Food Economics and Consumer Choice

Why agriculture needs technology to help meet a growing demand for safe, nutritious and affordable food
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An overview of the challenge ahead

Key Data

In **50** years, the world population will require **100%** more food, and **70%** of this food must come from efficiency-improving technology.


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**Working together, we can achieve an “ultimate win”**

- Consequences of failing to use science-based technologies/innovations will be disastrous
- We all share responsibility to ensure new & proven agricultural technologies are available
- Driven by food production efficiency, agriculture can achieve the “ultimate win” for consumers:
  - Affordability
  - Abundant supply
  - Food safety
  - Sustainability
  - Ample grain for biofuels
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Will population growth outpace the global food supply?

• **First World (W1)**
  Total estimated population, 2008: <1 billion

• **Second World (W2)**
  Total estimated population, 2008: 3-4 billion

• **Third World (W3)**
  Total estimated population, 2008: 1-2 billion

Agricultural technology: past, present & future

• In the 20th century, ag productivity in industrialized nations expanded at a phenomenal rate

• USDA cites ag technologies (advances in genetics, nutrition, disease/pest control & livestock management) as important factors for this increased productivity1,2

• Refining these technologies & discovering new ones will be critical to expanding productivity improvements in this century

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20th-Century technology improved ag productivity

Figure 1
(USDA Economic Research Service Data)

Changes in technology helped to more than double output of livestock products and crops during the second half of the last century.

Increases in output resulted in a 145 percent increase in TFP for U.S. agriculture.

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The consumer perspective

• Only 7% worry about agricultural production methods¹
• Only 1% cite biotechnology as a top-of-mind concern¹
• Most assume the meat/poultry they buy is safe²
• Only 17% in 2008 were interested in knowing about food animal production (~60% had little/no interest)²
• Primary food concern in 2008: affordability³

² Studies sponsored by the animal health industry in partnership with Elanco Animal health. 2001 study conducted by Ipsos Reid; 2004 study conducted by Forward Research; 2008 study conducted by Ipsos Forward Research.
Sixty-four percent of Americans believe today’s food supply is even safer than it was when they were young, though 60 percent express a high level of concern about food prices.¹

The consumer perspective (continued)

- Consumers trust farmers most to ensure food safety\(^1\)

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\(^1\) “Research Study: Consumer Trust in the Food System.” October 2008. The Center for Food Integrity.
The consumer perspective (continued)

- Consumers also want choice
- Those who prefer organic foods deserve that choice
- 75% of the world’s population can’t afford organic foods
- All consumer preferences can & should be protected
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Why is technology so important for meeting the global demand for food and consumer choice?
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Technology helps food producers provide more high-quality grains & protein sources using fewer natural resources.

Figure 5

<table>
<thead>
<tr>
<th>Total U.S. Milk Production</th>
<th>Total # of Cows Required</th>
</tr>
</thead>
<tbody>
<tr>
<td>1944</td>
<td>53,000</td>
</tr>
<tr>
<td>2007</td>
<td>84,000</td>
</tr>
</tbody>
</table>

Historical, “all natural” farming techniques were actually highly inefficient. Using proven agricultural technologies and modern management methods, we can now produce 58 percent more milk from 64 percent fewer cows.¹

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Technology can optimize affordability & consumer choice — especially in developing nations

- USDA reports price premiums for organic foods:\(^1,^2\)
  - 100%+ for vegetables
  - 200% for chicken
  - ~300% for eggs

- Organic agriculture may be “a realistic alternative” in 30 years, but only on a local level\(^3\)

- Efforts to maximize choice & production efficiencies (& lower costs) for all foods—including organics—deserve support throughout the global food chain

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Technology helps minimize global environmental impact of increased food production.

**Figure 6**

Total Greenhouse Gas Emissions per Lb. of Beef (excludes NOx)

Today’s conventional production methods help reduce total greenhouse gas emissions compared to organic methods.¹

Conclusions

1. The global food industry needs technology

2. Consumers deserve the widest possible variety of safe & affordable food choices

3. The food production system can mitigate the food economics challenge & achieve an “ultimate win”:
   - Improving the affordability of food
   - Increasing the food supply
   - Ensuring food safety
   - Increasing sustainability
   - Producing more biofuels w/no negative effect on food supply
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Pathways to success:

• Collaboration
• Choice
• Technology