American Agriculture:
It’s About People Making it Work!!
Population: 323 million
1/3 in Eastern Time Zone

Greatest East-West Distance (excluding Alaska and Hawaii):
2,807 miles
4,517 kilometers
How do American Households Spend their Money --

Share of U.S. household consumer expenditures by major categories, 2017

- Housing: 33.1%
- Transportation: 15.9%
- Food: 12.9%
- Personal insurance, pensions, 11.3%
- Health care: 8.2%
- Apparel: 3.1%
- Entertainment, alcoholic beverages: 6.2%
- Other: 3.6%
- Savings: 3.1%
- Education: 2.7%

U.S. Grocery Stores – 42,000 stores, $822 billion sales/year

Consumer Interests
- Cost
- Convenience
- Taste, but moving to Health & Wellness
- 1.5 visits/week
- $100 - $120/week

Emerging Value Concerns
- Locally produced
- Environmentally Sensitive
- Animals Humanely Treated
- Organic
- Is it GMO?
2017 Organic Food Market: $ 45 BILLION

2017 Total Food Market: $822 BILLION

• ORGANIC: 6.4% growth year over year - down from the 9% growth in 2016

• Organic food now accounts for 5.5% of retail food sold in the U.S.

U.S. Organic Food vs. Total Food Sales, Growth and Penetration, 2011-2017

<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Organic Food</td>
<td>$25.1</td>
<td>$27.9</td>
<td>$31.4</td>
<td>$35.1</td>
<td>$39.1</td>
<td>$42.5</td>
<td>$45.2</td>
</tr>
<tr>
<td>Growth (%)</td>
<td>9.5%</td>
<td>11.25%</td>
<td>12.2%</td>
<td>11.9%</td>
<td>11.1%</td>
<td>9.0%</td>
<td>6.4%</td>
</tr>
<tr>
<td>Total Food</td>
<td>$711,985</td>
<td>$740,450</td>
<td>$760,486</td>
<td>$787,575</td>
<td>$807,998</td>
<td>$812,907</td>
<td>$822,160</td>
</tr>
<tr>
<td>Growth (%)</td>
<td>5.4%</td>
<td>3.7%</td>
<td>2.7%</td>
<td>3.6%</td>
<td>2.6%</td>
<td>0.6%</td>
<td>1.1%</td>
</tr>
<tr>
<td>Organic % of total</td>
<td>3.5%</td>
<td>3.8%</td>
<td>4.1%</td>
<td>4.5%</td>
<td>4.8%</td>
<td>5.2%</td>
<td>5.5%</td>
</tr>
</tbody>
</table>

Source: Organic Trade Association’s 2018 Organic Industry Survey – Consumer Sales
Farms, land in farms, and average acres per farm, 1850-2017

Million farms, billion acres, or 100 acres per farm

[Graph showing trends for farms, average farm size, and land in farms from 1850 to 2017]

Farming in the U.S. is a Family Enterprise
WOMEN – KEY ROLE FOR GENERATIONS

At the University of Delaware College of Agriculture – 70% of the Undergraduate Students are WOMEN
Nearly 60% of all farm families have some significant level of “off-farm” income
Small Farms – those < $350,000 of Gross Cash Farm Income (GCFI)
• 90% of all US Farms
• 50% of all Farmland
• 23% of the Value of all Production

Large Scale Farms – those > $1 million GCFI
• 3% of all US Farms
• 18% of all Farmland
• 45% of the Value of Production

Non-Family Farms – Partnerships of nonrelated partners or Corporations
• 1% of US farms
• 10% of the Value of Production
• Top 19% of this category with a GCFI of > $1 million account of 88% of all Non-Family Value of Production

Note: Totals may not add up to 100 percent due to rounding. Family farms are those where the principal operator or individuals related to the operator own a majority of the business. Small family farms have annual gross cash farm income before expenses (GCFI) under $350,000. Midsize family farms have GCFI of $350,000 to $999,999. Large-scale family farms have GCFI of $1 million or more. Nonfamily farms are those where the majority of the business is not owned by the operator and/or relatives of the operator.
2017 crop cash receipts ($ billion)

- Corn: $46.6 billion
- Soybeans: $38.6 billion
- Wheat: $8.7 billion
- Cotton: $8.0 billion
- Hay: $6.5 billion
- Vegetables and melons: $19.7 billion
- Fruits and nuts: $31.1 billion
- All other crops: $37.0 billion

Total receipts: $196.3 billion

Data as of November 30, 2018.

2017 animals and products cash receipts ($ billion)

- Dairy: $67.4 billion
- Cattle and calves: $37.9 billion
- Hogs: $21.1 billion
- Poultry and eggs: $42.7 billion
- Other animals/products: $7.0 billion

Total receipts: $176.0 billion

Data as of November 30, 2018.
## Major Crop Acreage – U.S.

<table>
<thead>
<tr>
<th>Crop</th>
<th>Acres</th>
<th>Hectares</th>
</tr>
</thead>
<tbody>
<tr>
<td>Corn (Maize)</td>
<td>97,000,000</td>
<td>39,000,000</td>
</tr>
<tr>
<td>Soybeans</td>
<td>76,000,000</td>
<td>30,400,000</td>
</tr>
<tr>
<td>Wheat</td>
<td>49,000,000</td>
<td>19,600,000</td>
</tr>
<tr>
<td>Cotton</td>
<td>9,378,000</td>
<td>3,751,200</td>
</tr>
<tr>
<td><strong>ALL Vegetables &amp; Fruit</strong></td>
<td><strong>5,463,000</strong></td>
<td><strong>2,185,200</strong></td>
</tr>
</tbody>
</table>
AGRICULTURE IN THE U.S.

BIG - DIVERSE – FOUR REGIONS

2,000,000 FARMERS, 1% OF POPULATION
900,000 TILL 60% ACREAGE

80% Domestic – 20% Exports

SINCE 1950 – 170% INCREASE IN PRODUCTIVITY
26% LESS LAND – 22,000,000 LESS FARM WORKERS

DELAWARE
SMALL STATE, but 40% of land mass is in Ag
500,000 acres – 2,500 farmers
800 till 65% of acreage/40% irrigated

Corn, Soybeans, Poultry
Strong Vegetable Industry
Within 10 hours of 1/3 of US Population or 110 million people
Iowa – the Heartland of the Heartland – 30 million acres in farmland – 87% of Land Mass
U.S. Seafood – Landed 9.9 Billion Pounds of Fish and Shellfish
Import 5.9 Billion Pounds

Aquaculture - $1.5 billion of sales
MULTI-GENERATIONAL: TODAY’S FARM FAMILIES RELATE TO THEIR FAMILY STORIES – FAMILY HERITAGE – VALUE THE STRUGGLES OF THOSE WHO WENT BEFORE THEM.
Federal Government and Agriculture Infrastructure & Safety Net

➢ 3 Pieces of Landmark Legislation in 1862
➢ Hatch Act of 1887
➢ Legislation to “Reclaim” land in the Arid West in 1894, 1902 and 1907
➢ Smith-Lever Act of 1914

➢ Response to the Great Depression of the 1920s and 1930s
➢ Farm Bills beginning in 1933 and renewed and revised every five years since then
➢ Food & Nutrition Safety Net for lower income people
1862 – 3 Legislative Acts to Serve the Interests of the Family Farmer - Signed by President Abraham Lincoln

3 laws passed in 7 weeks that changed Agriculture Forever!

Founding - U.S. Department of Agriculture - May 15

The Homestead Act – May 20
Free Land – 160 acres/family – stay 5 years, build home, farm
-- Federal or Government Owned Land

270 Million Acres or
110 Million Hectares granted to
600,000 family farmers
1862 to 1910

The Morrill Act – Land Grant Universities – July 2
Federal Land Given to States to be sold to establish a College
USDA today

100,000 Employees
Presence in every county in every state

Congress Legislates the Farm Bill
The USDA administers the Farm Bill

Titles or Sections of the Farm Bill

1. Farm Production & Conservation
2. Trade & Foreign Agriculture Affairs
3. Food and Nutrition Services – (69% of Budget)
4. Marketing and Regulatory Programs
5. Food Safety and Inspection
6. Research, Education and Economics
7. Rural Development
8. National Resources and Environment (Forestry)
9. Management of USDA

Katrina Sasse, 2017 Nuffield Scholar, Australia
Sonny Perdue, U.S. Secretary of Agriculture
The First Homestead Family - 1868

Homestead States in Lighter Color

Again – 600,000 families on 270 million acres (110 million hectares) 1862 - 1910
Land Grant Universities

At Least one in Each State

105 Institutions across the US
Land Grant Universities: A Resource for Nuffield Scholars

➢ **Teaching** > “without excluding other scientific and classical studies, . . . To teach such branches of learning as are related to agriculture and engineering

➢ **Research** > Hatch Act of 1887 – federal funding for agricultural research

➢ **Extension** > Extend the University our to the People, Smith-Lever Act of 1914

➢ The **Three Legged Stool** was complete – Unique and rarely duplicated
Western States - Irrigation

Series of Legislative Acts in 1894, 1902 and 1907 dedicated to “Reclaiming” Land in the Western Arid States by Developing Irrigation

Those States typically receive 20 inches (500 mm) or less annually

A family owned cattle ranch that raises cows and calves on the Oregon and Idaho border. The ranch is comprised of private and federal lands which the Brackett family manages with their own resources and time. By ranching on public lands, this family is helping preserve water and plants, controlling fires, and protecting wildlife habitat. Animals graze on non-irrigated land, maybe 35 to 50 acres/animal. Irrigate and Harvest Hay from Irrigated land.
Great Economic Depression:
Need for an Economic Safety Net –
Preserve Agriculture and Farmers
Feed the Nation

Dust Bowl in the Midwest – 1930s
Henry A. Wallace

- Secretary of Agriculture, 1933-1940
- Coped with Great Depression Crisis for Agriculture
- Today’s Farm Legislation can be traced back to his Programs and Precedents
- Founded Pioneer Hybrid Seed Company
- HyLine Poultry - genetics
- His International work led to Norman Borlaug’s work in Mexico and ultimately Borlaug’s Nobel Peace Prize in 1970
- Vice-President of the United States, 1940-44

A Native of Iowa
The U.S. Farm Bill

Since 1933 – 18 “Farm Bills”

- **Safety Net** for economic viability of Farmers: **Income Support for farmers** . . . . Also, Trade is emerging as a key part of the safety net

- **Safety Net** to provide food for lower income people and school lunch nutrition programs. Food Stamps or SNAP (Supplemental Nutrition Assistance Program (Since 1960s)
  
  *This created the urban:rural coalition*

- **Conservation**

- **Research & Education** – USDA and Land Grant Universities

Major Farm Safety Net (**Income Support**) Management Goals:

- Influence Supply (primarily 1933-1950, still exists but evolving to risk management)
  
  Increase Demand (1950-now)

- **Risk Management --- Crop Insurance**
  
  *1990s to today*
Farm Bill – Safety Net

Components or “Titles”

- Nutrition – 40 Million People (9.2%)
- Crop Insurance
- Conservation
- Commodity Support
- Other
  - Research
  - Renewable Energy
  - Miscellaneous

*Figure OV-3. 2018 Outlays (All Other includes Rural Development, Research, Food Safety, Marketing and Regulatory, and Departmental Management.)*
U.S Crop Insurance Summary -2015

<table>
<thead>
<tr>
<th>Description</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Policies</td>
<td>1,203,549</td>
</tr>
<tr>
<td>Acres</td>
<td>298,204,110</td>
</tr>
<tr>
<td>Liability</td>
<td>$ 102,096,955,365</td>
</tr>
<tr>
<td>Total Premium</td>
<td>$ 9,714,408,068</td>
</tr>
<tr>
<td>Subsidy from Gov.</td>
<td>$ 6,054,375,282 62%*</td>
</tr>
</tbody>
</table>

*Overall average subsidy as percentage of total premium across 2015 U.S. crops, coverage levels, and policies.
*Subsidy paid to insurance companies to reduce subsidy cost to farmers
Summary of Government & US Agriculture

- Legislation in 1862, 1887, 1894, 1902 and 1907 and 1914 set up the infrastructure for:
  - USDA
  - Free Land
  - Irrigation of the West
- Education, Teaching and Research
- 1933 – beginning of the Farm Bills

----------------------------------

- State Departments of Agriculture
  - Local Regulations
  - Cooperate/Contract with USDA for certain Regulatory & Inspection Services
  - Advocate for Agriculture in the State

RESULTS:

✓ SCIENCE AND TECHNOLOGY
✓ EDUCATION

✓ PUBLIC/PRIVATE SECTOR INVESTMENTS

157 YEARS - 1862-2019:

✓ ABILITY TO FEED THE WORLD

✓ FARMERS STRIVE FOR PROFITABILITY

✓ MEET THE CHALLENGE OF FEEDING THE WORLD IN 2015
Since the 1990s, productivity growth has driven the growth in global agricultural output in total crop and livestock commodities.

In 2000-2014 period, the global output expanded by an average rate of 2.5% per year.

Global Output Growth slowed in the 1970s & 1980s, but accelerated during the 1990s and 2000s.

Over the last two decades, the rate of growth from agricultural inputs (land, labor, capital, material inputs) has slowed, but improvements in Total Factor Productivity Growth have increased, accounting for 2/3s of Global Output growth since 2000.

TOTAL FACTOR PRODUCTIVITY

Note: Total Factor Productivity (TFP) measures the productivity with which inputs are used to produce output. TFP growth is measured as the difference between the growth of aggregate output (crops and animal products) and the growth of aggregate input use (land, labor, capital, and materials).
Take Home Message from this Slide

• TFP growth reflects the use of new technology, efficiency improvement, and changes in management by agricultural producers around the world.

• Farmers and the Food Industry have invested, implemented and refined new science and technology

• This chart appears in the ERS topic page for International Agricultural Productivity, updated October 2017.

• *For Nuffield Scholars – what will be the trend from 2020 to 2040??*
Demographic and consumption changes
Asia will drive the world’s population growth through to 2050

Global population will grow from 6.9 billion in 2010 to 9.3 billion in 2050

42% or 1 billion of that growth will come from Asia

- Supply chains will significantly alter
- There will be unprecedented pressures on infrastructures both hard and soft within these regions
- High potential for social and economic cost

Sources: United Nations Population Fund Database; Food and Agriculture Organization of the United Nations (FAO)
CHALLENGES – ECONOMIC CULTURAL SOCIAL GENERATIONAL ENVIRONMENTAL

China Trade Tensions Hit Stock
Pressure Grows on U.S., China to Forge Trade Deal

A blight in the fields
As farms hurt for labor, households could feel the pain

You Call That Meat? Cattle Ranchers
and Lawmakers Beg to Differ
Farm Country Grows Anxious Over Aid

Growers' New Clout Tilts Farm Economy

China Buys U.S. Soybeans Day After Trade Talks
Characteristics of U.S. Farmers
(And – Perhaps Farmers Everywhere!)

Keen Observers
Resilient
Family Oriented
Independent

Innovative
Strive to Prevail
Multi-Generational
Secret of Survival - Realistic

Proud of What they do and who they are
THEY LOVE IT!!!!
On Line Resources

- USDA Economic Research Service
- College of Agriculture Websites across the country
- U.S. Agriculture Census – Google Ag Census, look for Mann Library Cornell University – Census data back to 1790
THANK YOU!