# USA: A Powerful Legacy, With Room to Grow

U.S. agriculture and food sectors are key drivers of economic growth, **producing \$2 trillion in annual revenue and \$130 billion in profit for more than 2.6 million businesses.** The agriculture and food sectors employ 19 million people in full and part-time jobs, 9 percent of total U.S. employment in 2013. On-farm employment provided more than 2.6 million of these jobs. Food services and restaurants and bars accounted for the largest share, 11.1 million jobs.<sup>1</sup>

**U.S. consumers benefit from this success** with year-round access to safe, nutritious and affordable foods. The average U.S. consumer spends just six percent of their household income on food eaten at home, the lowest percentage among 86 major countries.<sup>2</sup>

U.S. agriculture is also a reliable source of affordable safe food and agriculture products for the world. The U.S. exported \$141 billion in agricultural products in fiscal year 2017, the third highest level recorded, and had an agricultural trade surplus of \$22 billion, a 30 percent increase from 2016.<sup>3</sup>



There are nearly 40,000 grocery stores in the U.S. The typical grocery store has 40,000 to 50,000 items.<sup>4</sup> Households with children spend an average of \$170 per week at the grocery store. Women are the primary food purchasers in most households and have significant influence over the food system.

### **The Seeds of Success**

Most of the success of U.S. farmers and ranchers can be attributed **Total Factor Productivity (TFP)** growth generated by the widespread adoption and efficient use of seed technologies, precision mechanization and best practices for soil health, nutrient management and animal health.

For the past 65 years, U.S. agriculture has been a global leader in TFP and output growth. **From 1949 to 2015, TFP grew by an average annual rate of 1.38 percent**.<sup>5</sup> Agricultural output has tripled, even as farmers and ranchers have reduced their labor use by 75 percent and land use by 24 percent.<sup>6</sup>

Wider use of irrigation has allowed the farm sector to increase total output using less land.<sup>7</sup> Irrigation systems help farmers in areas with challenging and variable weather conditions stay productive during dry seasons and drought.



The efficiency of irrigation systems continues to improve. Farmers are now able to adjust and vary their systems to save water and use it more precisely.

As tractors, tillers, planters and other equipment for crop production became the norm for U.S. farmers, less labor was needed for cultivation and harvesting. In 1970, a farmer could plant 40 acres of row crops and harvest 4,000 bushels per day. With the advent of precision mechanization technology, by 2005, a farmer could plant 420 acres and harvest 30,000 bushels in a single day.<sup>8</sup>

Further efficiencies have been created through farm consolidation, particularly in crop production. In 2012, 36 percent of all cropland in the U.S. was on farms of 2,000 or more acres, up from 15 percent in 1982.<sup>9</sup> In 2015, 51 percent of the value of U.S. farm production came from farms with at least \$1 million in sales.<sup>10</sup>

While the U.S. is known for its highly productive commercial agriculture sector, USDA's report on <u>America's Diverse Family Farms</u>, shows that American farms come in all shapes and sizes.



Sheena Krueger supervises workers harvesting watermelons on her family farm outside of Letts, Iowa. The farm also grows cantaloupe, pumpkins, squash, onions, peppers, cucumbers, tomatoes, and zucchini for sale at their own stand and local grocery stores. Photo credit: USDA/Preston Keres

Half of all farmland is used by small family farms, defined as farms with an annual gross cash farm income (GCFI) of less than \$350,000. On 42 percent of small farms, the principal farm operator has a major occupation other than farming and another 18 percent are run by retired large-scale farmers who are continuing to farm on a smaller scale.

While small farms are less profitable than their larger competitors, they provide the fresh, local produce that customers are increasingly purchasing at farmers markets and grocery stores.

# **A Legacy of Conservation and Success**

Much of the decrease in agricultural land use is due to enrollment into the Conservation Reserve Program (CRP), the largest federal program providing financial compensation to landowners for voluntarily removing land from production for an extended period. Created in the 1980s, the CRP allows farmers to put less productive land aside for conservation purposes, such as pollinator and wildlife habitats. This leaves the most productive land available for cultivation and raises the contribution of TFP to overall output.

Underpinning all this progress is the collaborative system of public and private agricultural research and development (R&D) that has created the technologies that make the U.S. a productivity powerhouse. Public extension services and private-sector agricultural dealers have brought innovations and best practices to farmers and ranchers from coast to coast, increasing their opportunities for success.

The possibility of creating a system to conserve U.S. agricultural land was being discussed even before the Dust Bowl devastated America's agricultural heartland. As winds blew mountains of dust from the Great Plains to Washington, D.C., government officials understood that if U.S. agriculture was to survive, soil conservation needed to be a centerpiece of agricultural policy and practice.

In 1937, the **Standard State Soil Conservation Districts Law** authorized farmers to organize local soil and water conservation districts. These districts gave farmers a voice in federal programs and are widely acknowledged as a key reason for the success of private lands conservation.



Enactment of the Soil Conservation Act of 1935, at the mid-point of the Dust Bowl era, launched the U.S. conservation system and created the Soil Conservation Service (SCS). By 1938, thanks to new farming practices such as terracing, contouring and cover crop planting, soil stopped blowing away on 65 percent of the affected land. In the fall of 1939, rains would end the drought.

Today, the U.S. conservation system reaches into virtually every rural community with technical and financial assistance that is targeted to local conditions and local needs. The **2014 Farm Bill** strengthened the linkage between conservation compliance and crop insurance. To be eligible to receive many USDA benefits, including loans, disaster assistance, federal crop insurance premium subsidies and



conservation assistance, farmers must comply with requirements for highly erodible lands and wetlands.

The USDA's Natural Resources Conservation Service (NRCS) offers voluntary programs to eligible landowners and agricultural producers and provides financial and technical assistance to help manage natural resources in a sustainable manner.

Conservation system in Iowa. Photo credit: Tim McCabe, USDA NRCS

# A Productivity Powerhouse Loses Some Steam

For all the productivity generated by U.S. agriculture in the last 65 years, the current downward trend in productivity growth is troubling.

The contribution of TFP growth to U.S. agricultural output averaged just 0.49 percent from 2006 to 2015, the lowest 10-year average recorded since the 1960s.





Farmers and ranchers have responded to the rapid increase in global demand for food, biofuel and animal feed, by opening unused or conserved land for cultivation or grazing.<sup>11</sup>

Agricultural output is increasing slowly, after a steep decline in the first decade of the century, but the U.S. agricultural economy has endured a 5-year period of slow or minimal growth. The repercussions of this economic downturn are being felt throughout the agriculture sector.

The communities who rely on the agricultural economy for their prosperity are struggling with higher than average rates of poverty and food insecurity. **Three-quarters of the counties with the highest rates of food insecurity are in rural areas**.<sup>12</sup>



Helping Hungry Homes<sup>®</sup> is Smithfield Foods' initiative focused on alleviating hunger and helping Americans become more food secure. Smithfield donates fresh and packaged meats, which help to fill the shortfall of nutritious, proteinrich food sources that many hunger relief organizations often face. Since 2008, more than 100 million servings of protein have been donated to hunger relief organizations. Photo credit: Smithfield Foods Inc.

**Net farm income has fallen by 52 percent since 2013, the steepest decline since the Great Depression**. Farm bankruptcy rates have risen annually since 2014 and the debt burden on farmers and ranchers is at a record high. The **American Farm Bureau** projects that in 2018, farmers will be carrying \$239 billion in real estate debt and \$150 billion in non-real estate debt.<sup>13</sup>

As a result, the amount of working capital that farmers have available to maintain, improve and expand their operations is at the lowest level in 10 years. Only \$56 billion in working capital is available, down from \$165 billion in 2012.<sup>14</sup>

Without working capital, farmers are seeking more loans, but borrowing money is becoming more expensive as interest rates rise. The increasing cost of servicing farm debt will squeeze profit margins that are already razor-thin.<sup>15</sup> Those most likely to feel the pinch are large commercial producers with bigger operating loans and younger farmers with fewer assets and less savings.

# An Uncertain Season for U.S. Producers

The financial pressures farmers are facing are compounded by the uncertain future of U.S. trade relationships. The ongoing negotiations over the future of the North American Free Trade Agreement (NAFTA) and the tariffs imposed by China have created disruption for a sector of the economy that thrives on advanced planning and predictable markets.

Drought, extreme weather events and rising sea levels, exacerbated by climate change, are transforming the practice and business of agriculture in fundamental ways.

Farmers need technologies and knowledge that will enable them to maximize the productive potential of their farms, thereby controlling costs and preserving their economic viability. Public investments in agricultural R&D are the foundation for the innovative technologies and practices, but U.S. public-sector investments in agricultural R&D have been stagnant for two decades, slowing the pipeline of new innovations.

The next generation of agricultural technologies, such as gene-editing and precision systems, hold significant promise for helping farmers deal with the economic and environmental uncertainties they are facing. But public acceptance of these



Crop damage from Hurricane Maria in Puerto Rico, 2017. Photo credit: USDA

technologies is still evolving. Most consumers are several generations removed from farming and are not familiar with agricultural production methods. Bridging the "trust gap" between consumers and producers will be essential to the productivity and sustainability of American agriculture.

Faced with these uncertainties, farmers are finding ways to innovate and adapt on their own farms. Young agri-preneurs, universities and agribusinesses are using all their ingenuity to create and disseminate the innovations that will enable U.S. agriculture to adapt, survive and thrive in the twentyfirst century.

# America's Disappearing Farmland and Rangeland Case Study

U.S. agricultural land is some of the most productive and expensive in the world.

More than 31 million acres of U.S. agricultural land have been irrevocably lost to urban expansion since 1982 and an additional **175 acres of farm and ranchland are lost every hour** to make way housing and other industries.<sup>16</sup>

The land that is being lost is some of the most productive agricultural land in the country. It has the right combination of micro-climates, growing seasons and water availability to allow intensive cultivation with minimal environmental impact.<sup>17</sup>

Urban and suburban expansion is also reducing the amount of agricultural land for sale and contributing to high land prices. This is compounded by the fact that land is usually kept in within families. Between 2014 and 2019, 91.5 million acres of farm and



range land will transfer ownership, but only 21 million of those acres will be available on the open market.<sup>18</sup>

While land prices have declined in the last few years, farmers are still finding it difficult to afford highquality land; for young farmers, land prices and access are their top concerns.

# A Policy Path to Greater Productivity

Smart policies and public-sector investments are critical if the U.S. is to regain its momentum toward productivity. Global Harvest Initiative has identified five policy and investment priorities that can build a stronger future for American agriculture.

#### **Invest in Public R&D and Extension**

R&D funding levels authorized in the 2014 Farm Bill account for less than one percent of all farm bill spending.<sup>19</sup> These funds support the U.S. Department of Agriculture's capacity to conduct research and development for sustainable production technologies, the economics of farming and agriculture systems and food safety and quality. They also provide the land-grant colleges and universities with human talent and research and extension support.



USDA Agricultural Research Service Lab Technician Dennis Moss tests soybean seed viability at the National Laboratory for Genetic Resources Preservation in Ft. Collins, Colorado. Photo credit: USDA/Neil Palmer

R&D investments have a long gestation period and require steady investments to bear fruit in coming decades. Experts say the USDA's annual research budget should be substantially increased from today's levels to reinvigorate the productivity growth rates of American agriculture and ensure the future sustainability of the sector.<sup>20</sup>

Additional funding for animal science research is urgently needed. Outbreaks of livestock diseases such as avian influenza and foot-and-mouth disease could devastate the industry, yet public research funding has been stagnant in real dollars for the past two decades.<sup>21</sup> The next Farm Bill provides the opportunity to address the need for increased funding for animal science research and for a vaccine bank for high-consequence animal diseases.

# **Embrace Science-Based and Information Technologies**

Precision agriculture systems and crop and livestock biotechnologies have demonstrated their value in improving productivity and sustainability for farmers of all scales. New plant and livestock breeding technologies have the potential to deliver additional value and further enhance the sustainability of agriculture.

Bringing productive technologies to farmers requires regulatory systems that work efficiently and regulators that are up-tospeed on the latest scientific advancements.



The current regulatory system for biotechnology, which has not been revised since 1986 must be streamlined and modernized.

# Enhance Private-Sector Involvement in Infrastructure and Agricultural Development

An efficient, well-maintained transportation infrastructure enables U.S. farmers to supply markets around the world, while keeping costs low for consumers.

Yet the **American Society of Civil Engineers** estimates there will be a \$5.18 trillion shortfall (in constant 2015 dollars) between now and 2040 in funding required to improve and maintain the nation's roads, railways, water and electricity infrastructures, airports, inland waterways and marine ports.<sup>22</sup> A robust increase in federal funds is needed to maintain, improve and modernize this essential public good, particularly in rural areas that are less likely to attract private-sector infrastructure investments.



Inland waterways and ports are the agricultural highways of America's Midwest. In 2015, 72 percent of U.S. agricultural export volume, valued at \$128 billion, was transported to ports via waterborne commerce.

Public-private partnerships are needed to extend broadband services to rural areas so that farmers have access to high-quality, high-speed fixed broadband and mobile cellular coverage for precision agriculture. Federal policies should incentivize the expansion of broadband infrastructure and services out to the croplands and ranchlands where farmers are deploying new, innovative equipment and data technologies.



## **Expand Regional and Global Agricultural Trade**

Trade agreements such as the **North American Free Trade Agreement (NAFTA)** benefit U.S. agricultural producers and their communities. Canadian and Mexican tariffs on U.S. farm products have been eliminated, and with the duty-free access and integration of trade standards, Mexico and Canada have become top purchasers of U.S. agricultural products.

After withdrawing from the TPP, the United States is now foregoing

benefits for agricultural exports that would have come from joining the large agreement. The replacement agreement signed by 11 countries in 2018 (the Comprehensive and Progressive Agreement for Trans-Pacific Partnership, or CPTPP) will reduce U.S. exports to the region as CPTPP countries shift

their trade to competitors of the United States. The U.S. may still enter talks to join the CPTPP at a later date, which would bring benefits to farmers and consumers alike.

The U.S. also needs new bi-lateral trade agreements that enhance market access and lower tariffs on U.S. agriculture products.

# **Cultivate Partnerships for Sustainable Agriculture and Improved Nutrition**

Congress passed the **Global Food Security Act in 2016 authorizing the Feed the Future Initiative (FTF)**, which invests in agricultural productivity, food security and nutrition in select partner countries.

FTF leverages resources from the private sector and from local and national governments to make the investments more sustainable. With the support of FTF, famers generated \$10.5 billion new agricultural sales from 2011 to 2017 and 5.2 million families no longer suffer from hunger.<sup>23</sup>

Maintaining and leveraging investments in global and domestic programs will support the achievement of the <u>Sustainable</u>



A family of FTF participants in Uganda. Photo credit: USAID/DCA

**Development Goals** to eliminate extreme poverty and hunger.



possibilities and challenges for American agriculture, download the 2015 GAP Report<sup>®</sup>.

For an in-depth look at the

GlobalHarvest

2015 GAP Report®

#### **Endnotes**

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<sup>3</sup> "US Agricultural Exports Finish Strong in FY 2017," USDA, November 15, 2017. https://www.fas.usda.gov/data/agriculturalexports-finish-strong-fy-2017

<sup>4</sup> "U.S. Grocery Shopper Trends 2017," Presentation by the Harman Group for the Food Marketing Institute, July 18, 2917. <sup>5</sup> Rate is compounded annually. Sun Ling Wang, Richard Nehring and Roberto Mosheim, "Agricultural Productivity Growth in the United States: 1948-2015: Summary of Recent Findings," USDA ERS online, March 5, 2018. https://www.ers.usda.gov/dataproducts/agricultural-productivity-in-the-us/summary-of-recent-findings/

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<sup>7</sup> O'Donoghue, Erik J., Robert A. Hoppe, David E. Banker, Robert Ebel, Keith Fuglie, Penni Korb, Michael Livingston, Cynthia Nickerson, and Carmen Sandretto, "The Changing Organization of U.S. Farming," EIB-88, USDA ERS, (December 2011), p. 49. <sup>8</sup> O'Donoghue, Erik J. et al, "The Changing Organization of U.S. Farming," 2011.

<sup>9</sup> James MacDonald, Robert Hoppe and Doris Newton, *Three Decades of Consolidation in U.S. Agriculture*, USDA ERS, March 2018.

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<sup>13</sup> "Bankruptcies Higher Across Farm Country," American Farm Bureau Market Intel Blog, May 15, 2018.

<sup>14</sup> "Farm Sector Working Capital At Lowest Levels in 10 Years," Agricultural Economic Insights, July 23, 2018.

<sup>15</sup> Alan Bjerga, "The Next Threat Stalking American Farmers Is the End of Cheap Money," Blomberg News, April 24, 2018.

<sup>16</sup> American Farmland Trust, <u>https://www.farmland.org/our-work/areas-of-focus/farmland</u>, accessed September 24, 2018.

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<sup>18</sup> USDA NAAS, 2014 Tenure, Ownership and Transition of Agricultural Land Survey.

<sup>20</sup> "Retaking the Field: The Case for a Surge in Agricultural Research," Supporters of Agricultural Research (SoAR) Foundation, 2017.

<sup>2121</sup> "The Critical Role of Animal Science Research in Food Security and Sustainability," The National Research Council of the National Academies, The National Academies Press, 2015.

<sup>22</sup> "Failure to Act: Closing the Infrastructure Investment Gap for America's Economic Future," An update by the American Society of Civil Engineers, 2016.

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<sup>&</sup>lt;sup>19</sup> "Projected Outlays, 2014 Farm Bill, 2014-2018," USDA ERS, using data from Congressional Budget Office, "Cost Estimates for the Agricultural Act of 2014."