

**Okanagan Valley
Tree Fruit Authority**

Replanting for the Future

YIELD AND PRICE SURVEY

**Final Report
Executive Summary
May 1999**



Ministry of
Agriculture and Food

Okanagan Valley
Tree Fruit Authority

Executive Summary

To support the assessment of the Okanagan Valley Tree Fruit Authority Replant Program, the OVTFA Board approved funding for a yield and price survey of apple, cherry and peach replant projects.

Survey respondents were selected from replant projects planted between 1992 and 1995. Data was collected from 356 replant blocks. Even though this study is a survey and not a replicated trial, the data is considered reasonably accurate. Most growers had good records for their replant blocks and knowledgeable and experienced interviewers collected the information.

Observations

The general observations from this survey are:

- There is wide variability in yields and gross revenues for all density ranges. \$2,115 per acre average gross revenue in the fifth leaf for the bottom one third of the blocks and \$13,164 per acre for the top one third average indicate the wide variability in performance.
- Replanting to new varieties for most replant projects has been successful when compared to maintaining existing blocks of Red Delicious or other traditional varieties.
- The success of replanting is highly dependent on planting very marketable varieties (i.e. obtaining higher prices).
- Overall, highest gross revenues per acre for apples were reported with planting densities between 1,200 - 2,000 trees per acre.
- Higher density plantings produced earlier yields and higher gross revenues than lower density blocks.
- There is a high risk associated with replanting. Excellent horticultural skills combined with the choice of a variety or commodity that will return sufficient revenue to repay the establishment costs in a reasonable timeframe are required.

Conclusions

Considering the results of the survey, replanting to new higher value varieties and commodities can work. However, the results show a high degree of variability in production and revenue. To reduce that variability and ensure broad success across the industry, an integrated, multi-stakeholder approach to replanting is required, involving producers, industry, agri-business and governments.

To encourage replanting of orchards to improve overall profitability, the following issues should be addressed:

- **Continued financial assistance for replant projects.** The wide variability in performance and the risk associated with planting new varieties requires an incentive to encourage growers to replant on an accelerated basis.
- **Enhanced horticultural management and education assistance to ensure success in high density management.** The survey identifies that some growers do extremely well while other growers are not as successful. Steps should be taken to assist growers and their advisors to improve their replant knowledge. Improved grower skills will help increase the success of replant projects.
- **Continued support for tree fruit research.** On going research is critical to solving the technical problems that always occur in the tree fruit industry.
- **A market development strategy including assessment of new varieties and commodities.** Since the replanting program is so dependent on planting high value varieties, the industry should develop an overall industry plan for assessing new variety introduction and pass that information to growers. Growers can make informed decisions based on that information. Implications of fruit quality and marketing must be considered as well.

Background

In 1990 the Okanagan Valley Tree Fruit Authority was established to assist with the revitalization of British Columbia's tree fruit industry. A major thrust of the OVTFA was a replant program based on assisting the replanting of older plantings with new high density plantings of new higher value varieties. From 1991 to 2000 interior growers have been eligible for replant grants.

Parameters of study

Grower Sample

Commodity	Number of Blocks	Acreage
Gala	139	159
Fuji	112	119
Jonagold	34	31
Cherry	25	79
Peach	46	24
Total	356	412

Analysis of Replant Program Survey Results

Overview

The survey was commissioned by the Okanagan Valley Tree Fruit Authority and was assigned to a team of BC Ministry of Agriculture and Food staff for implementation. That team consisted of the following: Jim Campbell, George Geldart, Ken McAra, Helmut Arndt (all of BC Ministry of Agriculture and Food) and Lynn Simon (OVTFA). Experienced contractors were hired to interview the growers and a substantial number of growers participated in the survey. The survey team also provided the analysis of the data and wrote the report.

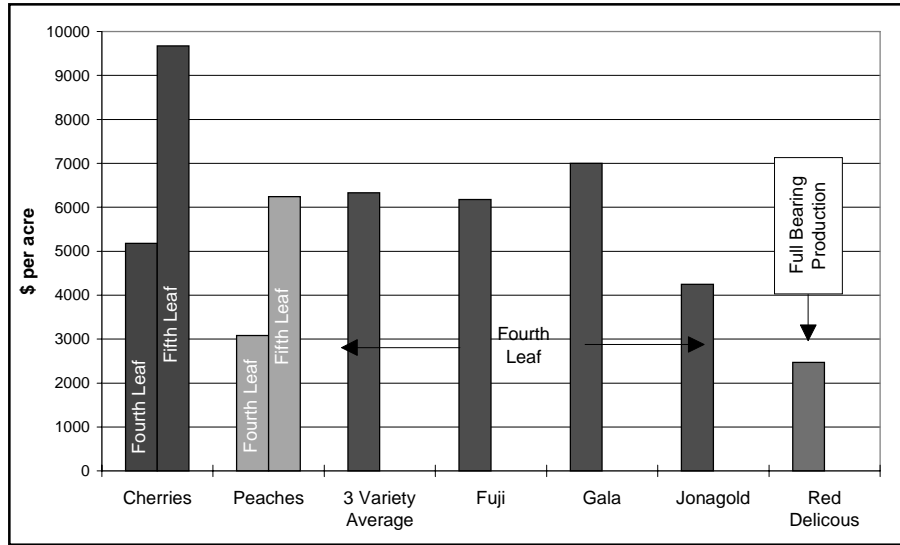
The Results

This section compares gross revenues from existing plantings with those from replanted blocks for apples, cherries and peaches. Gross revenue equals production times price. **Red Delicious has been used as the benchmark variety for approximate comparative purposes only, using industry wide average estimates for production and price.** Since Red Delicious has not been replanted in recent years, comparable data for new blocks could not be obtained. The comparison has been shown to illustrate the difference between replanting to a new variety as contrasted to keeping in the old block.

Yield and price (grower returns net of packing and selling costs) data have been collected for the years 1993-1998 from replant projects planted in 1992, 1993, 1994 and 1995. For the purposes of this report, the data has been analyzed from the perspective of second, third, fourth, fifth, sixth and seventh leaf (see graphs in the report) rather from a calendar year basis.

To obtain a comprehensive analysis of replanting, we need to examine the establishment cost of replanting to assess its economic impact. As this survey only examines the yield and revenue side of replant, readers should be aware of the initial capital cost of replanting, the risk of variety selection, weather and the overall future market demand of apples and soft fruits. (See conclusions)

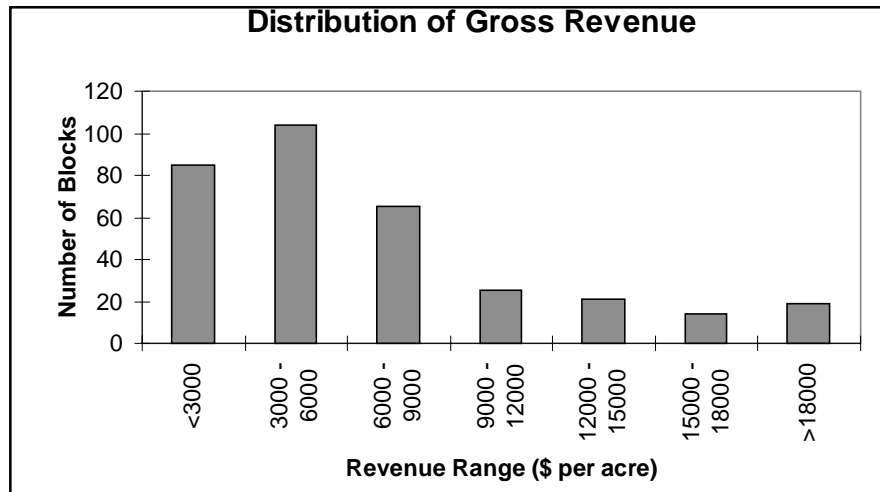
GRAPH 1: Gross Revenue by Commodity



Graph 1 compares gross revenues from new plantings with established Red Delicious trees. For apples, the average gross revenue was calculated for the fourth leaf stage. For cherries and peaches, the fourth and fifth leaf have been included because significant production is not attained until at least the fifth leaf on the soft fruits. Red Delicious represents average production and average returns derived from industry wide data.

The comparison illustrates the potential of replanting versus keeping existing plantings and is one measure of the success of projects funded under the replant program. These results indicate that the average gross returns for all varieties selected exceeded the benchmark value.

GRAPH 2: Distribution of Gross Revenue (Fifth Leaf) - Apples and Soft Fruits



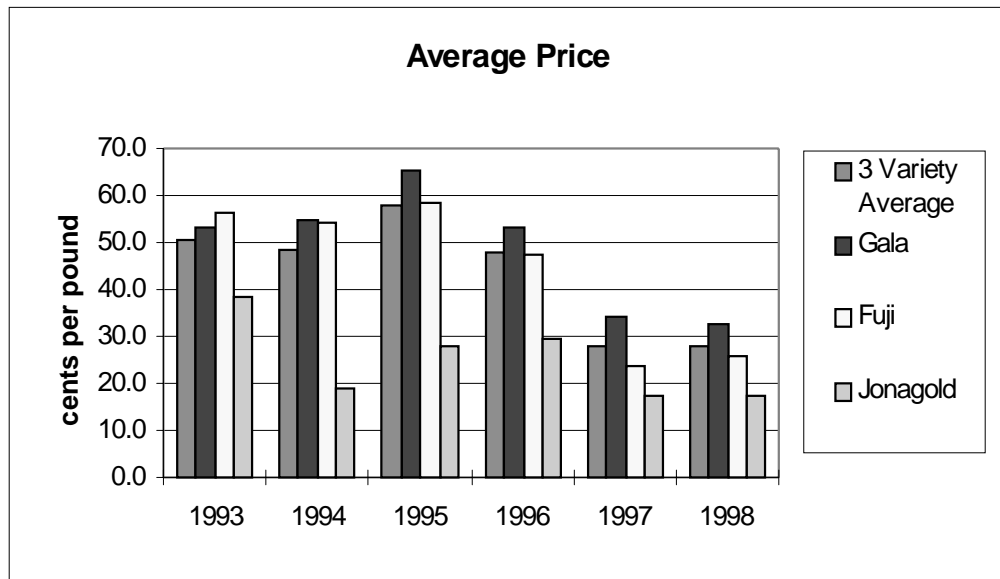
Graph 2 shows the distribution of gross revenue to growers in the fifth leaf stage. Clearly there was a wide range of incomes by this stage, indicating the risk associated with replanting.

The mean (average) gross revenue in the fifth leaf was \$6,807 per acre but the standard deviation was \$5,682, indicating a wide variance in returns in the fifth leaf. A significant number of

projects lagged behind the average. The bottom third had an average gross revenue of \$2,115 per acre by the fifth leaf. However, the top third had an average gross revenue of \$13,164.

These data point out the high degree of variation and the associated risk. Such variation could be caused by a number of factors including different horticultural skill levels, less than ideal sites, market variability, and commodity and variety choice.

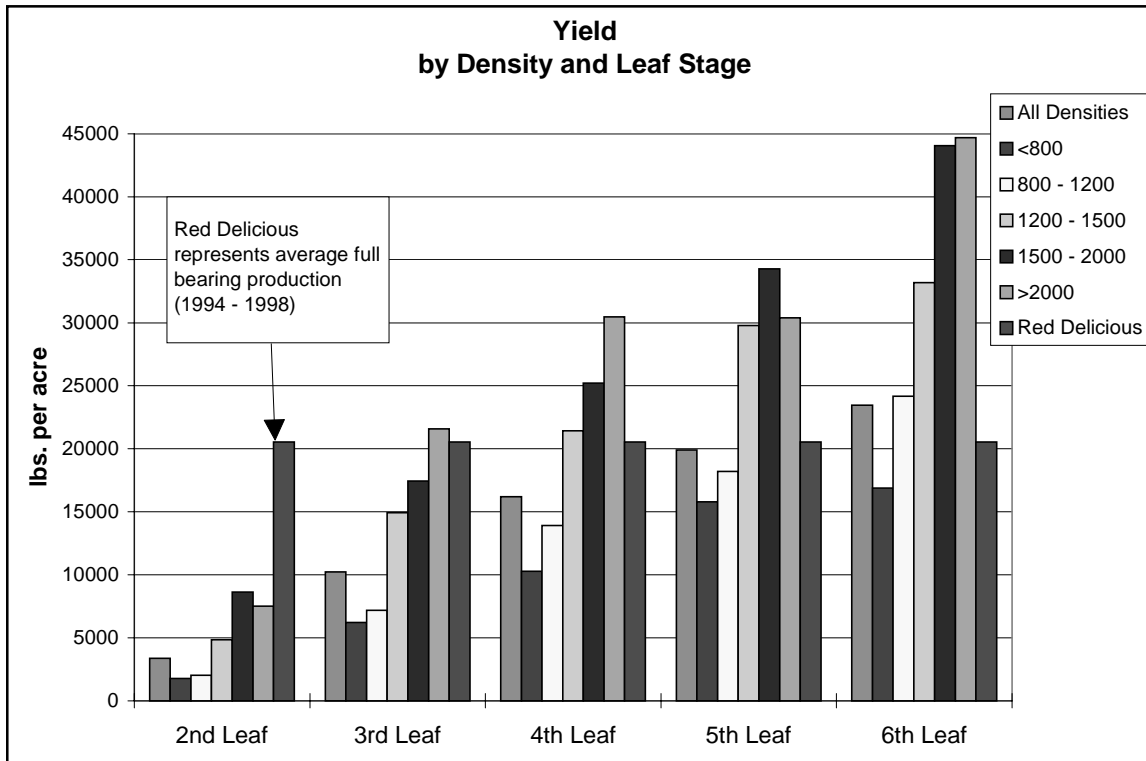
GRAPH 3: Average Price Per Pound by Year



Graph 3 shows the average prices reported on the survey by year. There has been a general trend over the last few years of declining prices for all varieties as a result of increasing global production for those varieties. From 1995 to 1998 the average price for all apples dropped 51%. Fuji suffered the greatest decline dropping 56% from the 1995 high of 58.4 cents dropping to a low of 25.9 cents (prelim.) in 1998.

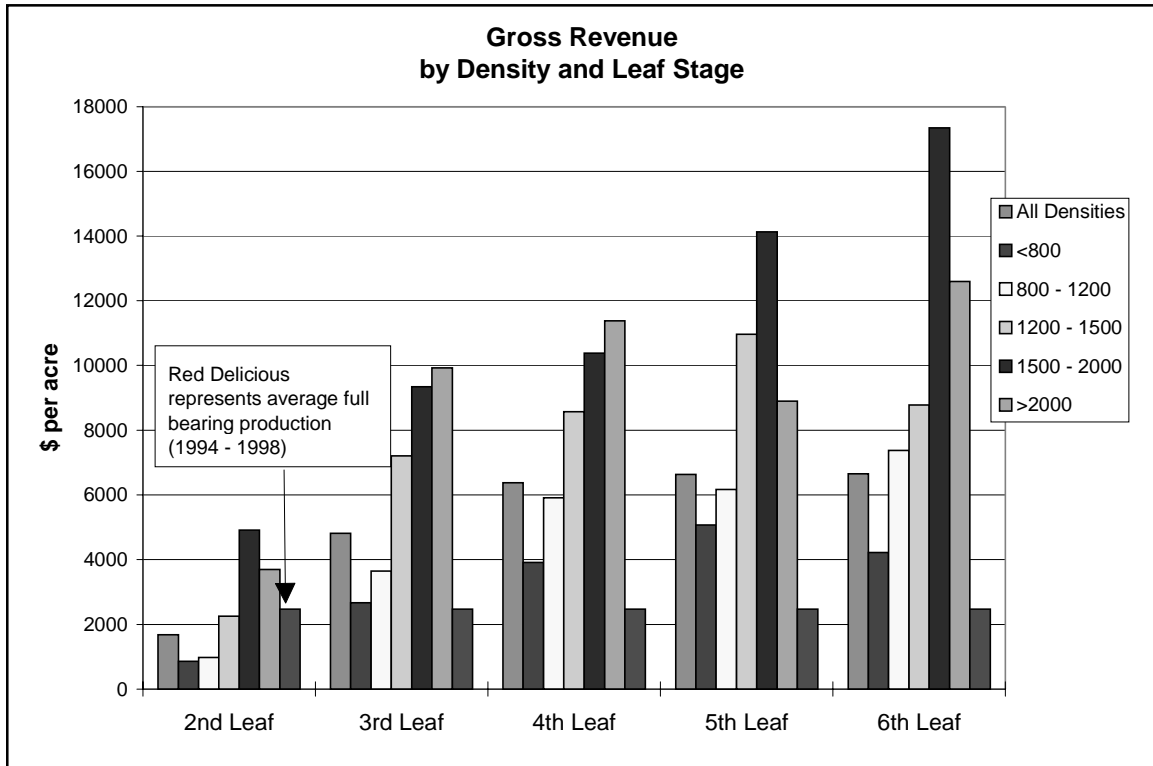
Apples

GRAPH 4: Yield by Density - Gala, Fuji and Jonagold Combined



Graph 4 indicates the average yield for all selected apple varieties by leaf stage and density. Yield generally increased with density. At densities greater than 1,200, yields met or exceeded the estimated yield from full bearing Red Delicious apples by the fourth leaf stage. High densities (greater than 1,500 trees per acre) continued to experience annual yield increases up to the sixth leaf. However, it is expected that yields would level off at this point. Due to the time period over which this survey was conducted, we have no data to confirm this. Users are cautioned not to extrapolate this data beyond this point.

GRAPH 5: Gross Revenue by Density - Gala, Fuji and Jonagold Combined

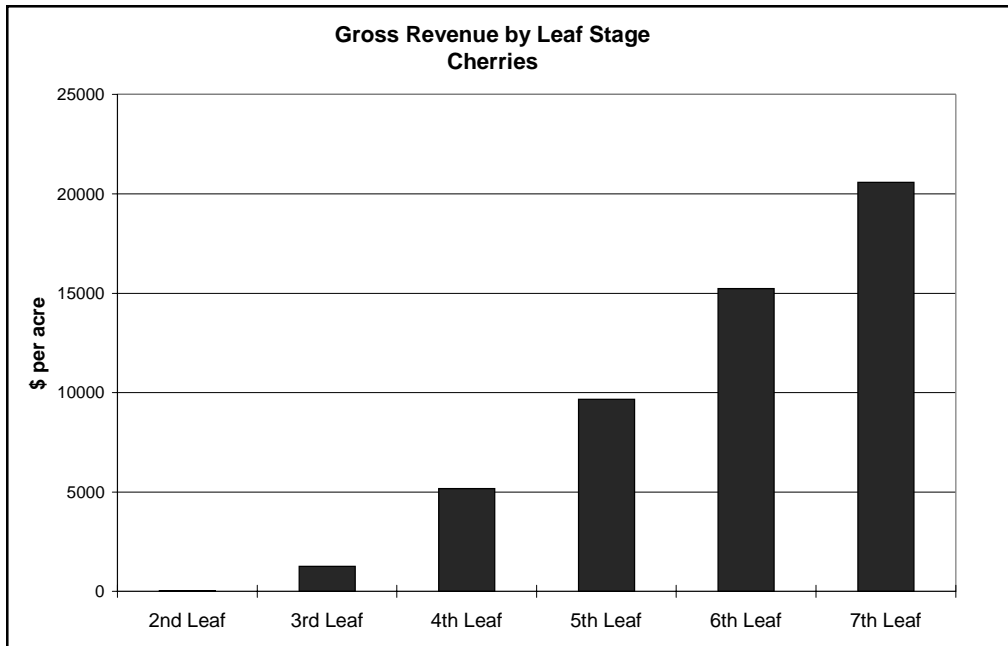


Graph 5 shows the average gross returns for all selected apple varieties by leaf stage and density. Gross revenue generally increased with density. At densities greater than 1,200, gross revenues met or exceeded the estimated gross revenues from full bearing Red Delicious apples by the second leaf stage. By the fifth and sixth leaf, very high densities (greater than 2,000 trees per acre) produced a lower gross revenue than trees planted at 1,500 - 2,000 per acre.

Soft fruits

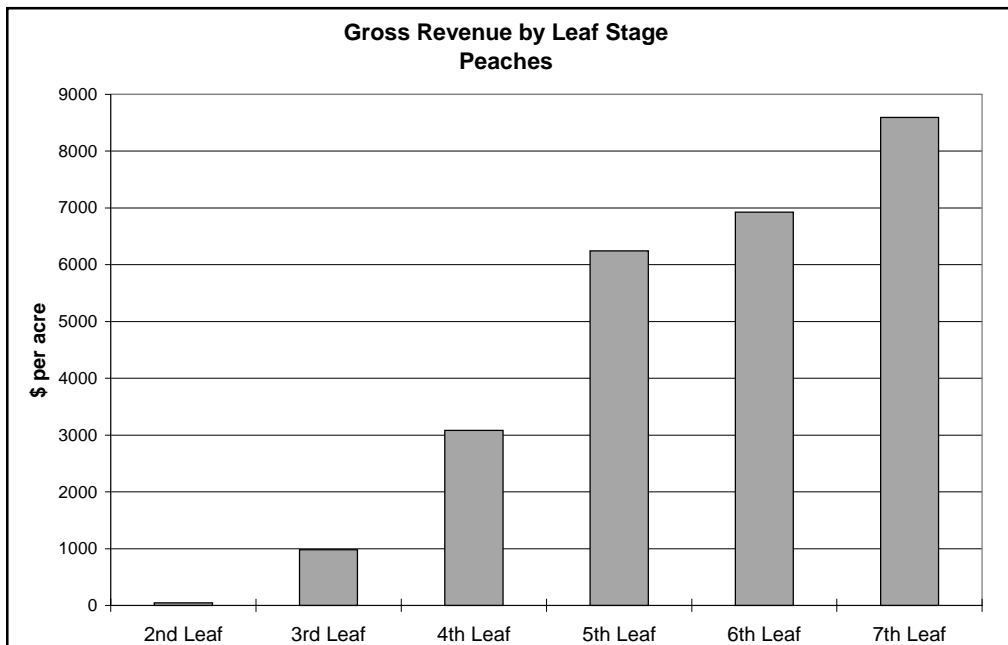
Sample size for both cherries and peaches was small so interpretation of the following data should be made with caution.

GRAPH 6: Gross Revenue by Leaf Stage - Cherries



Graph 6 shows the gross revenues for cherries. Cherries show a significant increase in gross revenues over the Red Delicious benchmark.

GRAPH 7: Gross Revenue by Leaf Stage - Peaches



Graph 7 shows the gross revenues for peaches. Peaches show a significant increase in gross revenues over the Red Delicious benchmark.

Summary and Conclusions

1. The survey indicates that the replanting program has assisted growers in producing some very successful replant projects. Very high gross revenues per acre for cherries and Gala apples for some projects indicate the potential for profitability. The success of these plantings has been achieved firstly by choosing a variety that has a high market demand and therefore price, and secondly, excellent horticultural practices to achieve high early yields of high quality fruit.
2. The reader should be cautioned when drawing conclusions from the potential revenue from these new plantings for the following reasons:
 - The high pricing these varieties have realized may not be reflected in the future as North American volumes of the varieties included in the survey increase.
 - Initial costs of replanting are high particularly with the higher densities and if the wrong variety is selected, then the replant project may not be economic. **More economic analysis is required to examine replant costs versus potential revenue.**
 - Successful replanting requires a high skill level from growers and some growers may need to improve their knowledge to successfully replant.
3. Apple yield is highly related to density. Observations from the survey indicate the following:
 - Low densities of less than 1,200 trees per acre do not realize the production and gross revenues of higher density plantings. This result probably means that the trees have not filled their space within the current time frame. Some growers argue that they will in time but the question remains: are they a viable replant proposition?
 - Highest yields come from plantings that exceed 1,500 trees per acre by the sixth year. It is apparent that these plantings have filled their space and have maximized their production early in the life of the planting. It is believed that these plantings have reached their maximum yield levels and that the yields after the sixth year will fluctuate according to weather and management factors.
 - Earlier yields come from higher density blocks. This result was expected, but is reassuring to see it realized. It also demonstrates the potential to capture the higher market returns for newer varieties.
4. Gross revenue per acre is dependent on a number of factors:
 - Variety selection is considered highly important. Even with excellent horticultural skills and high production, choosing a less marketable variety or a traditional variety will not produce sufficient gross revenues to pay for the high cost of replanting in a reasonable time frame. Since prices from the survey declined for all the varieties, the question to be answered by growers and the industry is ***“What varieties will growers be able to plant in the near future that may have a reasonable***

expectation of returning a high enough price for the growers efforts?"

- According to this survey, revenue per acre declines in years five and six for plantings that exceed 2,000 trees per acre. We have no explanation for this observation except that declining quality or fruit size may be happening as these very high densities mature. Further research needs to be done.
 - A very wide range of gross revenue distribution occurs in all varieties. Our survey indicates ranges of \$2116 per acre (bottom one third average) to a high of \$13,164 per acre (top one third average). The higher ranges show the potential of replanting. The wide range of yields at the same densities indicates the importance of using good horticultural practices when replanting. There is a need to further improve the skills of the growers.
5. Cherries and peaches show similar potential to apples. Gross revenue is lower in the first four years but equals apples in year five. **Care should be taken when analyzing cherries as price is dependent on the various marketing windows. The price reported by some growers may also include some packing and marketing costs.** Costs are also expected to be higher for cherries than apples.