quantities of SMITTEN held in CA for significant periods. When considering the high brix levels, low acid levels as well as parentage of SMITTEN we may see internal browning issues if fruit was to be held in CA. When internal defect sorting is required the grader speed is slowed and the packing process becomes slower.

**OVERALL RECOMMENDATION:** Would be pleased to pack large volumes of this fruit from beginning of February until middle of March. It would fill a gaping hole in our current production schedule, enabling more work to be available for our packing staff. Size and general quality would likely lead to decent packouts and a good volume of saleable fruit in supermarket count sizes.

## Envy:

- A naturally large apple with growers aiming for and regularly achieving large count sizes (70, 80 and 90 in 18kg). Equivalent of a count 60 and larger in a 12kg carton.
- For optimum crop size for packing for Australia's domestic market the less vigorous of the dwarfing rootstocks would be recommended.
- All growers suggested that if grown right in the first few years that it was a good apple to grow.
- Some issues with russet were reported amongst a few growers and packhouses.
  - Russet is not easily nor accurately sorted through our automated defect sorting technology.
  - Packing of Envy would require additional time and staffing resources to be spent on sorting in the packhouse for russet.
- Large fruit is generally a good result for the packhouse as there are less pieces to handle per kilo.
  - E.g. A count 60 would only require 5 pieces to be handled per kilo whereas an 82 would require 7 pieces to be handled per kilo. For every 1000 cartons of count 60 produced it would be 24000 less pieces to handle than when packing a smaller line of fruit.
  - As such this would decrease time and wages spent on packing this variety if it was grown big and was packed in traditional 12kg units.
- From what has been witnessed in New Zealand the fruit is generally grown too large for the current Australian count sizes, attempts at reducing the size of the fruit would likely lead to a decrease in eating quality and external red colour blush.
  - As such it would be expected that the fruit would need to be grown to its naturally large size for the variety to be a favourable eating experience for the consumer.
  - Big supermarkets would also need to shift their size thresholds.
- Comments made in New Zealand suggested that in order for Envy to be sold and marketed in Australia, alternate pack types would need to be considered. E.g. 4kg trays.
  - The Narre Warren North grader is not setup for 4kg trays. This and other alternate pack types would lead to decreased production efficiencies as our system is not designed for this type of packing.
- Envy seems generally quite robust in the packhouse and susceptibility to bruising does not seem high.
- Larger fruit can sometimes contribute to blockages in our existing grader process, whether it be in our presingulator area or in our chutes that feed our tray lanes.
- As with SMITTEN the NZ Envy market is driven by export, there have not yet been large quantities of Envy held in CA for significant periods. When considering the high brix levels, low acid levels as well as parentage of Envy we may see internal browning issues if fruit was to be held in CA. When internal defect sorting is required the grader speed is slowed and the packing process becomes slower.

**OVERALL RECOMMENDATION:** Given its size Envy would be a successful variety for packing due to the requirement to handle far less pieces than with smaller sized varieties. Concerns would be held over the extent of russet placed into field bins as current defect sorting technology is not able to remove this from a bi-coloured apple. Further concerns would be held over pack types that may potentially be used for the marketing of this fruit. If supermarkets were to accept count 44, 50 and 54 12kg cartons on this variety then I would expect it to be a highly successful variety for the packhouse. Size of fruit through the grading process may cause problems with blockages.

## Eve

- A firm and sturdy variety makes Eve a suitable variety for a packhouse.
- All fruit sighted in New Zealand and Australia suggests that it is generally a very clean piece of fruit with minimal defects, enabling a high packout.
- Fruit generally appears to be naturally large but not to the extent of Envy.

- Larger size fruit will have the same beneficial effects that Envy gives but unlike Envy fruit size appears to naturally sit within the larger end of the current supermarket size ranges.
- Due to Braeburn parentage fruit is dense and heavy, leading to a smaller diameter to weight ratio than that of most varieties currently produced in Australia.
  - A smaller diameter per piece is a massive positive for a packhouse. Varieties that are not so dense, such as Pink lady and Sundowner require time to be spent by staff on squeezing fruit into the given trays. When a variety is denser it sits comfortably within the tray and decreases the time spent on packing each tray.
  - For the above stated reasons there is also a decrease in the potential for bruising on varieties with a higher density as the apples are not wedged between each other.
  - Denser fruit will also decrease the amount of fruit dropped onto the floor as a tray is transferred into a carton. Again, due to fruit sitting more comfortable in tray cups.
- The NZ Eve market is driven by export, there have not yet been large quantities of Eve held in CA for significant periods. When considering the high brix levels, low acid levels as well as parentage of Eve we may see internal browning issues if fruit was to be held in CA. When internal defect sorting is required the grader speed is slowed and the packing process becomes slower.
- We visited one packhouse that packed 25,000 bins of Eve each season and they were always extremely happy when Eve was on the packing schedule as they found it to be a straight forward variety with minimal complications.

**OVERALL RECOMMENDATION:** Eve appears to be a variety that typically provides good results for a packhouse. Sturdy fruit, combined with good size and relatively free of defects is an excellent combination for a packhouse. There were comments made regarding possible internal disorders this is one point that needs to be considered for all varieties. The New Zealand market is generally one that packs a vast proportion of its fruit within the first 4 months of picking. As such there would need to be more research undertaken if we were to be storing any of these varieties for longer periods of time. Eve would be a variety that would suit our packhouse extremely favourably.

## Jazz

- The most tried and tested variety in Australia (of the listed varieties) was also extensively grown and packed in the parts of New Zealand that we visited.
- Again a sturdy and dense variety.
- Fruit witnessed in New Zealand orchards was low in colour at the time but all reports suggest that the colour would come on strong just before picking.
  - Experience in Australia has shown that blush colour and contrast is of the highest quality.
  - Some problems with grader bruising have been experienced when background colour becomes too yellow (overripe). No such issues have been experienced with greener background colour.
- Fruit size on Jazz is typically to the smaller end of the supermarket sizes and would require more fruit to be handled than Envy or Eve.
- Flesh density is high and allows for extremely quick handling and packing of trays as fruit sits cleanly and clearly into cups.
  - As with Eve this would also contribute to less bruising defects occurring through the packing process.

**OVERALL RECOMMENDATION:** Jazz has been packed in decent quantities for the past 2 years in Australia. Experience to date suggests that it is amongst the best varieties to pack. Excellent density allows for very smooth packing and the smaller fruit does contribute to a clean flow through the grading process. Jazz is a variety that is always looked forward to working with in the packhouse. The more the merrier



## Ambrosia

- A bicoloured apple with a yellow and pink skin.
  - Traditionally apples with yellow skin tend to enhance any kind of defects that are found on them. Dependent on percentage of yellow skin there would be concerns over the packout percentage if fruit is not grown to a high standard in the field.
- Reports in the orchard are that it acts like stonefruit around harvest time, if it is not picked on time it loses firmness quickly.
  - Concerns are held that a sharp decrease in firmness would increase susceptibility to grader damage during packing.
  - With a very narrow window for harvest you also have to mimic the harvesting behaviours with packing behaviours, essentially pausing the packing schedule of all other varieties and packing Ambrosia as it comes off the tree.
  - Orchard managers also quoted a very pungent 'winey' aroma develops in Ambrosia very quickly once maturity is reached, not confident that this characteristic suits the current way big supermarkets do business.
- With the large geographical distances that our orchards are from the packhouse as well as the condition that ambrosia is picked in, it would be inevitable that the product would be bruised before it is packed.
- Not a high amount of information was discovered on this variety and no further specific comments can be made.

**OVERALL RECOMMENDATION:** High concerns would be held over the packing of this variety. Yellow skin colour and the possibility of decreased pressures would lead to an increase in the potential for grader bruising and the possibility of rework being required post packing. Would not recommend this variety for packing.

## Brad Fankhauser – Grower Drouin Gippsland Victoria

Another interesting 'new' grafting method was the step graft. This was by far the most remarkable result I have seen of step grafting to date.



One method we are trialling here when we plant the new farm will be a bench grafted rootstock. This block was from of the Inglis blocks managed by Enza. Despite all the reports that this is can be a very unreliable and uneven way to plant an orchard, there didn't seem to be much wrong with this result.



My thoughts on the varieties are much like every one else's I assume. Smitten will have some 'punky' fruit in its early days and may also struggle with size as can Gala when over cropped.

Envy is most likely going to have the opposite effect with over size fruit until year 3 or 4 when the tree starts to calm down.

I personally think that ensuring there is a market for these new varieties will be a harder task than growing them. A good job some one from marketing was on the trip.....

I would still like to see some more fruit from other Australian growing sites to see how bad the fruit sizing really is. N.Z. generally have very different growing conditions that can have dramatic effects on fruit and tree behaviour.



## CRAIG BOYCE – INTEGRITY

The change in production strategies to now include overhead cooling in orchards has opened the GV up to many varieties it previously did not do well.

The ability to get flavour in the GV is well known but skin finish and colour have been limitations to sales because consumers buy with their eyes first.

Galas under overhead cooling this season were well ahead on presentation and maturity management in an extremely hot summer, this leads me to believe that there is plenty of yet untapped opportunities for the GV given its early harvest period and the potential to give high brix levels.

All varieties had agronomic challenges that will limit their ability to generate good nett returns. Work will need to be done to master these to create the correct production cost base. Thinning in particular on

Smitten under Aus labour costs could be a limitation to viability of the variety. I see this as the only major issue for Smitten.

Envy has real potential if you can minimise eye rot which is prevalent due to the open calyx end. The variety Envy as a replacement for Fuji is a no brainer providing good colour can be produced.

T34 was a interesting apple that I thought had real potential because of it's timing and it's flavour profile

Overall not do we only have to improve our growing capacity T/ha but we also need to profile our fruit better on trees as the NZ growers do so we are only harvesting a crop with a high packout % which in turn lifts bin returns

[How you think they will grade](#) I do wonder about the firmness of the Smitten but think cosmetically it was ok

[What you learnt.](#) I learnt that the team at Montague's have both the professionalism and the passion that I have been looking for in this industry and I look forward to connecting on several levels into the future



T34



Smitten in the field



Honey Moon

## SUSAN FINGER – VERNVIEW ORCHARDS

Trip to. New Zealand

The trip was originally aimed at new varieties particularly Smitten which is a licensed Prevar variety.

Trip was scheduled to take in harvest of this early variety.

The participants visited a number of orchards in the Nelson region and the Heartland packing facility. We also saw Smitten in Hawkes Bay.

Discussions were held about need to thin this variety as it is very precocious.

The fruit size was similar to gala and the bicoloured apple was very attractive.

Harvest window would allow harvest just before gala but would probably be in around similar times as early district gala.

What was so impressive was the pressure - firmness of the apple. It offers a variety in the early season which would place it in the premium category for shelf life. Many early varieties have poor shelf life thus potentially turning off consumers.

As a result of the trip, our orchard had placed an order for 2600 smitten on M9. We will be planting in 2014. We are reluctant to plant this variety on other rootstocks due to size profile. Further plantings may occur.

We also visited a number of orchards growing jazz, envy and ambrosia. Our orchard has jazz plantings and will be growing envy. What was of interest was the structural supports required for the heavy cropping envy. Structure of trellis is an important investment decision that could ensure continued productivity. We saw numerous envy plantings on a variety of rootstocks. Our initial plantings will be grafts on vigorous rootstocks. Size profile will mean M26 can also be used.



The visits to the research stations showed up the needs for continual improvement and focus on existing plantings.

Overall the trip was very worthwhile. It allowed our business to refocus. The discussions during the trip and travel allowed me to take back valuable information of where our business fits within the supply chain and where we need to position our business for the future. It has lead to us placing orders for next year and we are still working through our 'new' orchard plans.

We have as a result of the trip ordered 3,000 Smitten Trees on M9 Rootstocks to be grafted in Spring 2013 for planting in 2014.

### **Gavin Wylie**

From a Marketing Point of View Smitten will certainly have a place in the Australian Market

It's advantages come from its slightly earlier picking than Gala combined with its crunchy juicy flavour offering providing consumers with a superior quality piece of fruit to the current Riverland Gala that currently starts our NEW SEASON APPLE

Our biggest problem as an industry is the variance in quality and growers chasing higher dollars early in the season and compromising on quality i.e. picking immature and providing consumers with a poor eating experience to kick off the season.

Smitten will provide consumers with a fabulous eating experience. It will be first to be picked and picking and harvest maturity will be controlled better through a managed program.

I see it as having an 8 – 12 week window

I believe that the trip was a great success with tree orders from Vernview 3,000 and Savio 28,000 already received

### **Next Steps**

I will need to develop a formal business plan for Smitten, ENVY, Ambrosia and Red Fleshed Apples

I will develop formal marketing plans for the varieties and begin presenting the varieties to industry including retailers, growers and wholesalers.

Further formal assessments of Apple trial sites (particularly SMITTEN) should also begin. Montague have the experience from HAL PROJECT SF08023 on recording and monitoring trial sites.

Project SF08023 analyses new varieties of stonefruit in 3 stages of their life cycle. With so many new varieties of apple coming through the fold it would be prudent to assess the results of PROJCT SF08023 and consider applying these test to apples.

### **1. Field Evaluation of New cvs.**

Prior to the nominated cvs being considered commercially viable, each one is tested under Australian growing conditions. This phase of the project is designed to determine whether the nominated cvs will produce fruit at commercially viable yields and with commercially acceptable quality characteristics, namely a minimum Brix level of 15 coupled with the ability to achieve 75% of fruit which is meets the Woolworths Quality standards as defined in their specification. Timing of flowering and harvest maturity should be assessed and recorded. Of course some growers will be prepared to take the risk and plant prior to this assessment others will want to wait for trial assessments

## **2. Post Harvest Evaluation of New cvs.**

Post harvest evaluation will ensure that each new cultivar can successfully perform under Australian supply chain conditions and still be enjoyed by the consumer. In this critical phase of testing the storage potential and performance of new cvs will be documented. This evaluation will determine the maximum cool storage life of fruit based on the rate of development of quality loss and internal disorders resulting in unacceptable eating quality. A 'risk rating' based on the likelihood of storage disorders developing under supply chain conditions will also be determined for each new cultivar based on maturity, temperature and storage time. Work will also be undertaken to evaluate the impact of different post harvest treatments on eating quality considering factors such as sugar levels and firmness.

## **3. Consumer Satisfaction Evaluation of New cvs.**

To date very little work has been done in the area of consumer testing of apple and pear new varieties. This has meant that in general cvs are selected without consideration of their affect on consumption. A key criteria for progressing a variety is its level of acceptance by the consumer. Varieties should be evaluated by trained 'consumer' staff panel.

The evaluation protocols developed in this project will reduce a grower's need to purchase untested cvs and minimise the risk of significant funds invested each year in unproven cvs. This will result in an efficient and productive industry that can supply high quality fruit with greatly improved eating qualities.

## **Implications for Australian horticulture**

As stated in the opening summary consumer interest and consumption for apples in Australia is a major concern as are returns to growers with existing commodity varieties. It is imperative that the Apple industry invigorate consumer interest and we raise the per capita consumption for apples.

With the Hort Research and Plant and Food Breeding Programs based in New Zealand and any of the new varieties in commercial plantings in New Zealand it is going to be a requirement that Australian Apple Companies like Montague and growers visit New Zealand on a regular basis and a different timings of the year in order to view different varieties.

I believe that the tour will result in significant implications for the Australian Apple industry. Growers that take the time (particularly during harvest) to view new varieties such as Smitten a variety that is earlier than Gala, Envy which will be a Fuji replacement and incredible marketing opportunities that the Red Flesh Varieties present, they will be ready for the next 10 years which will be a very exciting time for the Australian Apple category. These growers are now planning for the future including varietal changes, advances in growing techniques and equipment and learning from mistakes made by growers who are further advanced in these varieties, therefore fast tracking their knowledge in growing the varieties and the speed at which they can produce at maximum yield maintaining quality fruit.

With tree orders for Smitten already in place it is clear that the trip will have implications once another variety is introduced to the Australian Market.

## **Information Dissemination**

Formal Varietal Profiles can be provided to growers and nurseries detailing growing habits, harvest maturity, crop load expectations, packouts, program management requirements etc

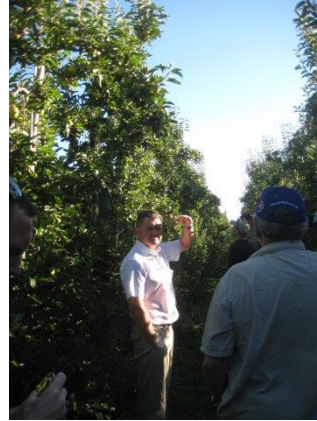
Business and Marketing Plans will be developed for growers and retailers

Montague will then conduct regional roadshows presenting the profiles of each of the varieties and show growers the process and timeline for ordering trees and how these varieties will be positioned in the Australian Market and how seasonality of existing varieties will be affected.

### Additional Photo's of Smitten



Eastons Orchard



Mark Russell turners & Growers



On the tree (young planting little misshapen)



In the water dump heading for domestic sale



In the bin at Compass Packhouse



Packed for Export Order





Smitten Branded Pre Packs for Domestic Market



Smitten Grafts – David Easton



Smitten in the field – Richard Hoddies





Smitten Picking Colour Guide



Compass Export Packhouse Packing Smitten



Smitten Packed



Smitten Quality Specifications







Plant & Food New Variety Development Station Nelson



Craig Boyce, Shane Hall, Rowan Little



Richard Volz, Brett Ennis at Plant & Food



Mick with the Original Smitten Trees at Plant & Food

## Itinerary

### Day 1: Monday 18 February 2013

By Air: Melbourne International Airport - Wellington International

9.30 AM Depart Melbourne International Airport on Air New Zealand Limited flight NZ852

3.00 PM Arrive Wellington International

By Air: Wellington Domestic - Nelson Airport

5.10 PM Depart Wellington Domestic on Air New Zealand Limited flight 8103

6.15 PM Arrive Nelson Airport

Accommodation: Grand Mercure Monaco Hotel & Resort

Welcome Dinner

### Day 2: Tuesday 19<sup>th</sup> Contact Morgan Rogers

8.00 am Meet at the Enza Office Nayland Road, Stoke. Latitude 41

8.20-9.00am Tour of Packhouse

9.30 -10.30am Willisbrook Orchard - Envy™ and Jazz™.

11.00 – 11.30 McLeans Jazz™.

11.30 - 12.00 Ian Palmers Envy™.

12.30 – 1pm Lunch in the field supplied by Enza.

1.15 – 1.45 pm Eastons Jazz™ and Envy™

2.00 – 2.45 pm Wawata Partnership , view Envy™.

3.00 pm Prevar New Variety meeting.

7 pm Dinner ENZA Mark Russell and Craig Hornblow

### Day 3: Wednesday 20<sup>th</sup>

9.00am: Compass Fruit Ltd view harvested fruit (sample in shade shelter) and Heartland Group domestic packing Line 3 Packing SMITTEN

10.00am: David Easton Apples to view the grafted Smitten (grafted 2012), along with eve and Ambrosia. Eastern Orchards

12.00-1.30: Lunch Grape Escape

1.45 -2.45: Alandale Orchards F60 (2009) & R101 (2010) Smitten, Eve and Ambrosia. McKlisky

4:00 Vailima Home- Met by Richard (Main Office) view VSD block 2009-2010 planting moving through to ZSF (2009 planting). Richard Hoddie Smitten, Eve, Jazz, Envy, Ambrosia

Vailima Westfield (2008) – Oldest SMITTEN planting in group.

Dinner with HEARTLAND and Heartland Growers

#### Day 4: Thursday 21 February 2013

By Air: Nelson - Wellington - Napier

10.20 AM Depart Nelson Airport on Air New Zealand Limited flight NZ8118

10.55 AM Arrive Wellington Domestic

11.30 AM Depart Wellington Domestic on Air New Zealand Limited flight 8440

12.25 PM Arrive Napier Airport

1:30 Enza Everend Road Orchard

3:00 Mr Apple SMITTEN Block

Dinner Enza Duncan Park and Morgan Rogers

#### Day 5: Friday 22 February 2013

8:30 AM Brett Ennis, Profile on All Prevar Varieties

10:30 AM Plant and Food View Rootstock Trials

11:30 AM Emmanuel, IFORed Program Profile

By Air: Napier Airport - Auckland Domestic Airport

3.15 PM Depart Napier Airport on Air New Zealand Limited flight 8410

4.15 PM Arrive Auckland Domestic Airport

#### Contacts for Smitten Test Trees Growing in Australia

Company	Trees	Name	Phone	Email
Montague Narre Warren -	70	Montague	Rod Taylor	<a href="mailto:rtaylor@montaguegroup.com.au">rtaylor@montaguegroup.com.au</a>
Rivercorp Land and Water Limited	20	Fergus McLachlan	411873336	<a href="mailto:fergus@rclw.com.au">fergus@rclw.com.au</a>
Joyson Orchards	20	Mark Joyce	417898600	<a href="mailto:markj@joyson.com.au">markj@joyson.com.au</a>
Ardrossan Orchards	20	Ian Cathels	427491710	<a href="mailto:iancathels@bigpond.com">iancathels@bigpond.com</a>
Savio	20	Rosie Savio	417702212	<a href="mailto:savio@halenet.com.au">savio@halenet.com.au</a>
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Finger	10	David Finger	409536337	<a href="mailto:vernview@bigpond.com">vernview@bigpond.com</a>
Witchell	20	Sean Witchell		<a href="mailto:shaun.witchell1@bigpond.com">shaun.witchell1@bigpond.com</a>
Armour	20	Ian Armour		<a href="mailto:armouraa@sympac.com.au">armouraa@sympac.com.au</a>
Eden Park	20	Scott Roweth	407938546	<a href="mailto:sroweth@bigpond.com">sroweth@bigpond.com</a>
Lenswood Co-op	20	James Walters	409377600	<a href="mailto:james@lenswoodrural.com">james@lenswoodrural.com</a>
Howard Hansen	10	Howard Hansen	418122237	<a href="mailto:howard@hansenorchards.com.au">howard@hansenorchards.com.au</a>
ACN	10	Nick Parris	427359951	<a href="mailto:acnorch@mcmedia.com.au">acnorch@mcmedia.com.au</a>
Total Test Trees Planted	330			

## Contacts - Trip Participants

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Mickael Simms – Harcourt Orchard 2iC

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## Contacts – Places Visited

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Brendan is the contact to visit Richard Hoddie, David Easton, Michael Thompson

The tour was successful. The Orchards and people visited were all most accommodating and would I would most definitely revisit these growers on future tours. They are the most progressive growers and have experiences we can learn from having had the varieties in the ground for several years before Australia has the opportunity to plant.

By Gavin Wylie  
Marketing Manager  
Montague Fresh