Carbon, Water, & Money

An Update on Marketing and Economic Research

*It is easy to lie with statistics. It is hard to tell the truth without them.*

Andrejs Dunkels, mathematician, teacher, writer

**Acknowledgements**

[Logos of various organizations]
Topics

1. What’s the status of the carbon/water footprint research?
2. How much has the cost of grower inputs increased?
3. What are some key grower-level benchmarks?
4. How’s the economy and when will the next recession start?

Carbon/water footprint research:

- FNRI & SCRI & HRI funding.
- Economic engineering approach.
- Representative growing/irrigation BMPs.
- 3-gal woodies on East and West Coast, Young plants, Annuals (Begonias), Potted Flowering (Poinsettias), Outdoor (Mums)
Begonias

Total GWP = 0.140 kg CO₂e

Mums

Total GWP = 0.555 kg CO₂e
Poinsettias

Why does this matter?

1. A correlation exists between GWP & costs.
2. Sustainable messages increase LTP and WTP.
   - Biodegradable & recyclable containers
   - Pollinator-friendly
   - Water and energy conserving
   - Carbon neutral or saving
   - Functional benefits (JEH 4-part series)
Ellison Chair in International Floriculture

Our value proposition for the future:
Emphasizing the benefits of flowers, shrubs, trees, and turfgrass

https://ellisonchair.tamu.edu/benefitsofplants/
The Power of Plants!

ellisonchair.tamu.edu -- Benefits of Plants

The value perspective

Marketing efforts
Prices of substitutes

Consumer’s incentive to purchase: (PV-P)>0
Firm’s incentive to sell: (P-COGS)>0

Objective value (OV) = \sum \text{of all benefits}
Perceived value (PV) = \sum \text{of perceived benefits}
Product or service price (P)
Cost of goods sold (COGS)
Direct costs
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How much has the cost of grower inputs increased?

<table>
<thead>
<tr>
<th>Cost category</th>
<th>% of sales</th>
<th>% of tracked expenses</th>
</tr>
</thead>
<tbody>
<tr>
<td>Containers</td>
<td>4.50%</td>
<td>7.09%</td>
</tr>
<tr>
<td>Media (peat-based)</td>
<td>2.50%</td>
<td>3.94%</td>
</tr>
<tr>
<td>Propagation stock</td>
<td>15.00%</td>
<td>23.62%</td>
</tr>
<tr>
<td>Plant protection products</td>
<td>1.00%</td>
<td>1.57%</td>
</tr>
<tr>
<td>Fertilizers</td>
<td>1.00%</td>
<td>1.57%</td>
</tr>
<tr>
<td>Labor (wages)</td>
<td>22.00%</td>
<td>34.65%</td>
</tr>
<tr>
<td>Fuel/Energy</td>
<td>2.50%</td>
<td>3.94%</td>
</tr>
<tr>
<td>Maintenance</td>
<td>2.00%</td>
<td>3.15%</td>
</tr>
<tr>
<td>Freight and trucking</td>
<td>11.00%</td>
<td>17.32%</td>
</tr>
<tr>
<td>POP, tags, labels, etc.</td>
<td>2.00%</td>
<td>3.15%</td>
</tr>
<tr>
<td>Total</td>
<td>63.50%</td>
<td>100.00%</td>
</tr>
<tr>
<td>Other expenses</td>
<td>36.50%</td>
<td>---</td>
</tr>
<tr>
<td></td>
<td>100.0%</td>
<td>100.00%</td>
</tr>
</tbody>
</table>
Index of Prices Paid by Growers, 2007-2018 (2007=100)

<table>
<thead>
<tr>
<th></th>
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<th></th>
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<tr>
<td>Containers</td>
<td>7.09%</td>
<td>100</td>
<td>109.8</td>
<td>98.0</td>
<td>107.9</td>
<td>117.2</td>
<td>119.9</td>
<td>124.1</td>
<td>129.3</td>
<td>116.7</td>
<td>111.2</td>
<td>117.0</td>
<td>122.7</td>
</tr>
<tr>
<td>Media (peat-based)</td>
<td>3.94%</td>
<td>100</td>
<td>103.2</td>
<td>90.8</td>
<td>96.9</td>
<td>95.3</td>
<td>95.5</td>
<td>99.1</td>
<td>97.6</td>
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<td>124.9</td>
<td>117.2</td>
<td>120.8</td>
</tr>
<tr>
<td>Propagation stock</td>
<td>23.62%</td>
<td>100</td>
<td>102.8</td>
<td>106.7</td>
<td>108.4</td>
<td>111.9</td>
<td>114.2</td>
<td>115.9</td>
<td>117.8</td>
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<td>119.5</td>
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<td>125.0</td>
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<td>181.7</td>
<td>127.7</td>
<td>117.1</td>
<td>152.4</td>
<td>154.6</td>
<td>147.4</td>
<td>144.1</td>
<td>132.9</td>
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<td>111.7</td>
<td>113.2</td>
<td>118.0</td>
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<td>128.3</td>
<td>131.4</td>
<td>133.3</td>
</tr>
<tr>
<td>Fuel/Energy</td>
<td>3.94%</td>
<td>100</td>
<td>130.2</td>
<td>86.6</td>
<td>107.4</td>
<td>137.2</td>
<td>136.2</td>
<td>135.0</td>
<td>134.3</td>
<td>87.1</td>
<td>76.3</td>
<td>91.1</td>
<td>98.8</td>
</tr>
<tr>
<td>Maintenance</td>
<td>3.15%</td>
<td>100</td>
<td>102.9</td>
<td>104.9</td>
<td>106.9</td>
<td>111.2</td>
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</tr>
<tr>
<td>Other expenses</td>
<td></td>
<td></td>
<td></td>
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<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>43.50%</td>
</tr>
</tbody>
</table>

Weighted index (2007=100) | 100 | 106.0 | 103.6 | 107.0 | 111.8 | 113.8 | 116.7 | 119.9 | 118.5 | 119.5 | 122.5 | 126.8

**Index of Prices Paid by Growers**

Each production input can be toggled on/off simply by clicking on the name of each input in the legend. The top line graph shows the cost increase (or decrease) of each production input since 2007, while the bottom line graph shows the 10-year weighted average growth of all production inputs. Bottom line, the costs of production-related inputs have increased 2.1% since pre-recession levels. Labor alone has increased by 3.3% since 2007.
Costs declining, industry hiring.

But, a 25.6% increase in tonnage by 2030.

Tariff effects

$106 billion / year ( $831 per HH)
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124 MONTHS
Effect of TCJA?

(uncertainty about trade)
What’s the job market situation?

U6 rate 7.2%

7.3M non-farm vacancies vs. 6.4M workers
Mean (Average) Household Income
By Quintile and Top 5 Percent in 2017 Dollars

<table>
<thead>
<tr>
<th>Household Segment</th>
<th>2016 Mean Income</th>
<th>Real Income Growth Since 1947</th>
</tr>
</thead>
<tbody>
<tr>
<td>Top 1%</td>
<td>$231,381</td>
<td>Top Quintile</td>
</tr>
<tr>
<td>Top Quintile</td>
<td>$175,480</td>
<td>95.5%</td>
</tr>
<tr>
<td>2nd Quintile</td>
<td>$156,633</td>
<td>93.1%</td>
</tr>
<tr>
<td>Middle Quintile</td>
<td>$112,116</td>
<td>89.2%</td>
</tr>
<tr>
<td>4th Quintile</td>
<td>$59,149</td>
<td>24.4%</td>
</tr>
<tr>
<td>Bottom Quintile</td>
<td>$15,804</td>
<td>28.5%</td>
</tr>
</tbody>
</table>

Source: Census Bureau

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**U.S. Wages**

12-month change in average hourly earnings (in thousands of dollars)

Source: BLS, Heather Long/The Washington Post

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**Both the Height of the Fed Chair and Rates Have Fallen Over Time, Could a Taller Fed Chair Mean Rates Rise?**

- Alan Greenspan
- Ben Bernanke
- Janet Yellen
- Jay Powell

Interest rates

Source: LPL Research, Bloomberg 10/22/17

We don't actually believe that interest rates are determined by the height of the Fed chair, but it has been an interesting coincidence.
Home prices have appreciated for 9 straight years.
Current prices are 11.3% below the March 2006 peak and 36.9% above the Feb 2012 trough.

When will the next recession start?
Financial sector risk is negligible.

Growing slower than historic average.
The unemployment rate is still in the safe zone.

Leading economic index is flattening.
The yield curve is inverted, but...

17-34 months from Dec 2017

33% chance of recession in 2019

50% chance of recession in 2020

80% chance of recession in 2021
What could derail this outlook?

Monetary policy gone awry.
Trade war effects.
OPEC reneging on output deal.
Bubble bursting.
Recession in China/Europe.

Acknowledgements