Food Is Plentiful!
Therefore Farming is EASY... right?

Jennie Schmidt, MS, RD
Schmidt Farms, Inc.
Schmidt Farms Inc.

3rd Generation in USA
2100 Acres in Maryland

• Corn (biotech & conventional production; formerly certified organic)

• Soybeans (food, feed & seed)
  • Wheat (feed & seed)
  • Barley (seed)

• 150 acres Roma tomatoes
• 160 acres fresh market green beans
• 80 acres processing lima beans
  • 250 acres of hay
  • 22 acres winegrapes
• Custom Hire Vineyard Mgt Co.

Our Farm Goal =

to maximize value per acre producing safe, high quality foods, while preserving and improving our soils and sustaining the family farm for the next generation
Who Am I? Farmer, Dietitian, Promoter of Food & Farming

- 2011 America’s Farm Mom of the Year
- CommonGround Volunteer
- Board Member
  - 1st Female V.P. - Maryland Grain Producers
  - US Wheat Foods Council
  - Past-Pres, MD Grape Growers Assoc.
  - Chairman, Maryland Farm Bureau Specialty Crops

- Academy of Nutrition & Dietetics -
  - workgroup on Advanced Food Technology
Food & Farming: Why the disconnect?

• USDA est. 1862 “The People’s Department” (90% of the population were farmers)

• Farmers now make up <2% of the US population

• Milk comes from a cow?
Consumer Influences

What’s Driving These Trends?

- Biotechnology
- Organic
- Conventional

- Global Demand
- Farm Economics
- Environment
- Land Capacity
Let’s Talk Farming Systems

Agriculture

Conventional: uses Modern technology And mechanization. Stems from Green Revolution

Biotechnology: plant Breeding techniques To develop or improve Living organisms. “RoundUp/Bt/Stacked”

Organic: ecological Production system Minimizing off farm Inputs; only OMRI Approved materials.
## Comparison of Practices

<table>
<thead>
<tr>
<th>Practice</th>
<th>Conventional</th>
<th>Biotech</th>
<th>Organic</th>
</tr>
</thead>
<tbody>
<tr>
<td>No-Till</td>
<td>✓</td>
<td>✓</td>
<td></td>
</tr>
<tr>
<td>Crop Rotation</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
</tr>
<tr>
<td>Cover Crop</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
</tr>
<tr>
<td>Green Manure</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
</tr>
<tr>
<td>IPM</td>
<td>✓</td>
<td>✓</td>
<td></td>
</tr>
<tr>
<td>Fertilizers</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
</tr>
<tr>
<td>Pesticides</td>
<td>✓</td>
<td>✓</td>
<td>✓ OMRI</td>
</tr>
</tbody>
</table>
Time & Fuel Consumption

**Conventional/Biotech**
- No-till plant w/ injectable fertilizer
- Spray for weeds
- Monitor fertility/pests
- Scout fields
- Harvest

**Organic**
- Plow
- Disc
- Spread manure
- Plant
- Rotary hoe
- Rotary hoe
- Rotary hoe
- Cultivate
- Cultivate
- Cultivate
- Monitor fertility/pests
- Scout fields
- Harvest
Current Organic Acres: 5.4 million
Total US Farm Acres: 915 million
Adoption of genetically engineered crops in the U.S.

Percent of planted acres

Data for each crop category include varieties with both HT and Bt (stacked) traits. Source: USDA, Economic Research Service.
The Role of Biotech

- Insect Protection
- Herbicide Resistance
- Virus Resistance
- Nutritional Enhancement
**Bt: Bacillus Thuringiensis**

Stalk tunneling by European Corn Borer

Root damage by rootworm
Why Biotech?

Sprayed 32 times.

Sprayed once.
“Round-Up Ready” Soybeans
Pesticide Use Data

World and U.S. Pesticide Amounts of Active Ingredient By Pesticide Type

- Herbicides
- Insecticides
- Fungicides
- Other
- Total

![Bar Chart]

Amount of Pesticides Used in the United States By Pesticide Group

- Conventional Pesticides (17%)
- Other Pesticides (5%)
- Chlorine/Hypochlorites (51%)
- Wood Preservatives (19%)
- Specialty Biocides (8%)

Source: EPA, 2007; Brookes & Barfoot, 2012

Top Pesticides by Active Ingredient
- Herbicide – Glyphosate
- Fungicide – Sulfur
- Insecticide – Carbaryl/Sevin
What is a pesticide?

“A pesticide is a chemical used to prevent, destroy, or repel pests.” – EPA

Surprising Examples of Pesticides

Baking Soda

Warfarin

Fluoride

Hand Sanitizer

Canola Oil

“The dose makes the poison” – Paracelsus
Synthetic vs Organic Pesticides

Organic Pesticide – active ingredient derived from natural materials.
Synthetic Pesticide – manufactured active ingredient

OMRI Lists

- The OMRI Products List© is the most complete directory of products for organic production or processing. Includes over 2,500 products.
- “Natural compounds are not inherently less toxic to humans than synthetic ones. Some of the most deadly, fast-acting toxins and some potent carcinogens occur naturally. “Natural” does not necessarily mean safe or nontoxic, and it certainly does not mean nonchemical.” Handbook of IPM, Weinzierl and Henn, 1994.
Oral LD50s

**Synthetic**
- Sevin 850 mg/kg
- DDT (banned) 87 mg/kg
- Glyphosate 5600 mg/kg
- Pounce 2200 mg/kg  
  (synthetic pyrethroid)

**Organic**
- Rotenone 60 mg/kg
- Nicotine 55 mg/kg
- BurnOut 3000 mg/kg
- Pyrethrum 1350 mg/kg

FYI: LD 50 of Table Salt = 3000 mg/kg

*(Smaller values indicate a more toxic product!)*
“No-Till” (L) does not work up the ground before planting.
<table>
<thead>
<tr>
<th></th>
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<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Biotech Acreage</td>
<td>195</td>
<td>322</td>
<td>416</td>
<td>270</td>
<td>522</td>
<td>527</td>
</tr>
<tr>
<td>Yield bu/a</td>
<td>54.2</td>
<td>50.3</td>
<td>53.5</td>
<td>46</td>
<td>37</td>
<td>43</td>
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<tr>
<td>Conventional Acreage</td>
<td>156</td>
<td>184</td>
<td>213</td>
<td>306</td>
<td>750</td>
<td>675</td>
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<tr>
<td>Yield bu/a</td>
<td>48.2</td>
<td>43.2</td>
<td>46.3</td>
<td>36</td>
<td>34</td>
<td>36</td>
</tr>
<tr>
<td><strong>Yield Difference</strong></td>
<td>6 bu</td>
<td>7.1 bu</td>
<td>7.2 bu</td>
<td>10 bu</td>
<td>3 bu</td>
<td>7 bu</td>
</tr>
<tr>
<td><strong>Income Difference/Acre</strong></td>
<td>$41.40</td>
<td>$47.00</td>
<td>$52.20</td>
<td>$113.00</td>
<td>$37.56</td>
<td>$101.85</td>
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</table>
### Schmidt Farms Inc.

<table>
<thead>
<tr>
<th>Corn – Year (dryland)</th>
<th>2000</th>
<th>2004</th>
<th>2010 (slight drought)</th>
<th>2011 (drought &amp; Hurricane)</th>
<th>2012 (drought)</th>
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<tbody>
<tr>
<td>Biotech Acreage</td>
<td>10</td>
<td>276</td>
<td>573</td>
<td>397</td>
<td>464</td>
</tr>
<tr>
<td>Yield bu/a</td>
<td>171</td>
<td>182</td>
<td>110</td>
<td>44</td>
<td>111</td>
</tr>
<tr>
<td>Conventional Acres</td>
<td>647</td>
<td>415</td>
<td>195</td>
<td>213</td>
<td>261</td>
</tr>
<tr>
<td>Yield bu/a</td>
<td>165</td>
<td>167</td>
<td>91</td>
<td>18</td>
<td>57</td>
</tr>
<tr>
<td>Bt Yield Advantage</td>
<td>6.4</td>
<td>15</td>
<td>19</td>
<td>26</td>
<td>54</td>
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<tr>
<td>Price/Bu</td>
<td>$2.35</td>
<td>$2.55</td>
<td>$5.18</td>
<td>$6.47</td>
<td>$7.40</td>
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<tr>
<td>Net/Acre</td>
<td>$15.04</td>
<td>$38.25</td>
<td>$98.42</td>
<td>$168.22</td>
<td>$399.60</td>
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<tr>
<td>Certified Organic</td>
<td>40 bu/ac</td>
<td>Mowed</td>
<td></td>
<td>decert</td>
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</tbody>
</table>
The Meaning of “Commingled” Grain in the Food System
Our On-Farm Grain Storage
A few of the Off-Farm Grain Delivery Options for all farmers in the region
Thank You!

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