Labor Prospects for the Washington Tree Fruit Industry

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Tree fruit contribution to the WA state economy

- Between 2007-2009 added average $1.92 billion/year to the Washington State economy.

- In 2013,
  - WA apples amounted $2.2 billion (total production value).
  - WA cherries $379 million.
  - WA pears $225 million.
Dependence on labor

- U.S. agriculture highly dependent on labor.
- For all U.S. agricultural crops, labor represents 17% of all variable costs.
- For fruits it is 48%.
Migrant labor

- U.S. agriculture has a history of dependence on migrant labor force.
- Fruit operations in the West U.S. had relied on,
  - Chinese in the 1870’s.
  - Japanese in the early 1900’s.
  - Mexican in the 1920’s (WWI Bracero program).
  - Mexican in the 1940’s (WWII Bracero program).
- In 2009, 75% of hired farm workers in the U.S. were born in Mexico.
Unauthorized migration to the U.S.

Estimates of the U.S. unauthorized immigrant population in thousands

Source: Pew Research, 2013
Reasons for changing tendencies

- Economic growth and productivity in Latin America.
- Fertility rates in Mexico dropped.
- Increased U.S.-Mexico border enforcement.
- Agricultural labor force is aging.
Economic growth and productivity
GDP growth in Mexico and the U.S.

Mexican economy is growing faster per year than the U.S. economy

Source: World Bank
Per-capita economic growth
Mexico

A 1% increase in per capita economic growth for Mexico relative to the U.S. reduces migration by 7.9%.

Source: World Bank
Population and fertility rate
Mexico

<table>
<thead>
<tr>
<th>Year</th>
<th>Population growth (%)</th>
<th>Total population</th>
<th>Fertility rate</th>
</tr>
</thead>
<tbody>
<tr>
<td>1995</td>
<td>95 M</td>
<td>95 M</td>
<td>2.97</td>
</tr>
<tr>
<td>1997</td>
<td>100,000,000</td>
<td>100,000,000</td>
<td>2.22</td>
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<td>1999</td>
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<td>2003</td>
<td>115,000,000</td>
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<td>2005</td>
<td>120,000,000</td>
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<td>2007</td>
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<tr>
<td>2013</td>
<td>140,000,000</td>
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</tr>
</tbody>
</table>

Source: World Bank
Change in the 15-35 age cohort population
Mexico

In 1994, 610,522 individuals were added to this group. In 2014, it was 277,313

Source: World Bank
Increase in U.S. border enforcement spending

A 1% increase in border enforcement expenditures reduces the number of migrants by 0.48%.

Source: Meissner et al.
Situation

- Labor supply showing signs of a decreasing tendency.
- Labor demand relatively constant with annual average 1 million workers since 2007.
- Widespread labor shortage has not YET happened.
- Competition from other countries.
Alternatives

- Invest in labor-saving technologies.
- Invest in the guest-worker program H-2A.
This study...

- Forecast labor demand and supply for major labor intensive crops in Washington State.
- Measure the impact of labor shortage on agricultural wages, yields and fruit prices.
- Measure the impact of the H-2A program and labor-saving technologies.
Farm worker distribution across crops in WA State

These four crops absorbed 73% of all seasonal workers
Estimated annual growth for farm workers to be demanded by major labor-intensive crops in WA State

<table>
<thead>
<tr>
<th>Crops</th>
<th>Annual growth rate 2014-2034</th>
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<tbody>
<tr>
<td>Grape</td>
<td>1.89%</td>
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<tr>
<td>Apple</td>
<td>1.70%</td>
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<tr>
<td>Sweet cherry</td>
<td>1.34%</td>
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<tr>
<td>Pear</td>
<td>1.21%</td>
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</table>
Estimated monthly farm workers to be demanded in WA State

![Graph showing estimated monthly farm workers in WA State]

<table>
<thead>
<tr>
<th>Month</th>
<th>2011</th>
<th>2013</th>
<th>2034</th>
</tr>
</thead>
<tbody>
<tr>
<td>Jan</td>
<td>14163</td>
<td>14180</td>
<td>20314</td>
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<tr>
<td>Feb</td>
<td>15615</td>
<td>15801</td>
<td>22752</td>
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<tr>
<td>Mar</td>
<td>14106</td>
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<td>Apr</td>
<td>14183</td>
<td>14759</td>
<td>21179</td>
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<tr>
<td>May</td>
<td>14123</td>
<td>14899</td>
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<td>Jun</td>
<td>31123</td>
<td>31445</td>
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<td>Jul</td>
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<td>Aug</td>
<td>46605</td>
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<td>Sept</td>
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<td>46044</td>
<td>58459</td>
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<td>Oct</td>
<td>52843</td>
<td>46421</td>
<td>63008</td>
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<td>Nov</td>
<td>25431</td>
<td>21880</td>
<td>35755</td>
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<tr>
<td>Dec</td>
<td>11297</td>
<td>11394</td>
<td>16401</td>
</tr>
</tbody>
</table>
Labor supply
Actual and predicted U.S. farm labor supply 2012-2034

U.S. farm labor supply to drop on average,
1% from 2013-2018
1.4% from 2018-2025
0.7% from 2025-2038
Effects of labor supply decrease

- A 7% decrease in labor supply in the next five years would lead to,
  - Increase in wages by 8.3%.
Alternatives to the decrease supply of labor

- H-2A program.
- Labor enhancing mechanization technologies.
H-2A program

H-2A changes add cost, difficulty

Rules for the guest-worker program have changed significantly each year that McDougall & Sons has participated.


The McDougall & Sons housing camps are made up of manufactured units for 12 people. This camp at Quincy, Washington, has 96 beds.

GERALDINE WARNER

An increase in the wage rate that employers must pay workers recruited through the H-2A guest-worker program will add well over $1 million to labor costs this year for one company alone.

McDougall & Sons, Inc., in Wenatchee, Washington, has recruited Mexican workers through the H-2A program for the past three years and has built housing for them at five locations in central Washington. Last year, the company hired 190 foreign guest-workers, which met about half its labor needs during harvest.

Employers using the H-2A program are required to pay what is known as the 'adverse effect' wage rate, which is set by the U.S. Department of Labor.

Growers make H-2A work

Washington is the fourth largest employer of H-2A workers in the country after North Carolina, Georgia, and Florida.

Geraldine Warner // May 1, 2014 // Labor // Production

Mark and Kevin Stennes, growers in Pateros, Washington, fixed up their worker housing specifically to be able to use the H-2A program. They plan to bring in 50 foreign workers this year, recruiting through the Washington Farm Labor Association.

The number of employees working in Washington State under the federal H-2A temporary agricultural worker program has been growing at double-digit rates and is likely to continue to increase over the next few years, says Dan Fazio, director of the Washington Farm Labor Association.

Innovative orchardists, together with a supportive state government, are finding ways to make the cumbersome and complex program work for them, he says.
H-2A Adverse wage rate

Minimum wage rate in WA

Adverse wage rate

Avg=$11.06 /hour

Avg=$8.8 /hour
H-2A facts

- In the U.S. in 2013 it covered **0.13%** of all total farmworkers (98,813 of 777,300)
- In WA the number of certified H-2A workers has increased from **810** in 2006 to **6,363** in 2013.
- Yakima, Okanogan, and Chelan are the top three counties with major H-2A demand.
H-2A in Washington State

- Total H-2A certified workers
  - 2006: 810
  - 2007: 1,678
  - 2008: 2,393
  - 2009: 1,967
  - 2011: 3,172
  - 2012: 4,431
  - 2013: 6,363
H-2A in Washington State

H-2A certified workers - Total workers 2006-2013 except 2010

- Yakima: 9,690
- Okanogan: 5,170
- Chelan: 3,070
- Lewis: 0
- Other counties: 0

Notes:
- 2006: 107 workers
- 2007: 231 workers
- 2008: 131 workers
- 2009: 356 workers
- 2010: 0 workers
- 2011: 25 workers
- 2012: 38 workers
- 2013: 3 workers
H-2A forecast scenarios (Zahniser, 2012)

1. Labor supplied annually to agriculture by non-U.S. citizens increases by 30,000 in year 1 and rises to 150,000 in year 15.

2. Total number of unauthorized workers in all sectors of the economy (ag and non-ag) decreases by 5.8 million by year 15 (40% reduction).
1. Increase in immigrant labor scenario, by year 15

❖ Fruits, tree nuts, vegetables, and nursery products will increase

• 1.1 - 2.0 % total production
• 1.7 - 3.2 % exports

❖ Real wages for agricultural workers will decrease

• 4.4 %
H-2A forecast results (Zahniser, 2012)

2. Reduction in the number of unauthorized workers, by year 15

- Agricultural output will decrease
  - 2.0 - 5.4 % total production
  - 2.5 - 9.3 % exports

- Real wages for agricultural workers will increase
  - 3.9 -9.9 %
H-2A forecast conclusion (Zahniser, 2012)

- **Increasing** the number of immigrant workers will,
  - Increase labor intensive agricultural production.
  - Decrease agricultural wages.
  - Decrease the number of U.S. citizens and permanent residents working in agriculture.

- **Decreasing** the number of immigrant workers will,
  - Decrease agricultural production.
  - Increase agricultural wages.
  - Increase number of U.S. citizen and permanent residents to work in agriculture but average wages in general will fall.
  - This will represent a negative effect on the overall economy.
## Investing in mechanization technologies

<table>
<thead>
<tr>
<th>General information</th>
<th></th>
<th></th>
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</thead>
<tbody>
<tr>
<td><strong>Purchase price</strong></td>
<td>50,000</td>
<td>US dollars</td>
</tr>
<tr>
<td><strong>Years of life</strong></td>
<td>20</td>
<td>years</td>
</tr>
<tr>
<td><strong>Hours of operation</strong></td>
<td>1,000</td>
<td>hours/year</td>
</tr>
<tr>
<td><strong>Fuel consumption</strong></td>
<td>1</td>
<td>gallon/hour</td>
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<tr>
<td><strong>Salvage value</strong></td>
<td>10</td>
<td>percent</td>
</tr>
<tr>
<td><strong>Interest rate</strong></td>
<td>7</td>
<td>percent</td>
</tr>
<tr>
<td>Machine Costs</td>
<td></td>
<td></td>
</tr>
<tr>
<td>---------------</td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Fixed costs</strong></td>
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<tr>
<td>Annuity</td>
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<tr>
<td>Depreciation</td>
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<tr>
<td>Interest rate</td>
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<tr>
<td>Taxes, insurance, housing</td>
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<tr>
<td><strong>Total fixed costs</strong></td>
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<tr>
<td><strong>Variable costs</strong></td>
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<tr>
<td>Repairs</td>
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<tr>
<td>Fuel cost</td>
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<tr>
<td>Lube cost</td>
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<tr>
<td><strong>Total variable costs</strong></td>
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<tr>
<td><strong>Total ownership costs</strong></td>
<td>$13,145</td>
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</tr>
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</table>
Investing in mechanization technologies

- IF 1 machine covers 75 acres AND production is 65 bins per acre, THEN cost of machine $2.70 per bin.

- IF current picking rate with the machine is at 0.69 bins/person/hour, then picking efficiency needs to improve by 13% in order to break-even.

- Picking wage has to increase by 12% (from 23.5/bin to 26.20/bin) in order to break-even.
Conclusions

❖ Agricultural labor supply will decrease at an average rate of 1% yearly. By year 2018, labor supply will have dropped by 7% -all else constant-.

❖ Labor demand for apples will increase by 1.7% yearly. -all else constant-.
Conclusions

❖ H-2A program investment is considerable:
  ❖ Housing for seasonal labor for a 300-acre operation was estimated at $1.2 million.
  ❖ Adverse wage rate, is 24.38% higher than minimum wage rate.
  ❖ Fee per worker $1,200-$1,300.
Conclusions

❖ Improvement in picking efficiency with mechanical harvester aid is feasible, **13%**.

❖ If picking wage increase by **12%** investing in machine will make sense.