

Harvest management, optimising quality and profit.

Marcel Veens Horticultural Adviser

# Maturity and harvesting

- Do we pick fruit based on maturity?
- How do we pick it?
  - Ladders?
  - Picking-platforms?
- What will deliver the best eating experience for the consumer?

- Once we have reached fruit maturity the sooner we harvest, the better the long term quality will be.
- Planning is the key to get the fruit harvested within the required time frame.

Colour, size and maturity drives our decisions to pick good quality fruit.



# How do we plan this?

- use experience.
- use spreadsheet .



# Optimise Pink Lady quality at harvest.

- Know your fruit inside and outside (early and regular maturity monitoring)
- Multiple, selective picks (may need to be 4-5 days apart)
- Quick harvest ;14 –18 days max
- Bruising (care, training, not cold or wet, pack warmed fruit) have a supervisor?
- Maximise storage potential (step wise chilling)
- Smart fresh, DPA, CA regimes (CO<sub>2</sub>/O<sub>2</sub> ratios critical)
- Choose a storage and marketing regime that is fit for purpose (long term, med term, short term and immediate sale)

## Cost of the tools per ha& per kg

|  |          |                      | TOTAL/ha          | Cost per kg     |                 |
|--|----------|----------------------|-------------------|-----------------|-----------------|
|  |          |                      |                   | 40,000/ha       | 25,000/ha       |
| Vigour control: Regalis                  |          | 3 sprays@\$300       | \$900.00          | \$0.0225        | \$0.0360        |
| Cultar                                   |          | 3 sprays@\$100       |                   | \$0.0000        | \$0.0000        |
| Cropload: handthinning                   | 60hrs/ha | @ \$18/hr            | \$1,080.00        | \$0.0270        | \$0.0432        |
| Summer pruning                           | 60hrs/ha | @ \$18/hr            | \$1,080.00        | \$0.0270        | \$0.0432        |
| Retain                                   |          | 1 spray@\$940        | \$940.00          | \$0.0235        | \$0.0376        |
| Reflective matting *                     |          |                      | \$1,500.00        | \$0.0375        | \$0.0600        |
| Leaf plucking                            | 50hrs/ha | @ \$18/hr            | \$900.00          | \$0.0225        | \$0.0360        |
| Supervising pickers                      |          | \$0.008/kg           | \$320.00          | \$0.0080        | \$0.0080        |
| SmartFresh                               |          | \$15/bin - \$0.04/kg | \$1,714.00        | \$0.0429        | \$0.0429        |
|  |          | <b>TOTAL</b>         | <b>\$8,874.00</b> | <b>\$0.2219</b> | <b>\$0.4437</b> |
| * \$500/100 mtr. = \$15,000 incl. labour |          |                      |                   |                 |                 |
| Over 10 years: \$1500/per year           |          |                      |                   |                 |                 |

## NET PRESENT VALUE AND INTERNAL RATE OF RETURN

| <u>New Technology Costs</u> |                   |           |                | <u>Base Plan Costs</u> |                   |           |                |
|-----------------------------|-------------------|-----------|----------------|------------------------|-------------------|-----------|----------------|
|                             | Net Return        |           | PV             |                        | Net Return        |           | PV             |
| Year 1                      | 13,209.42         |           | 13,209.42      | Year 1                 | 13,209.42         |           | 13,209.42      |
| Year 2                      | 23,659.01         |           | 21,508.19      | Year 2                 | 23,659.01         |           | 21,508.19      |
| Year 3                      | 22,041.18         |           | 18,215.85      | Year 3                 | 22,041.18         |           | 18,215.85      |
| Year 4                      | 20,352.90         |           | 15,291.43      | Year 4                 | 20,352.90         |           | 15,291.43      |
| Year 5                      | 18,590.89         |           | 12,697.83      | Year 5                 | 18,590.89         |           | 12,697.83      |
| Year 6                      | 16,751.73         |           | 10,401.51      | Year 6                 | 16,751.73         |           | 10,401.51      |
| Year 7                      | 14,831.81         |           | 8,372.17       | Year 7                 | 14,831.81         |           | 8,372.17       |
| Year 8                      | 12,827.35         |           | 6,582.46       | Year 8                 | 12,827.35         |           | 6,582.46       |
| Year 9                      | 10,734.37         |           | 5,007.66       | Year 9                 | 10,734.37         |           | 5,007.66       |
| Year 10                     | 6,985.13          |           | 2,962.37       | Year 10                | 6,985.13          |           | 2,962.37       |
|                             | <b>\$ 159,984</b> | <b>\$</b> | <b>114,249</b> |                        | <b>\$ 159,984</b> | <b>\$</b> | <b>114,249</b> |
|                             | <b>IRR</b>        |           | <b>#DIV/0!</b> |                        | <b>IRR</b>        |           | <b>#DIV/0!</b> |

40,000

*Change in Net Present Value (NPV)*

\$0 per Hectare over 10-ys

*Change in Internal Rate of Return*

#DIV/0!



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*Discount Rate*

10.00%

*Beginning Land Values*

\$ 12,000

*Ending Land Values*

\$ 12,000

### CASH FLOW ANALYSIS

|         | <u>New Technology Costs</u> |                   |                    |                         | <u>Base Plan Costs</u> |                   |                    |                         |
|---------|-----------------------------|-------------------|--------------------|-------------------------|------------------------|-------------------|--------------------|-------------------------|
|         | Annual Returns              | Annual Cash Costs | Annual Net Returns | Accumulated Net Returns | Annual Returns         | Annual Cash Costs | Annual Net Returns | Accumulated Net Returns |
| Year 1  | \$ 60,924                   | \$ 35,714         | \$ 25,209          | \$ 25,209               | \$ 26,424              | \$ 23,479         | \$ 2,945           | \$ 2,945                |
| Year 2  | \$ 60,268                   | \$ 36,609         | \$ 23,659          | \$ 48,868               | \$ 60,268              | \$ 36,609         | \$ 23,659          | \$ 48,868               |
| Year 3  | \$ 59,582                   | \$ 37,541         | \$ 22,041          | \$ 70,910               | \$ 59,582              | \$ 37,541         | \$ 22,041          | \$ 70,910               |
| Year 4  | \$ 58,866                   | \$ 38,513         | \$ 20,353          | \$ 91,263               | \$ 58,866              | \$ 38,513         | \$ 20,353          | \$ 91,263               |
| Year 5  | \$ 58,117                   | \$ 39,526         | \$ 18,591          | \$ 109,853              | \$ 58,117              | \$ 39,526         | \$ 18,591          | \$ 109,853              |
| Year 6  | \$ 57,334                   | \$ 40,583         | \$ 16,752          | \$ 126,605              | \$ 57,334              | \$ 40,583         | \$ 16,752          | \$ 126,605              |
| Year 7  | \$ 56,516                   | \$ 41,684         | \$ 14,832          | \$ 141,437              | \$ 56,516              | \$ 41,684         | \$ 14,832          | \$ 141,437              |
| Year 8  | \$ 55,660                   | \$ 42,832         | \$ 12,827          | \$ 154,264              | \$ 55,660              | \$ 42,832         | \$ 12,827          | \$ 154,264              |
| Year 9  | \$ 54,764                   | \$ 44,030         | \$ 10,734          | \$ 164,999              | \$ 54,764              | \$ 44,030         | \$ 10,734          | \$ 164,999              |
| Year 10 | \$ 53,827                   | \$ 58,842         | \$ (5,015)         | \$ 159,984              | \$ 53,827              | \$ 58,842         | \$ (5,015)         | \$ 159,984              |

## NET PRESENT VALUE AND INTERNAL RATE OF RETURN

| <u>New Technology Costs</u> |                   |           |                | <u>Base Plan Costs</u> |                   |           |                |
|-----------------------------|-------------------|-----------|----------------|------------------------|-------------------|-----------|----------------|
|                             | Net Return        |           | PV             |                        | Net Return        |           | PV             |
| Year 1                      | 15,270.20         |           | 15,270.20      | Year 1                 | 13,209.42         |           | 13,209.42      |
| Year 2                      | 25,632.32         |           | 23,302.11      | Year 2                 | 23,659.01         |           | 21,508.19      |
| Year 3                      | 23,923.08         |           | 19,771.14      | Year 3                 | 22,041.18         |           | 18,215.85      |
| Year 4                      | 22,139.29         |           | 16,633.57      | Year 4                 | 20,352.90         |           | 15,291.43      |
| Year 5                      | 20,277.45         |           | 13,849.77      | Year 5                 | 18,590.89         |           | 12,697.83      |
| Year 6                      | 18,333.92         |           | 11,383.92      | Year 6                 | 16,751.73         |           | 10,401.51      |
| Year 7                      | 16,304.86         |           | 9,203.67       | Year 7                 | 14,831.81         |           | 8,372.17       |
| Year 8                      | 14,186.25         |           | 7,279.79       | Year 8                 | 12,827.35         |           | 6,582.46       |
| Year 9                      | 11,973.88         |           | 5,585.90       | Year 9                 | 10,734.37         |           | 5,007.66       |
| Year 10                     | 8,099.70          |           | 3,435.06       | Year 10                | 6,985.13          |           | 2,962.37       |
|                             | <b>\$ 176,141</b> | <b>\$</b> | <b>125,715</b> |                        | <b>\$ 159,984</b> | <b>\$</b> | <b>114,249</b> |
|                             | <b>IRR</b>        |           | <b>#DIV/0!</b> |                        | <b>IRR</b>        |           | <b>#DIV/0!</b> |

40,000

85%

|  |                 |                               |
|--|-----------------|-------------------------------|
| <b>Change in Net Present Value (NPV)</b> | <b>\$11,466</b> | <b>per Hectare over 10-ys</b> |
| <b>Change in Internal Rate of Return</b> | <b>#DIV/0!</b>  |                               |



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Discount Rate 10.00%      Beginning Land Values \$ 12,000  
 Ending Land Values \$ 12,000

## CASH FLOW ANALYSIS

|         | <u>New Technology Costs</u> |                   |                    |                         | <u>Base Plan Costs</u> |                   |                    |                         |
|---------|-----------------------------|-------------------|--------------------|-------------------------|------------------------|-------------------|--------------------|-------------------------|
|         | Annual Returns              | Annual Cash Costs | Annual Net Returns | Accumulated Net Returns | Annual Returns         | Annual Cash Costs | Annual Net Returns | Accumulated Net Returns |
| Year 1  | \$62,985                    | \$ 35,714         | \$ 27,270          | \$ 27,270               | \$ 26,424              | \$ 23,479         | \$ 2,945           | \$ 2,945                |
| Year 2  | \$62,241                    | \$ 36,609         | \$ 25,632          | \$ 52,903               | \$ 60,268              | \$ 36,609         | \$ 23,659          | \$ 48,868               |
| Year 3  | \$61,464                    | \$ 37,541         | \$ 23,923          | \$ 76,826               | \$ 59,582              | \$ 37,541         | \$ 22,041          | \$ 70,910               |
| Year 4  | \$60,652                    | \$ 38,513         | \$ 22,139          | \$ 98,965               | \$ 58,866              | \$ 38,513         | \$ 20,353          | \$ 91,263               |
| Year 5  | \$59,804                    | \$ 39,526         | \$ 20,277          | \$ 119,242              | \$ 58,117              | \$ 39,526         | \$ 18,591          | \$ 109,853              |
| Year 6  | \$58,917                    | \$ 40,583         | \$ 18,334          | \$ 137,576              | \$ 57,334              | \$ 40,583         | \$ 16,752          | \$ 126,605              |
| Year 7  | \$57,989                    | \$ 41,684         | \$ 16,305          | \$ 153,881              | \$ 56,516              | \$ 41,684         | \$ 14,832          | \$ 141,437              |
| Year 8  | \$57,019                    | \$ 42,832         | \$ 14,186          | \$ 168,067              | \$ 55,660              | \$ 42,832         | \$ 12,827          | \$ 154,264              |
| Year 9  | \$56,004                    | \$ 44,030         | \$ 11,974          | \$ 180,041              | \$ 54,764              | \$ 44,030         | \$ 10,734          | \$ 164,999              |
| Year 10 | \$54,942                    | \$ 58,842         | \$ (3,900)         | \$ 176,141              | \$ 53,827              | \$ 58,842         | \$ (5,015)         | \$ 159,984              |

## NET PRESENT VALUE AND INTERNAL RATE OF RETURN

25,000

| <u><i>New Technology Costs</i></u> |                  |                  | <u><i>Base Plan Costs</i></u> |                  |                  |
|------------------------------------|------------------|------------------|-------------------------------|------------------|------------------|
|                                    | Net Return       | PV               |                               | Net Return       | PV               |
| Year 1                             | (406.57)         | (406.57)         | Year 1                        | (406.57)         | (406.57)         |
| Year 2                             | 10,432.57        | 9,484.16         | Year 2                        | 10,432.57        | 9,484.16         |
| Year 3                             | 9,221.62         | 7,621.17         | Year 3                        | 9,221.62         | 7,621.17         |
| Year 4                             | 7,958.38         | 5,979.25         | Year 4                        | 7,958.38         | 5,979.25         |
| Year 5                             | 6,640.45         | 4,535.52         | Year 5                        | 6,640.45         | 4,535.52         |
| Year 6                             | 5,265.34         | 3,269.36         | Year 6                        | 5,265.34         | 3,269.36         |
| Year 7                             | 3,830.40         | 2,162.16         | Year 7                        | 3,830.40         | 2,162.16         |
| Year 8                             | 2,332.88         | 1,197.14         | Year 8                        | 2,332.88         | 1,197.14         |
| Year 9                             | 769.89           | 359.16           | Year 9                        | 769.89           | 359.16           |
| Year 10                            | (2,264.71)       | (960.46)         | Year 10                       | (2,264.71)       | (960.46)         |
|                                    | <b>\$ 43,780</b> | <b>\$ 33,241</b> |                               | <b>\$ 43,780</b> | <b>\$ 33,241</b> |
|                                    | <b>IRR</b>       | <b>2554.29%</b>  |                               | <b>IRR</b>       | <b>2554.29%</b>  |

|   |  |
|---|--|
| <b><i>Change in Net Present Value (NPV)</i></b> | <b><i>\$0 per Hectare over 10-ys</i></b> |
| <b><i>Change in Internal Rate of Return</i></b> | <b><i>0.00%</i></b>                      |



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*Discount Rate                      10.00%                      Beginning Land Values \$        12,000*  
*Ending Land Values \$        12,000*

v. 06/05/06

## CASH FLOW ANALYSIS

|         | <u><i>New Technology Costs</i></u> |                   |                    |                         | <u><i>Base Plan Costs</i></u> |                   |                    |                         |
|---------|------------------------------------|-------------------|--------------------|-------------------------|-------------------------------|-------------------|--------------------|-------------------------|
|         | Annual Returns                     | Annual Cash Costs | Annual Net Returns | Accumulated Net Returns | Annual Returns                | Annual Cash Costs | Annual Net Returns | Accumulated Net Returns |
| Year 1  | \$35,539                           | \$ 23,945         | \$ 11,593          | \$ 11,593               | \$ 26,424                     | \$ 23,479         | \$ 2,945           | \$ 2,945                |
| Year 2  | \$35,156                           | \$ 24,724         | \$ 10,433          | \$ 22,026               | \$ 35,156                     | \$ 24,724         | \$ 10,433          | \$ 22,026               |
| Year 3  | \$34,756                           | \$ 25,535         | \$ 9,222           | \$ 31,248               | \$ 34,756                     | \$ 25,535         | \$ 9,222           | \$ 31,248               |
| Year 4  | \$34,338                           | \$ 26,380         | \$ 7,958           | \$ 39,206               | \$ 34,338                     | \$ 26,380         | \$ 7,958           | \$ 39,206               |
| Year 5  | \$33,902                           | \$ 27,261         | \$ 6,640           | \$ 45,846               | \$ 33,902                     | \$ 27,261         | \$ 6,640           | \$ 45,846               |
| Year 6  | \$33,445                           | \$ 28,180         | \$ 5,265           | \$ 51,112               | \$ 33,445                     | \$ 28,180         | \$ 5,265           | \$ 51,112               |
| Year 7  | \$32,968                           | \$ 29,137         | \$ 3,830           | \$ 54,942               | \$ 32,968                     | \$ 29,137         | \$ 3,830           | \$ 54,942               |
| Year 8  | \$32,468                           | \$ 30,135         | \$ 2,333           | \$ 57,275               | \$ 32,468                     | \$ 30,135         | \$ 2,333           | \$ 57,275               |
| Year 9  | \$31,946                           | \$ 31,176         | \$ 770             | \$ 58,045               | \$ 31,946                     | \$ 31,176         | \$ 770             | \$ 58,045               |
| Year 10 | \$31,399                           | \$ 45,664         | \$ (14,265)        | \$ 43,780               | \$ 31,399                     | \$ 45,664         | \$ (14,265)        | \$ 43,780               |

**NET PRESENT VALUE AND INTERNAL RATE OF RETURN**

25.000  
85%

| <u>New Technology Costs</u> |                    |                    | <u>Base Plan Costs</u> |                  |                  |
|-----------------------------|--------------------|--------------------|------------------------|------------------|------------------|
|                             | Net Return         | PV                 |                        | Net Return       | PV               |
| Year 1                      | (8,267.02)         | (8,267.02)         | Year 1                 | (406.57)         | (406.57)         |
| Year 2                      | 2,521.09           | 2,291.90           | Year 2                 | 10,432.57        | 9,484.16         |
| Year 3                      | 1,256.82           | 1,038.70           | Year 3                 | 9,221.62         | 7,621.17         |
| Year 4                      | (62.14)            | (46.68)            | Year 4                 | 7,958.38         | 5,979.25         |
| Year 5                      | (1,438.29)         | (982.37)           | Year 5                 | 6,640.45         | 4,535.52         |
| Year 6                      | (2,874.29)         | (1,784.71)         | Year 6                 | 5,265.34         | 3,269.36         |
| Year 7                      | (4,372.89)         | (2,468.38)         | Year 7                 | 3,830.40         | 2,162.16         |
| Year 8                      | (5,936.99)         | (3,046.62)         | Year 8                 | 2,332.88         | 1,197.14         |
| Year 9                      | (7,569.64)         | (3,531.29)         | Year 9                 | 769.89           | 359.16           |
| Year 10                     | (10,677.12)        | (4,528.14)         | Year 10                | (2,264.71)       | (960.46)         |
|                             | <b>\$ (37,420)</b> | <b>\$ (21,325)</b> |                        | <b>\$ 43,780</b> | <b>\$ 33,241</b> |
| <b>IRR</b>                  |                    | <b>#DIV/0!</b>     | <b>IRR</b>             |                  | <b>2554.29%</b>  |

**Change in Net Present Value (NPV) -\$54,566 per Hectare over 10-yr**  
**Change in Internal Rate of Return #DIV/0!**



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Discount Rate 10.00%      Beginning Land Values \$ 12,000  
Ending Land Values \$ 12,000

v. 06/05/06

**CASH FLOW ANALYSIS**

|         | <u>New Technology Costs</u> |                   |                    |                         | <u>Base Plan Costs</u> |                   |                    |                         |
|---------|-----------------------------|-------------------|--------------------|-------------------------|------------------------|-------------------|--------------------|-------------------------|
|         | Annual Returns              | Annual Cash Costs | Annual Net Returns | Accumulated Net Returns | Annual Returns         | Annual Cash Costs | Annual Net Returns | Accumulated Net Returns |
| Year 1  | \$36,741                    | \$ 33,008         | \$ 3,733           | \$ 3,733                | \$ 26,424              | \$ 23,479         | \$ 2,945           | \$ 2,945                |
| Year 2  | \$36,307                    | \$ 33,786         | \$ 2,521           | \$ 6,254                | \$ 35,156              | \$ 24,724         | \$ 10,433          | \$ 22,026               |
| Year 3  | \$35,854                    | \$ 34,597         | \$ 1,257           | \$ 7,511                | \$ 34,756              | \$ 25,535         | \$ 9,222           | \$ 31,248               |
| Year 4  | \$35,381                    | \$ 35,443         | \$ (62)            | \$ 7,449                | \$ 34,338              | \$ 26,380         | \$ 7,958           | \$ 39,206               |
| Year 5  | \$34,886                    | \$ 36,324         | \$ (1,438)         | \$ 6,010                | \$ 33,902              | \$ 27,261         | \$ 6,640           | \$ 45,846               |
| Year 6  | \$34,368                    | \$ 37,242         | \$ (2,874)         | \$ 3,136                | \$ 33,445              | \$ 28,180         | \$ 5,265           | \$ 51,112               |
| Year 7  | \$33,827                    | \$ 38,200         | \$ (4,373)         | \$ (1,237)              | \$ 32,968              | \$ 29,137         | \$ 3,830           | \$ 54,942               |
| Year 8  | \$33,261                    | \$ 39,198         | \$ (5,937)         | \$ (7,174)              | \$ 32,468              | \$ 30,135         | \$ 2,333           | \$ 57,275               |
| Year 9  | \$32,669                    | \$ 40,239         | \$ (7,570)         | \$ (14,743)             | \$ 31,946              | \$ 31,176         | \$ 770             | \$ 58,045               |
| Year 10 | \$32,049                    | \$ 54,727         | \$ (22,677)        | \$ (37,420)             | \$ 31,399              | \$ 45,664         | \$ (14,265)        | \$ 43,780               |

- The assumption was that with a 40,000 kg crop, if using all the tools, the 1st grade pack-out would increase from 75% to 85%.
- The Teamlite program shows that this will result in an increased profit of \$ 11,466 over 10 years.
- The extra cost was \$ 8,874/ha. year
- If the crop is only 25,000kg/ha, you are using all the tools and increase the pack-out from 75% to 85% it creates a loss.

Improvement of the pack-out will always improve the bottom-line.  
 With every decision we make we should make a list with the pro's and con's.

|                         | Advantage                 | Disadvantage | Increase in pack-out? |
|-------------------------|---------------------------|--------------|-----------------------|
| Pruning                 | Better quality            | cost         | 50%                   |
| Vigour control: Regalis | more light/less pruning   | cost         | 10%                   |
| Cultar                  | more light/less pruning   | cost         | 10%                   |
| Cropload: handthinning  | Better size               | cost         | 20%                   |
| Summer pruning          | improves colour           | cost         | 10%                   |
| Retain                  | maturity management       | cost         | 10%                   |
| Reflective matting *    | improves colour           | cost         | 30%                   |
| Leaf plucking           | improves colour           | cost         | 10%                   |
| Supervising pickers     | less bruising             | cost         | 20%                   |
| SmartFresh              | better shelf-live/ reduce | cost         | ?                     |
|                         | risk                      |              |                       |
| Surround                | reduce sunburn            |              | 30%                   |
|                         |                           |              |                       |
|                         |                           |              |                       |
|                         |                           |              |                       |

Before making a decision estimate your yield/ha

# Colour improvement.

- Good pruning should be exposing fruit sites to 50% or better light levels.
- Summer pruning will take annual shoot growth out and will improve light levels but will also increase the susceptibility to sunburn.
- Leaf plucking as an option to expose fruit to light is not the best way to achieve the desired outcome as you are removing a perfectly good leaf that is working for you in storing carbohydrates and cooling.
- Reflective matting is being used extensively to aid in the colouring of Pink Lady and is another tool that should be used to help colour development.

Reflective matting has more effect on older trees than on high density planting.

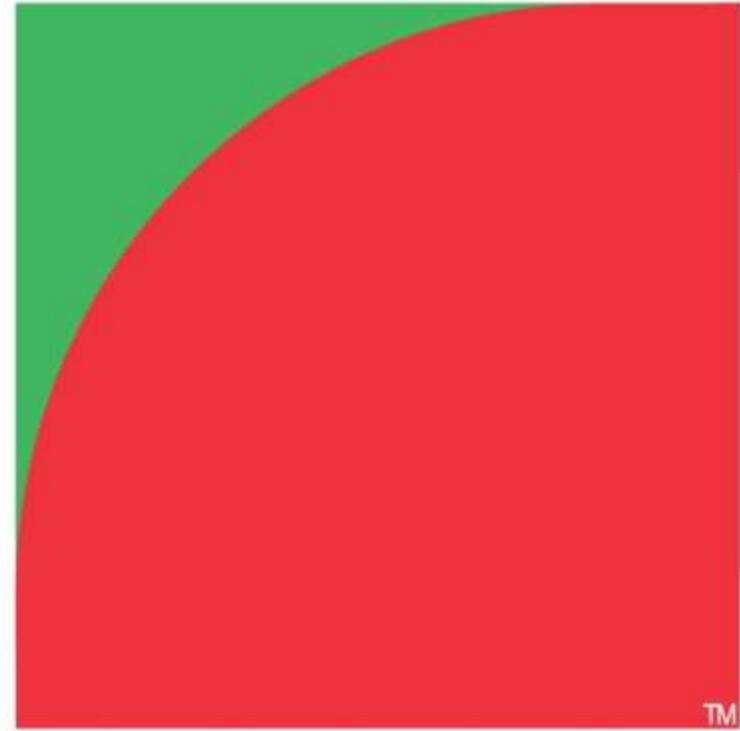


## Maturity management.

Retain can assist in the following:

- Improved colour due to harvest delay
- Bigger fruit size, fruit grows 1mm/week through harvest
- Greener background colour
- Firmer fruit in storage
- Fewer incidences of greasy fruit
- Reduced pre-harvest drop
- Fruit pressure declines about 0.3kg/week
- Sugar lifts 0.3 to 0.5 brix/week
- Supervising : although a firm fruit, Pink Lady is easily bruised. Do not harvest while fruit is wet and temperatures cold. Pink Lady needs to be selective picked by colour every four to five days to minimise mixed maturity.

# Risk management



SmartFresh

# Risk

- Over a period of time, even the best investors will inevitably suffer losses. Unfortunately, even good ideas can lose money and bad ideas can sometimes make money. There is inevitably a high degree of change or luck involved. The most important thing is to manage the risks and to “stay in the game”. Investors need to think about how far a price can move in the wrong direction. They also need to diversify, be able to cut losing positions and withstand the stress involved.

*Richard Farleigh*

- Each system, consisting of a particular combination of cultivar, rootstock, tree spacing and training method, has implications for fruit quality, quantity and ultimately profit. The choice of system is made at planting, while an important annual decision is the optimal rate of thinning, both of which determine potential yield over the lifetime of the orchard. These decisions also influence costs and revenues per hectare and are made in the context of unknown future prices of inputs and outputs.

# Can we afford high coloured strains?

- Every year 10% of the orchard should be replaced so that you keep a young and modern orchard.
- Can we afford *not* to do this?

# Reasons for changing orchard systems.

- Planting a high density block 1 x 3.25 m., 3000 trees/ha
- Using M26 or M9 will give you vigour control.
- Greater light interception results in higher yield per ha. average 50,000 kg or more/ha.
- As sunlight distributed to fruiting sites increases to 50% of full sun, there is improvement in fruit size, red colour, flower bud development and fruit set.
- The trees are smaller and easier to manage (lower labour cost)
- Higher fruit quality: size, colour (Using a better strain will give 90% colour)

## NET PRESENT VALUE AND INTERNAL RATE OF RETURN

| <u><i>New Technology Costs</i></u>              |                   |                   | <u><i>Base Plan Costs</i></u>            |                   |                   |
|---|-------------------|-------------------|--|-------------------|-------------------|
|   | Net Return        | PV                |  | Net Return        | PV                |
| Year 1  | (65,682.51)       | (65,682.51)       | Year 1                                   | (65,682.51)       | (65,682.51)       |
| Year 2  | (11,430.22)       | (10,391.11)       | Year 2                                   | (11,430.22)       | (10,391.11)       |
| Year 3  | 12,558.63         | 10,379.03         | Year 3                                   | 12,558.63         | 10,379.03         |
| Year 4  | 22,975.98         | 17,262.19         | Year 4                                   | 22,975.98         | 17,262.19         |
| Year 5  | 45,642.70         | 31,174.58         | Year 5                                   | 45,642.70         | 31,174.58         |
| Year 6  | 55,258.75         | 34,311.34         | Year 6                                   | 55,258.75         | 34,311.34         |
| Year 7  | 52,746.97         | 29,774.29         | Year 7                                   | 52,746.97         | 29,774.29         |
| Year 8  | 50,123.19         | 25,721.12         | Year 8                                   | 50,123.19         | 25,721.12         |
| Year 9  | 47,382.04         | 22,104.07         | Year 9                                   | 47,382.04         | 22,104.07         |
| Year 10   | 57,017.87         | 24,181.14         | Year 10                                  | 57,017.87         | 24,181.14         |
|   | <b>\$ 266,593</b> | <b>\$ 118,834</b> |  | <b>\$ 266,593</b> | <b>\$ 118,834</b> |
|   | <b>IRR</b>        | <b>31.51%</b>     |  | <b>IRR</b>        | <b>31.51%</b>     |
| <b><i>Change in Net Present Value (NPV)</i></b> |                   |                   | <b><i>\$0 per Hectare over 10-yr</i></b> |                   |                   |
| <b><i>Change in Internal Rate of Return</i></b> |                   |                   | <b><i>0.00%</i></b>                      |                   |                   |



*The user may change any inputs in subsequent sheets that are in "BLUE" font. The other cells are passcode protected. After the user has changed the desired inputs AND before changing inputs from implementing a particular technology, in this sheet only, the user must click on the "green star" icon to the left. This procedure locks in your current situation and changes will be shown in "RED" font. Below are other tables and graphs for your review.*

*Discount Rate*      ***10.00%***      *Beginning Land Values*    \$    ***12,500***  
*Ending Land Values*      \$    ***12,500***

v. 06/05/06

## CASH FLOW ANALYSIS

|         | <u><i>New Technology Costs</i></u> |                   |                    |                         | <u><i>Base Plan Costs</i></u> |                   |                    |                         |
|---------|------------------------------------|-------------------|--------------------|-------------------------|-------------------------------|-------------------|--------------------|-------------------------|
|         | Annual Returns                     | Annual Cash Costs | Annual Net Returns | Accumulated Net Returns | Annual Returns                | Annual Cash Costs | Annual Net Returns | Accumulated Net Returns |
| Year 1  | \$ -                               | \$ 53,183         | \$ (53,183)        | \$ (53,183)             | \$ 26,424                     | \$ 23,479         | \$ 2,945           | \$ 2,945                |
| Year 2  | \$ -                               | \$ 11,430         | \$ (11,430)        | \$ (64,613)             | \$ -                          | \$ 11,430         | \$ (11,430)        | \$ (64,613)             |
| Year 3  | \$28,753                           | \$ 16,194         | \$ 12,559          | \$ (52,054)             | \$ 28,753                     | \$ 16,194         | \$ 12,559          | \$ (52,054)             |
| Year 4  | \$42,518                           | \$ 19,542         | \$ 22,976          | \$ (29,078)             | \$ 42,518                     | \$ 19,542         | \$ 22,976          | \$ (29,078)             |
| Year 5  | \$69,798                           | \$ 24,156         | \$ 45,643          | \$ 16,565               | \$ 69,798                     | \$ 24,156         | \$ 45,643          | \$ 16,565               |
| Year 6  | \$82,423                           | \$ 27,164         | \$ 55,259          | \$ 71,823               | \$ 82,423                     | \$ 27,164         | \$ 55,259          | \$ 71,823               |
| Year 7  | \$81,026                           | \$ 28,279         | \$ 52,747          | \$ 124,570              | \$ 81,026                     | \$ 28,279         | \$ 52,747          | \$ 124,570              |
| Year 8  | \$79,566                           | \$ 29,443         | \$ 50,123          | \$ 174,693              | \$ 79,566                     | \$ 29,443         | \$ 50,123          | \$ 174,693              |
| Year 9  | \$78,039                           | \$ 30,657         | \$ 47,382          | \$ 222,076              | \$ 78,039                     | \$ 30,657         | \$ 47,382          | \$ 222,076              |
| Year 10 | \$76,441                           | \$ 31,923         | \$ 44,518          | \$ 266,593              | \$ 76,441                     | \$ 31,923         | \$ 44,518          | \$ 266,593              |

- **There is nothing permanent except change.**