

Appendix 6.3.1

Wheat, Oats, Barley and Hay sales 2002, NCW
Source: 2002 Census of Agriculture

Compiled by R. Faini, WSU Extension, Chelan County

| All Wheat | Acres | Yield (bu) | value |
|-----------|--------|------------|---------------------------|
| Douglas | 184829 | 7122466 | @3.25 = \$23,148,014 |
| Okanogan | 9763 | 452682 | = \$1,471,266 |
| | | | TOTAL VALUE: \$24,619,230 |
| | | | |

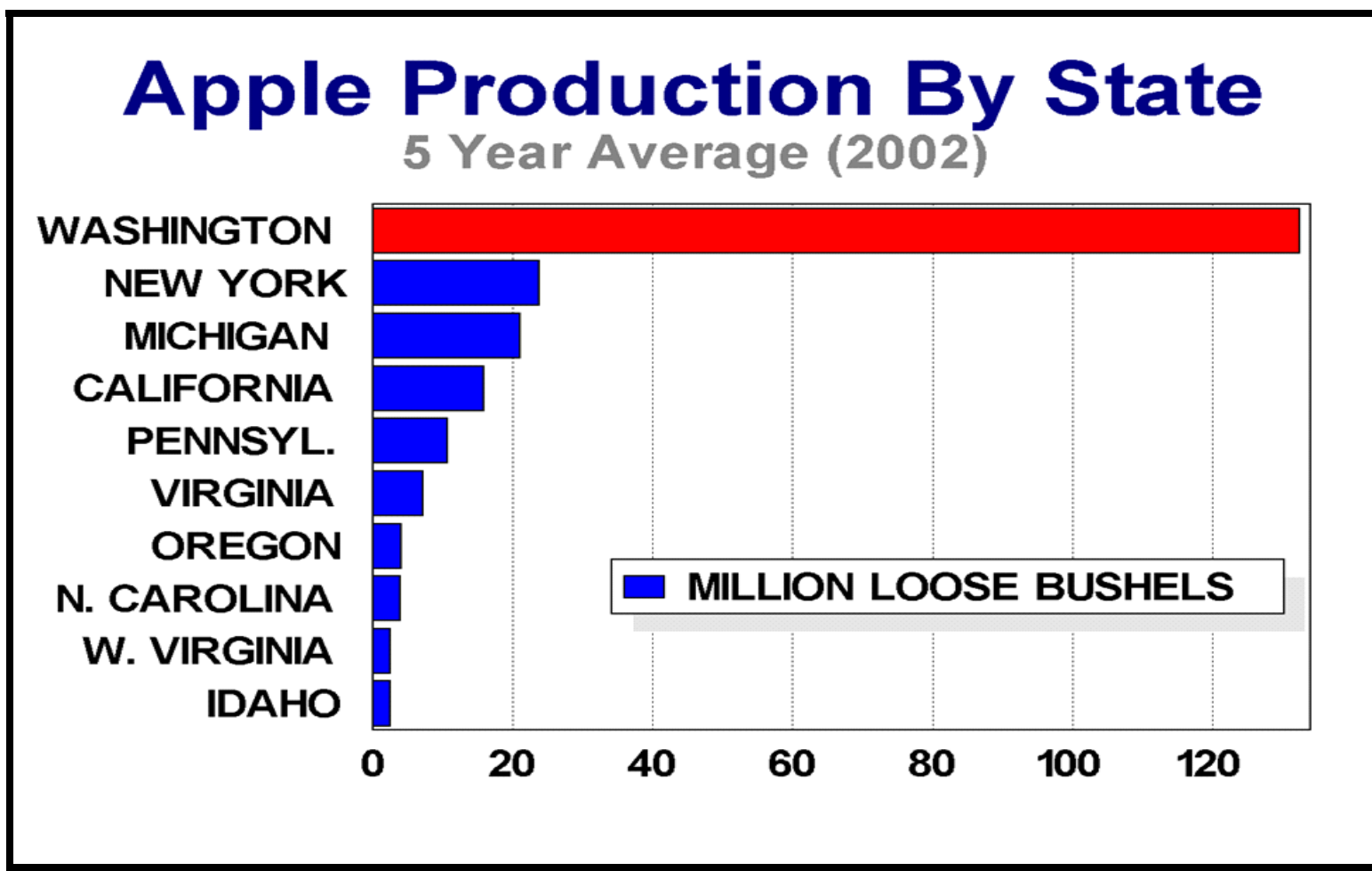
| All Oats | Acres | Yield (bu) | |
|----------|-------|------------|------------------------|
| Douglas | 1632 | 65535 | @2.00 = \$131070. |
| Okanogan | 2011 | 13933 | = \$27866 |
| | | | TOTAL VALUE: \$158,936 |
| | | | |

| All Barley | Acres | Yield (bu) | |
|------------|-------|------------|------------------------|
| Douglas | 3993 | 147327 | @2.00 = \$294654 |
| Okanogan | 318 | 11700 | = \$23400 |
| | | | TOTAL VALUE: \$318,054 |
| | | | |

| All Hay | Acres | tons | Value |
|----------|-------|-------|---------------------------|
| Chelan | 1823 | 3218 | @120 = \$386,160 |
| Douglas | 3654 | 16500 | = \$1,980,000 |
| Okanogan | 34138 | 85089 | = \$10,210,680 |
| | | | TOTAL VALUE: \$12,576,840 |

Totals Acres = 242,161
 Value = \$37,673,060

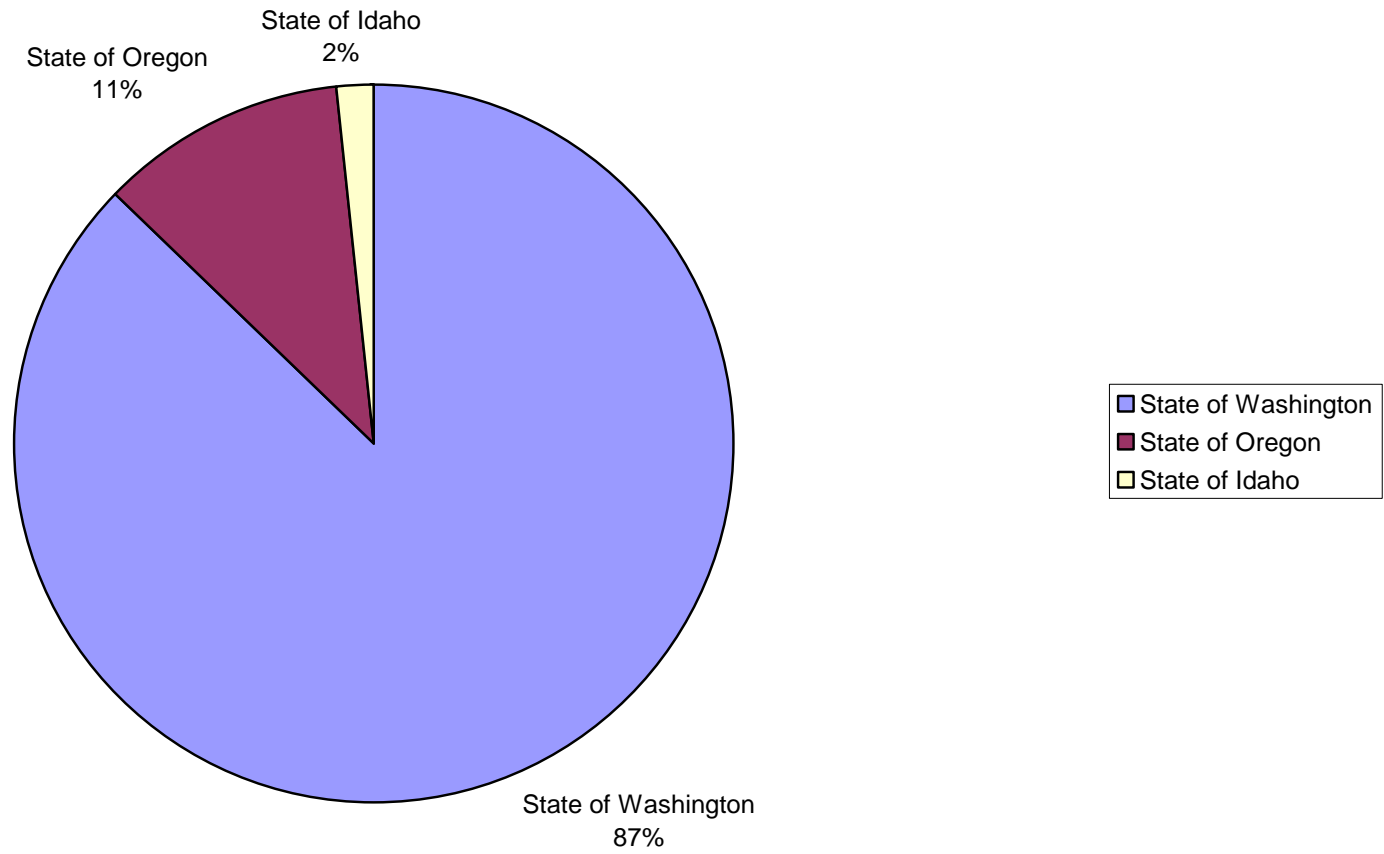
Appendix 6.3.2



Source: Tim Smith, WSU Extension

Appendix 6.3.3

Chart 1 - Total Farmgate Values - Northwest States



Tree Fruit Industry Impact on the North Central Region of Washington State

INCOME IMPACT RESULTS:

| | |
|---|--------------------|
| Direct and Indirect Purchases by Business Sectors | \$154,473,468 |
| Total Household Income of Owners and Employees | 444,297,553 |
| Local Business Sectors Impacted by Household Expenditures | <u>199,728,201</u> |
| Total Economic Income Impact to Region | \$798,499,222 |

Local Sectors Impacted by Household Expenditures:

| IMPLAN SECTOR | IMPLAN # | % of Local Consumer Expend. | Local \$ Impact |
|--------------------------|----------|-----------------------------------|--------------------|
| | | | |
| Housing | mix | 8.02 | \$28,102,108 |
| Retail Trade | mix | 3.63 | \$12,719,533 |
| Health Care | mix | 14.69 | \$51,473,812 |
| Eating & Drinking Places | 481 | 4.40 | \$15,417,616 |
| Food Processing | mix | 2.17 | \$7,603,688 |
| Wholesale Trade | mix | 3.47 | \$12,158,892 |
| Utilities | mix | 2.02 | \$7,078,087 |
| Insurance | 428 | 0.55 | \$1,927,202 |
| Personal Services | mix | 1.64 | \$5,746,566 |
| Communications | mix | 0.72 | \$2,522,883 |
| Transportation Services | mix | 1.34 | \$4,695,365 |
| Motor Vehicle Operation | mix | 4.80 | \$16,819,217 |
| Banking/Credit Services | mix | 2.53 | \$8,865,129 |
| State/Local Services | mix | 1.06 | \$3,714,244 |
| Petroleum Products | mix | 0.00 | \$0 |
| Education | mix | 0.83 | \$2,908,323 |
| Recreational Activities | mix | 1.26 | \$4,415,044 |
| Hotels & Lodging | 479 | 0.61 | \$2,137,442 |
| Investments | 426 | 0.35 | \$1,226,401 |
| Civic/Religious Assoc. | mix | 0.35 | \$1,226,401 |
| Fabrics/Apparel | mix | 0.01 | \$35,040 |
| Publications/Paper | mix | 0.04 | \$140,160 |
| Business/Labor Assoc. | mix | 0.35 | \$1,226,401 |
| Household Furnishings | mix | 0.61 | \$2,137,442 |
| Household Industry | 494 | 0.22 | \$770,881 |
| U.S. Postal Service | 398 | 0.08 | \$280,320 |
| Other | mix | 1.26 | \$4,415,044 |
| Non-Local Purchases | mix | 43.00 | \$150,672,152 |
| | | | |
| Total Purchases | | 100.00 | \$350,400,353 |

ESTIMATED AVERAGE ANNUAL EMPLOYMENT 39,925
(ASSUMES AVERAGE ANNUAL INCOME OF \$20,000)

Appendix 6.3.5

Tree Fruit Water Usage Calculations

**Calculating the amount of water used by 1 Acre of fruit trees per season,
for Cool, Average and Warm weather conditions in NCW.**

| | Water Use Per Day | | | | Water Use Per Season | | |
|--|-------------------|---------|------|------|----------------------|--------------|-------------|
| | Acre Inches Used | | | | Acre Inches Used | | |
| | Cool | Average | Warm | days | Cool | Average | Warm |
| Early April | 0.04 | 0.05 | 0.05 | 15 | 0.6 | 0.75 | 0.75 |
| Late April | 0.08 | 0.09 | 0.1 | 15 | 1.2 | 1.35 | 1.5 |
| Early May | 0.1 | 0.14 | 0.2 | 15 | 1.5 | 2.1 | 3 |
| Late May | 0.17 | 0.18 | 0.25 | 15 | 2.55 | 2.7 | 3.75 |
| Early June | 0.2 | 0.23 | 0.26 | 15 | 3 | 3.45 | 3.9 |
| Late June | 0.25 | 0.29 | 0.33 | 15 | 3.75 | 4.35 | 4.95 |
| July | 0.28 | 0.33 | 0.38 | 30 | 4.2 | 4.95 | 5.7 |
| Early Aug | 0.27 | 0.31 | 0.35 | 15 | 4.05 | 4.65 | 5.25 |
| Late Aug | 0.22 | 0.24 | 0.3 | 15 | 3.3 | 3.6 | 4.5 |
| Early Sept | 0.15 | 0.19 | 0.25 | 15 | 2.25 | 2.85 | 3.75 |
| Late Sept | 0.08 | 0.1 | 0.15 | 15 | 1.2 | 1.5 | 2.25 |
| October | 0.05 | 0.08 | 0.1 | 30 | 0.75 | 1.2 | 1.5 |
| (Table calculations from Tim Smith, WSU Extension) | | | | | | | |
| Total Season Use: Acre Inches | | | | | 28.35 | 33.45 | 40.8 |

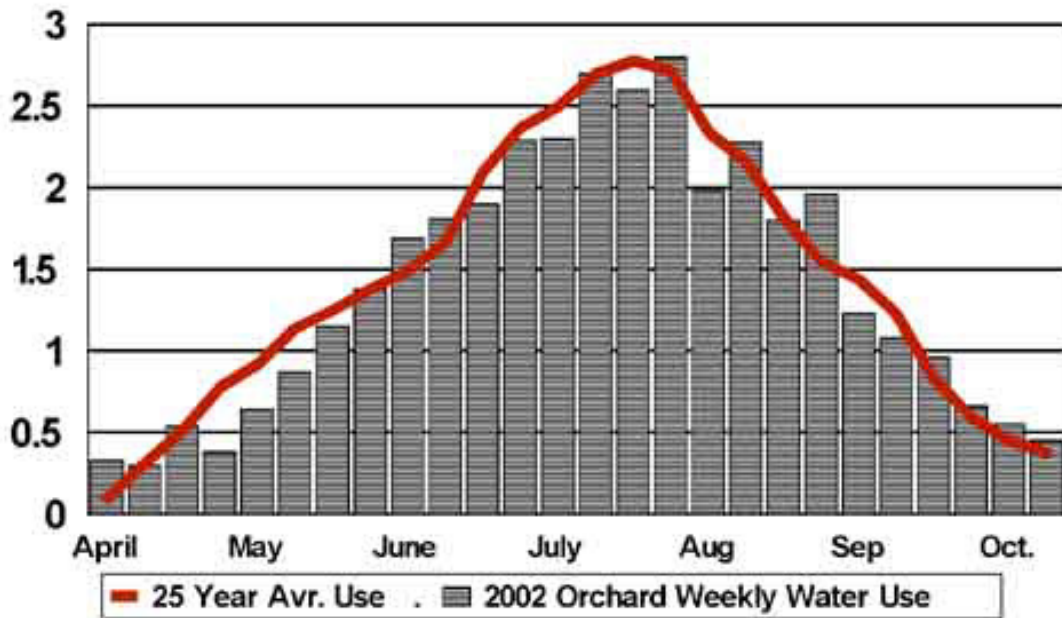
Converting ANNUAL water usage from "Acre inches" to "cfs"

- A) 1 acre of land covered by 1 inch of water = 3630 cubic feet of water
- B) Since there are 3630 cubic ft in 1 acre inch And 31,536,000 seconds in a year
- C) Per acre we divide 3630 cubic ft by 31,536,000 seconds.= 0.0001151 cubic ft/sec/A for each acre inch applied.
- D) To factor in irrigation inefficiencies, which range from 15% - 40%, additional water needed is calculated here:
 - * 15% = 1.15 x 0.0001151 ft³/sec = 0.0001323 ft³/sec per acre each year
 - * 40% = 1.40 x 0.0001151 ft³/sec = 0.0001611 ft³/sec per acre each year¹
- E) For the average use noted above (33.45 Acre inches), **all nut & tree fruit acreage** in NCW (77,459) would use only 342.8 to 417.4 cfs per season from ALL RIVERS COMBINED in Chelan, Douglas and Okanogan Counties

¹ Calculations: A - D, Robert Simmons, WSU Water Quality Specialist

Orchard Water Use- Wenatchee Area PAWS

Acre Inches Through Trees Per Week- Irrigation Need Is Higher



Total 2002 April-Oct 1 : 34.84 inches T.Smith, WSU Extension

Appendix 6.3.7 Tree Fruit Water Usage Calculations

Calculating the amount of water needed to irrigate 10,000 Acres
 Showing Acre Feet, CFS and Average Streamflow
 (Reference Appendix 6.3.5 for foundation of numbers used here.)

| | Water Use Per day¹ | CFS Needed* | Average streamflow |
|-------------|--|--|--|
| | Acre ft on <u>10,000 A</u> , adding an inefficiency of 30% to the Average use | to Supply 10,000 Acres During Season | Wenatchee River at Monitor, WA ² 1962-2004, in ft ³ /sec |
| Early April | 54.2 | 27.31 | |
| Late April | 97.5 | 49.16 | April: 4002 cfs |
| Early May | 151.7 | 76.47 | |
| Late May | 195.0 | 98.31 | May: 8004 cfs |
| Early June | 249.2 | 125.62 | |
| Late June | 314.2 | 158.39 | June: 8969 cfs |
| July | 357.5 | 180.24 | July: 4440 cfs |
| Early Aug | 335.8 | 169.32 | |
| Late Aug | 260.0 | 131.08 | August: 1495 cfs |
| Early Sept | 205.8 | 103.77 | |
| Late Sept | 108.3 | 54.62 | September: 820 cfs |
| October | 86.7 | 43.69 | October: 1091 cfs |

Table Calculations by Robert Simmons, WSU Water Quality Specialist

- * A) 1 acre of land covered by 1 inch of water = 3630 cubic feet of water
- *B) Since there are 3630 cubic ft in 1 acre inch and 86,400 seconds per day
- *C) Per 10,000 acres we multiply # Acre In used by 3630 cubic ft and
divide by 86,400 seconds to get CFS Needed

¹ Multiply the Acre feet in this column by 12 to get Acre Inches

² Number shown is **after all prior depletions** (including domestic use and irrigation)

Source: USBR

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