ARGOS

AGRICULTURE RESEARCH GROUP ON SUSTAINABILITY

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Analysis of ZESPRI's Organic Kiwifruit Databases

Introduction

In 2003, ZESPRI Innovation contracted John Fairweather and Lesley Hunt (who are now in the ARGOS team) to analyse several ZESPRI databases on organic kiwifruit orchards. The database contained data for the 2002-03 season. The main aim of the analysis was to examine the range of organic production levels and fruit sizes and to relate these to orchard factors like spray regimes and geographical location.

The results have already been circulated to organic growers but this research note has been prepared to circulate the key results more widely. More detailed information can be found in the full report which will be available on the ARGOS website. Note that may of the relationships reported here are suggestive rather than definitively proven as causal.

Key Findings – Organic Hayward

Production and premiums:

- One quarter of the fruit was count size 39 while another third was less than count size 36 (Figure 1). The average count size was 35.8.
- Organic orchards on average produced 13,796 trays of fruit. This translated into 4,177 trays on average per hectare (the average orchard size was 3.8 hectares).
- There was no relationship between fruit size and yield in trays per hectare.
- There was no relationship between fruit size and achievement of a Taste ZESPRI™ (TZ) premium, that is to say that, just because a grower produces small fruit does not mean he won't be able to achieve TZ.

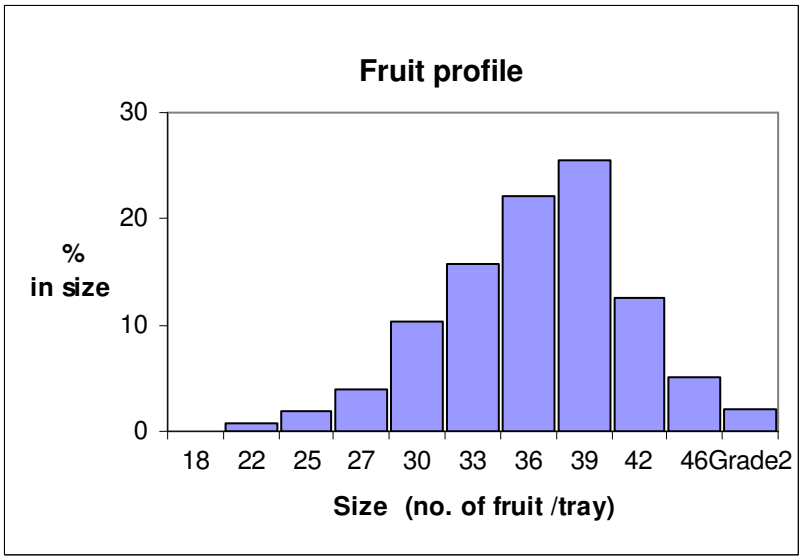

Figure 1: Kiwifruit size profile

- Receiving KiwiStart (KS) compensation did not relate to receiving a TZ premium. In other words, orchards which achieved KS did not necessarily achieve TZ and vice versa.

Orchard spraying:

- Mineral oil was used an average 0.9 times *before* full bloom, and 2.3 times *after* full bloom. Statistical analyses indicate that applications of mineral oil *before* full bloom increased the percentage of KS and TZ fruit (Figure 2).

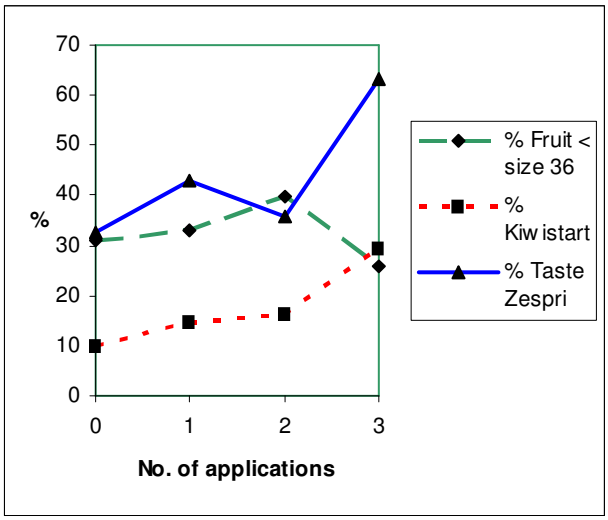

Fig. 2: Relationship between applications of mineral oil before full bloom and the % of small fruit and attainment of premiums.

- Growers averaged 2.7 applications of BT sprays *after* full bloom.

Orchard location and size:

- Production of larger fruit and the achievement of KS appears to be limited on orchards which are higher altitude and further to the west or south.
- Altitude and location did not appear to limit the total production in trays per hectare or the attainment of the TZ premium.
- There was no clear evidence for a relationship between orchard canopy area, and yield, fruit size, or the attainment of KS or TZ premiums.

Key Findings – Organic Hort16A

Production:

- One third of all fruit was count size 36 while another third was less than count size 36. The average count size was 35.3.
- Orchards on average produced 8,300 trays of fruit. This translated into 3,847 trays on average per hectare (the average size of the Hort16A crop was 1.9 hectares per orchard).

Agrichemical Use:

- Mineral oil was used for scale control was applied on average 1.4 times *before* full bloom and 1.3 times *after.*
- Orchards which applied two applications of mineral oil compared with one *before* full bloom appeared to produce a greater percentage of larger fruit and larger average fruit size. However, it seems to adversely affect the number of trays per hectare.
- Orchards which did not apply mineral oil *after* full bloom compared to those with two applications appeared to have a greater percentage of KS fruit.
- Bt spray applied for leafroller control was used on average 2.7 times *after* full bloom.

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