



# APATA GROW SPRING FIELD DAY 2016

HAYWARD TASTE REVIEW, DRY MATTER, AND  
OPERATIONS UPDATE

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## SCHEDULE

10:00AM – Operations update

10:20AM – Hayward taste review: Suggested changes

10:40AM – Hayward dry matter

12:00PM – Finish and BBQ

# OPERATIONS UPDATE

Written information to follow in the October 2016 Kiwilink newsletter.

## HAYWARD TASTE REVIEW - ZESPRI

\*Description and rationale for changes presented at the back of this handout\*

The Green Taste Review Committee has set out recommendations in three areas to further enhance incentives to produce a better taste profile for the category.

This proposal is driven by issues with product differentiation in market, despite changes already being introduced for the season. Consequently, NZKGI, suppliers and Zespri formed the 2016 Hayward Taste committee to develop these further recommendations. The purpose is to ensure the fruit delivered to the market has the best opportunity of driving sales of Zespri Kiwifruit at a premium price.

The Taste Committee heard directly from Zespri's onshore and offshore sales and marketing teams during its review. Competitive pressures are increasing, but the trend in recent years is that the taste profile of New Zealand-grown Hayward is decreasing. Zespri's strong assertion to the Committee was that significant changes to commercial signal are needed to ensure grower decision making reverses this trend.

Competition is not only increasing from other kiwifruit producers, but from other great-tasting fruit alternatives. Also, in New Zealand's selling window, Chilean exporters can offer Hayward fruit at significantly lower cost than New Zealand producers. In addition, the Committee heard that some Chilean exporters are improving their offering year on year.

Zespri set out three specific reasons for a significant improvement in the taste profile: to provide clear differentiation from competitors to justify the sales premium; low-taste Hayward damages the Zespri brand and discourages repeat purchase; low-taste Hayward

in established markets reduces OGR by impacting run rates and lengthening the sales window.

In preparation for the review, Zespri carried out a grower survey on taste with 124 people responding. The vast majority of respondents accepted that taste drives in-market value, that taste is critical to the success of Zespri Green, and that growers can influence taste. However, only a quarter of growers believe that the current commercial signals reflect how important taste is to our markets.

### **THE RECOMMENDATIONS ADDRESS THESE THREE ASPECTS:**

- Minimum Taste Standard: to be retained at 15.5 percent but enhanced with the requirement that 70 percent of the tested volume exceeds the MTS.
- Taste Zespri Grade: a change to the calculation methodology, splitting the taste buckets into 0.5 percent dry matter increments to smooth the transitions from one grade to another.
- Maximum Taste Payment: to consult with the industry on an increase to be made to 60 percent either in 2017 or in 2018. The current level is 50 percent.

## **HAYWARD DRY MATTER**

### **WHAT CAN YOU DO TO INFLUENCE DRY MATTER?**

There are many tools available to up the dry matter content of your fruit, the most important is the overall management of the orchard.

- Have a plan
- Get the job done on time
- Count and adjust (and count again)
- You can't control the weather so get everything else in place that you can

Hayward taste is the big focus currently with the markets demanding less low quality fruit. We want consumers to buy our product year after year so it's crucial we deliver a superior taste experience or we face losing those loyal customers.

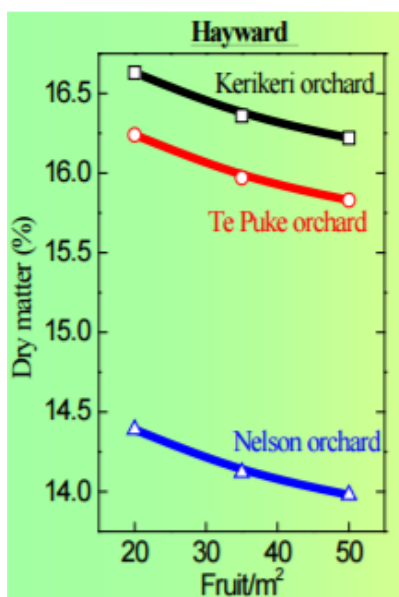
Achieving high dry matter fruit is essentially a balancing act. We often talk about kiwifruit vines in the context of sources and sinks. Think about an average kiwifruit vine - essentially it has a finite potential to produce carbohydrates or dry matter during a growing season through the process of photosynthesis occurring in the leaves aka it is a source. The vine then spreads those carbohydrates through the vine to shoots, fruit and later in the season roots aka sinks. The more competition there is for the source the less each sink gets. As an orchardist through cultural techniques you act as the resource allocator and the trick is to allocate these resources as effectively and efficiently as you can to get the best result.

## FLOWER AND FRUIT NUMBERS

Let's forget about the other sinks for now and just think about the fruit. Earlier we noted that a vine has a finite amount of carbohydrates to allocate. A useful analogy to use is money. Let's say you get \$100 per week and you allocate it to five bank accounts (cheque, holiday, traffic infringements, kid's university, and savings). Each bank account will only receive \$20. However, if you only have four accounts (cheque, holiday, kid's university, savings) each account gets \$25. The less individual sinks the higher the dry matter. In the analogy we have dropped bank account for traffic infringements - an inefficient wasteful use of resources.

Returning to our kiwifruit vine the trick is to not produce more flowers/fruit than a vine can reasonably be expected to get to an acceptable level of dry matter. This is often generalised as 40-50 flowers/m<sup>2</sup> but will vary by orchard. This relationship is demonstrated in the graph below - the more fruit per metre squared the less dry matter per fruit:





Reproduced from Zespri Kiwitech  
bulletin N37 (Croploading strategies)

It's important to get a handle of what your numbers are, after all you can't manage what you don't measure. Ideally you will have your winter bud numbers. If so you can do some counts of king flowers (shown in the centre in the photo below) per winter bud and multiple up from there to see how you are tracking versus the target of as 40-50 flowers/ $\text{m}^2$ . If you don't have winter bud numbers, you will also need to do some quick counts from a few representative areas.



By now you will probably have observed and/or heard about the unusual season we are having. Bud burst on Hayward appears to be highly variable and so overall we are expecting lower flower numbers than previous years. Given the wet Spring to-date the risk of bud rot due to Psa is high and if the weather continues a poor pollination is likely so this could further compound the low numbers. As such we are suggesting that orchardists take a conservative approach to Hayward flower bud thinning to ensure we reach fruit-set with

some reasonable numbers. You may want to take a more aggressive approach if you are well in excess of 50 flowers/m<sup>2</sup> and you consider yourself to have a very low risk of bud rot. In this case thin flowers from weaker shoots to keep your leaf to fruit ratio high later in the season. Or if necessary remove entire canes. Remember the earlier you do this the less time these flowers/fruit act as an inefficient sink.

The exception to this conservative thinning message is any flowers that won't make the grade such as lateral or misshapen flower buds. In the analogy above this is your traffic infringement savings account – it is just a waste of resource to keep these in play.

### **CANOPY MANAGEMENT – DID YOU KNOW YOU ARE MULTI-TASKING?**

Summer canopy management can be tricky business as you are trying to achieve several objectives at the same time:

1. Grow a canopy capable of being an effective source of carbohydrate for the current seasons crop.
2. Avoid excessive vegetative growth that will act as a sink of available resources.
3. Grow next year's canopy.

The key here is to consider the purpose of every shoot as you do your summer canopy work. The amount of summer work required will depend greatly on the type of wood you laid down during winter pruning. Observational research by Plant and Food Research utilizing case studies of top performing Hayward growers has documented the success achieved by low-vigour management systems rather than full replacement. The reality is a combination is required. It's that balance between quiet fruited wood but avoiding overly floral canes that will produce a lot of low dry matter fruit.

Whichever end of the spectrum you sit the rules remain the same:

1. Control vigour early by doing a little often. If you leave summer pruning too late you will have wasted resources growing something you don't need and removing it will be more time consuming and expensive. Further, unruly canopies often compromise next year's canopy, good wood will have been shaded and therefore



produce less flowers, plus tangling may result in the need to remove canes it may have been useful to keep.

2. Think about what the shoot is doing now and what it may do in the future. Shoots growing in the wrong direction or in an already cluttered zone need to be removed early (you can't make a silk purse out of a sow's ear). Alternatively, if you have gaps consider how a shoot could be used in winter pruning to fill that gap before cutting and cut in a way that will make it useful later. Let nature do her work - there is no need to prune terminated wood.
3. Consider your method of removal depending on the desired outcome. Are you trying to permanently remove or just slow growth? For permanent removal you need to get rid of the growing point so rip or flush cut. This approach will commonly be used in the leader zone provided sufficient canes exist for next year. Just cutting the growing tip out will actually stimulate growth further down the shoot as apical dominance is lost. In the fruiting zone squeezing or tipping is used. Once a shoot is half its final desired length squeezing the growing tip causing enough damage that shoot expansion and leaf development still occurs but not so much that apical dominance of the tip is lost. After flowering zero leaf pruning can be used to avoid shading by cutting back to the last fruit beyond which there are no growing points.
4. In general, late growth (hairy canes) will be the least productive the following season so should be targeted for early removal. The in general comment relates to the observation that this year it is the hairy canes from last year that have had the best bud burst possibly due to the late season high sunshine hours versus the low sunshine received by earlier developing canes.

How can I tell if my summer canopy management is adequate? Lighter open canopies are not only associated with higher dry matter fruit but are also less prone to disease issues (such as Psa). A good judge of your canopy density is your sward. If you see bare patches of ground with no grass growth your canopy cover has been too thick.



## GIRDLING

Girdling is a proven effective tool for improving dry matter. Like vegetative shoots, roots are also a sink for carbohydrates, and girdling will temporarily disconnect this sink (roots) from the source (leaves), allowing more resources to go into the fruit. We want the carbohydrate flow to the roots to be stopped at key times of the year, but we do this in a way that allows that connection to reform later so that the plant can develop new roots each season. If we continue the bank account analogy, we have already dealt with the traffic infringement account (vegetation), now we have realised that our kids aren't near university age, so we are going to delay putting money into kid's university fund account (girdling), but only for now since we will need it to grow in the future (callus/healing). Now for a short period of time we only have three accounts to put our monthly \$100 into so each gets \$33 for a bit until we start using the kid's university account again.

A summer girdle, carried out in mid to late February will improve the dry matter by an average of 0.7% on Hayward (e.g. 17% to 17.7%). Girdling should be done with a girdling knife, or chain on all vines within a block to maximise the impact and help reduce variability in maturity at harvest. We recommend that you avoid girdling sick vines as the added stress can lead to their demise.

While a second dry matter girdle has been trialed in Gold3 and shown to give a similar dry matter increase to the first girdle, these trials have not been run on Hayward. The low dry matter levels in the Bay of Plenty caused some growers performed a second dry matter girdle on their Hayward in the 2015/16 season, and there appeared to be a positive effect. However, these were done without control vines and without any trial data it is best to leave this in the "Rescue Situation" category rather than the standard practice category.





*Girdling too deep! Tip of pen indicates correct girdling depth.*

Allow around 12 – 15 hours of labour per hectare and remember to keep in mind the importance of not going too deep (or make sure staff know this) due to the negative effects it can have on callusing and increased susceptibility to Psa.

## MANAGING THE PLANTS AND THE PEOPLE

Just as important as improving vine management is improving orchard management. Even if you've been in the game for decades there's always more to learn. When studies looked into the top performing Hayward orchards a significant theme amongst them was having managers and contractors with considerable understanding of vine growth who were hands-on operators. Another way to improve this is by fostering development and skills of those working for you. It isn't just a nice token it's another tool to increasing dry matter, as they learn more their vine management will improve and so will production.

Choice of contractor:

- Choose a contractor who has well trained staff and whose methods match your philosophy.
- Think about how you will get the contractor and staff to understand your desired outcomes and make sure they are supervised and given feedback on how they are performing while they are still doing the job. Most contractors will have supervisors with the gang full time, which is important. Many contractors will prefer the feedback goes via them or their supervisor, rather than directly to the staff.



- We suggest you give clear instructions and tell the contractor what your goals are.
- Use the KISS (Keep It Simple Stupid) approach. If a simple technique will get the same result, then take that route, and don't try to do more than one task at a time.
- While we are all usually quite quick to point out things that we are not happy with, don't forget to recognise where the work is being done well. We all like the boss to tell us we have done a good job.

# APATA GUIDELINES ON FLOWER THINNING GOLD3 TO MAXIMISE DRY MATTER

## GETTING GOLD3 NUMBERS DOWN EARLY WITH TIMELY THINNING

### CANES

- Remove very small diameter, weak cane. This is likely to produce weaker, shorter shoots which will have lower leaf area than shoots on stronger canes.
- Removing any spur wood that's surplus to what you need is another quick way to lower numbers quickly.

### SHOOTS

- Thinning out short and late shoots especially ones on the underside of the cane is a fast way to get excess numbers down, especially if you have a very high percentage budbreak this season.
- Target vegetative (no flower buds) shoots and look to space out shoots evenly so there's good light interception later in the season.

### FLOWERS AND FRUIT

- Removing lateral flowers is a must – these are always lower dry matter and smaller than king fruit. Trials have shown it's best to do this as early as you can.
- Get as close to your target flower number per m<sup>2</sup> as possible – aim for three leaves per fruit when thinning flower buds.
- If you can't reach your target do what you can, any reduction in flower numbers is better than leaving numbers too high. Thinning early means more carbohydrates (and therefore dry matter) available for the fruit you take to harvest.

### FRUIT THINNING

- Previous industry trial work has shown a reduction in Gold3 dry matter content of about 0.3% for every 10 fruit/m<sup>2</sup> (e.g. 18% dry matter at 50 fruit/m<sup>2</sup> versus 17.7% at 60 fruit/m<sup>2</sup>). In relation Hayward loses around 0.15% for every 10 fruit/m<sup>2</sup>.



# APPENDIX

## **1. THE TASTE REVIEW COMMITTEE RECOMMENDS THE MINIMUM TASTE STANDARD (MTS) BE RETAINED AT 15.5% DRY MATTER BUT ENHANCED WITH THE REQUIREMENT THAT 70% OF THE TESTED VOLUME MUST EXCEED THE MTS**

Rationale:

- This ensures greater confidence that a line of fruit near to the MTS will have minimal numbers of fruit below the acceptable eating experience for consumers in order to protect the Zespri brand in the market. At an average dry matter of 15.5% (2016 TZG of .17) half the fruit is disliked by more than 1 in 4 customers.
- The committee felt that increasing the MTS was a preferred option over accepting low tasting M Band fruit and not paying any taste value on it or accepting the fruit as nonstandard supply.
- That dealing with fruit at the bottom of the taste range was an effective signal to growers that this fruit was not acceptable in market and reduced the overall taste profile of New Zealand fruit.
- Requiring 70% of each line to be above the minimum standard gives greater confidence about the overall taste experience of lower M Band fruit.
- The 70% requirement means that a line of fruit will on average have a 15.9%DM (2016 TZG of .26)



## **2. THE TASTE REVIEW COMMITTEE RECOMMENDS CHANGES TO THE TASTE ZESPRI GRADE (TZG) CALCULATION METHODOLOGY BY SPLITTING THE TASTE BUCKETS INTO 0.5% DRY MATTER INCREMENTS WITH ALTERED WEIGHTINGS**

Rationale:

- This will both smooth the transitions from one TZG grade to another and to further incentivise Y and T band fruit
- This change has the effect of further incentivising Y and T band by redistributing existing funds within the current taste payment system and therefore has little or no impact on fruit value
- A line of Hayward's TZG grade is determined by how many pieces of fruit from the 90 fruit sample fall into dry matter 'buckets', with each bucket weighted differently (illustrated below)
- Currently the buckets are in increments of 1% and each grade is weighted differently to ensure that pieces of fruit in higher dry matter buckets have the effect of raising the line's TZG
- The committee has reached a view that the bucket increment size of 1% combined with weighting changes last year, mean that a small number of fruit moving into the 'next bucket up' can have dramatic effects on TZG
- This creates an undesirable variability in TZG results from a relatively small change in sampled fruit dry matter– and this leads to repeat testing to affect financial outcomes
- This variability in TZG outcomes may contribute to a lack of confidence in sampling methodology when it is partially the calculation basis contributing to disproportionate differences in outcomes between samples





**3. THE TASTE REVIEW COMMITTEE RECOMMENDS THAT THE MAXIMUM TASTE PAYMENT (MTP) IS INCREASED TO 60% IN EITHER THE 2017 OR 2018 SEASON. THIS WAS A MAJORITY POSITION OF THE COMMITTEE. THE COMMITTEE RESOLVED THAT THE INDUSTRY SHOULD BE CONSULTED AS TO WHETHER THE CHANGE SHOULD OCCUR FOR THE 2017 OR 2018 SEASON BEFORE A FINAL RECOMMENDATION ON TIMING IS MADE.**

Rationale:

- The Maximum Taste Payment is the mechanism that shifts money from fruit value into the taste calculation
- The Maximum Taste Payment is the percentage of fruit value (pool returns after incentives and compensation are accounted for) that can be distributed via the TZG grade calculation (another way of looking at the MTP is that it is the percentage of fruit value that is 'up for grabs' in the taste calculation). The total value of the MTP will only be wholly paid out if the average TZG is 1 (this year the average TZG was 0.5).
- Zespri's representations about the market conditions and the risks of a declining taste profile meant the Taste Committee was largely convinced that more fruit value should be distributed according to the taste profile of a grower line
- The committee was split on the timing of the move to 60% Maximum Taste Payment with a majority favouring 2017
- Those members who favoured 2017 were convinced by Zespri's representations about the critical nature of not having a Hayward offering that is clearly differentiated by taste
- Those who were reluctant to implement this recommendation in 2017 were concerned that growers were still responding to the last set of taste programme changes, and that climatic changes plus grower practice might address the taste issue without the MTP change.