

TRANSITIONS IN THE 

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 American Agricultural Landscape

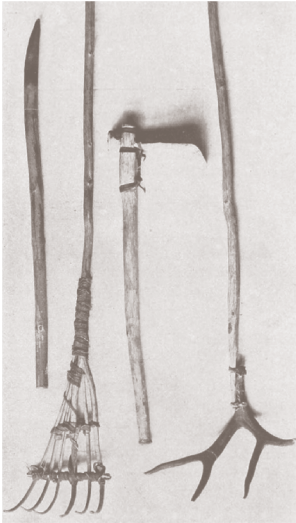
 SOY

# Early American Agriculture

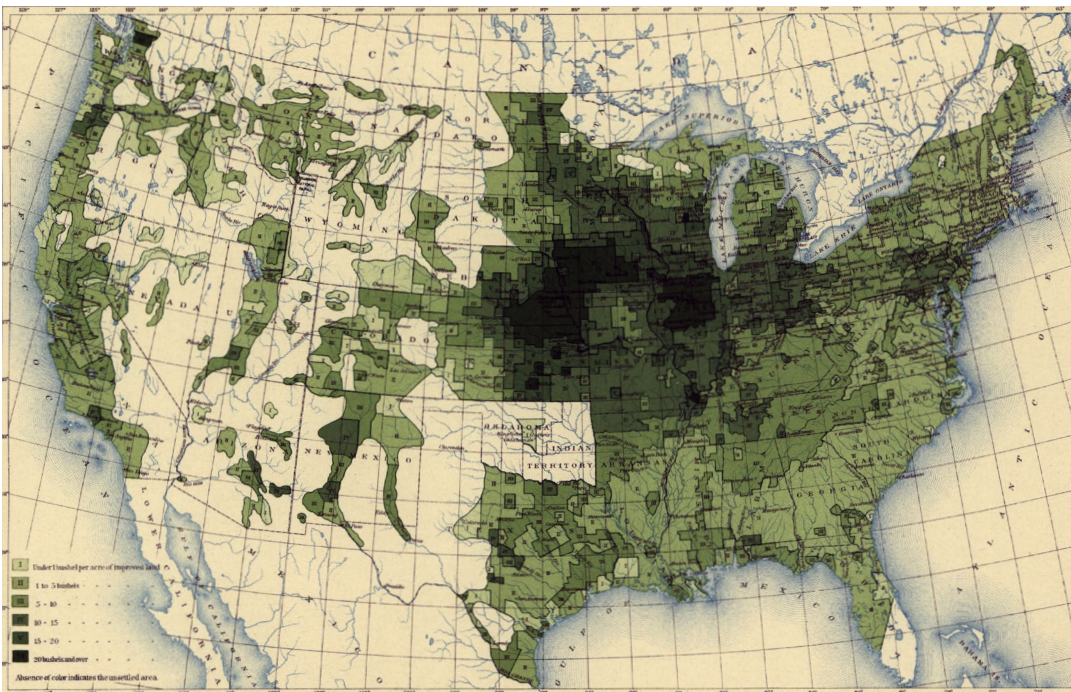
Agriculture is woven into the history of North America. For thousands of years, it has provided food security and commerce for the continent's inhabitants. Native Americans were farming North America for over 5,000 years prior to European settlement<sup>1</sup>.

They used tools shaped from bone, stone and shell; practiced irrigation, selective breeding, crop rotation and terracing; and traded with other tribes from more than 1,000 miles away. Their crops included foods like corn, squash, sunflowers, and beans; many now commonly produced in the U.S.

Once Europeans began to colonize North America, they began to produce crops for sustenance and profit with the help of the Native Americans<sup>2</sup>. By the time the colonies became independent from Britain, farmers were producing crops at a surplus large enough to trade amongst themselves and other countries<sup>3</sup>. States like Virginia became more established and started growing tobacco for export to Europe.



Digging stick, rake, hoe, the first heavy ash pole hardened by fire, and the rake made of a deer antler, or willow shoots cleverly bent at the ends to form teeth



Production of all grains per acre of improved land:1890.

Source: United States Census Office. 11Th Census, 1. & Gannett, H. (1898) Statistical atlas of the United States, based upon the results of the eleventh census. Washington, Govt. print. off. [Map] Retrieved from the Library of Congress, <https://www.loc.gov/item/07019233/>.

<sup>1</sup> Nabhan, G.P., 1989. "Enduring Seeds: Native American Agriculture and Wild Plant Conservation", The University of Arizona Press.  
<sup>2</sup> Mercer, S.A. and Holbrook, S.A. 2020. "Native American and Colonial Agriculture" Chapter One in "Agricultural Policy of the United States" Palgrave MacMillan.  
<sup>3</sup> Walton, G.M. "The Economic Rise of Early America, Cambridge Press, 1979.



## Transition to Production Agriculture

After independence, the United States began to improve its farming techniques and began transitioning away from subsistence farming<sup>4</sup>. By the 1840s, machinery such as McCormick's reaper and the cotton gin helped farms transition to commercial enterprises<sup>5</sup>. By the 1890s, the settlement era had ended, and the crop footprint in the United States seemed to have stabilized<sup>6</sup>.

Since the 1930s, U.S. agriculture has seen several improvements that have boosted productivity and reduced labor-intensive tasks<sup>6</sup>. Up until this point, there was little improvement in corn yields, but the practice of hybridization (cross breeding of two lines of a crop variety) increased corn harvest by an average of 0.8 bushels per year until the 1950s. Since then, the next big advance was the introduction of fertilizer and other chemicals, which increased yields at a rate of 1.9 bushels per year for corn and soybeans<sup>7</sup>.

By constantly improving genetic stock and applying better agronomic practices, such as the adoption of a corn-soybean rotation (planting soybeans that fix nitrogen in the soil, available to the subsequent corn crop, and reducing insect pressure), continue this yield trend today<sup>7</sup>. Likewise, soybeans, which have taken up a larger percentage of the agricultural acreage, have seen improving yields commensurate with corn; yields for both crops have increased by more than two and a half times since 1950. These innovations have led to an increase in the number of acres planted similar with that of corn and soybeans while reducing wheat acres<sup>7</sup>.



## Corn, Soybean and Wheat Acres (1926 – 2021)

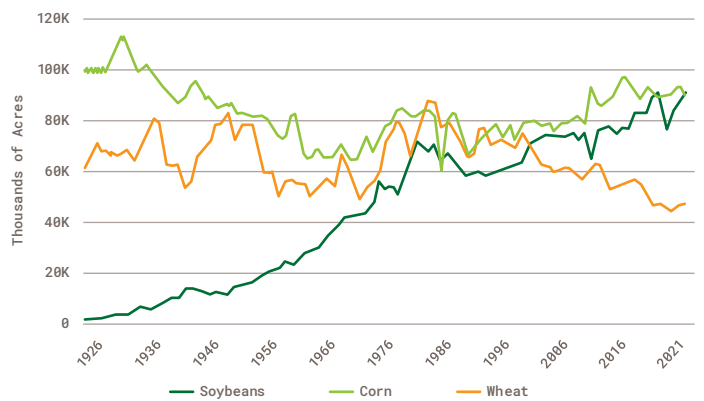


Figure 1. Acres in soybeans, corn and wheat in the U.S. 1926-2021 (USDA NASS)

## Corn and Soybean Yields (1926 – 2026)

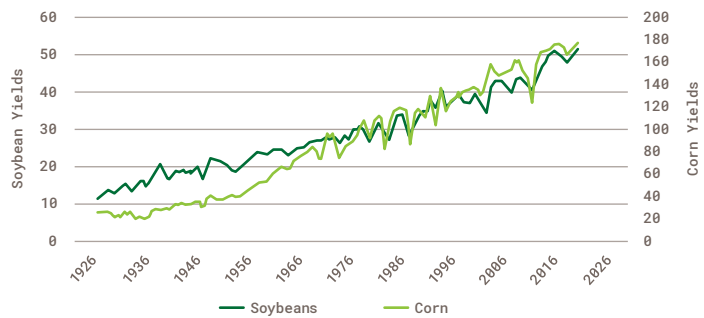


Figure 2. Soybean and Corn Yields Since 1926 (USDA NASS)



<sup>4</sup>Cochrane, W.W., "The Development of American Agriculture: A Historical Analysis", University of Minnesota Press, 1993.

<sup>5</sup>Gates, P.W., "The Farmer's Age: Agriculture 1815-1860", Holt, Rinehart and Winston, 1960.

<sup>6</sup>Alston, J.M. and Pardey, P.G., "Innovation, Growth and Structural Change in American Agriculture" Chapter in The Role of Innovation and Entrepreneurship in Economic Growth, University of Chicago Press, 2022.

<sup>7</sup>USDA-NASS. 2022. Quick Stats. United States Dept. of Agr - Nat'l Ag. Statistics Service, Washington, D.C. URL: <https://quickstats.nass.usda.gov> [accessed June 2022]

# Current State of American Agriculture



Since 1900 rural population and number of farms have declined in the United States, while farm size and urban population have gone up as fewer workers were required to grow more crops.

With yield improvements and mechanization, fewer people were needed to plant and harvest more crops<sup>8</sup>. The United States transitioned from a rural to an urban country. Farm size increased, and fewer types of crops were grown. A surplus of crops with increasing global demand led to increased exports of agricultural products.

Not surprisingly, acres in principal crops (soybeans, corn, wheat, and cotton) in the United States were highest in the 1930s before innovations led to the tremendous yield increases<sup>9</sup>. Since then, acreage slowly declined until a bump in the 1980s before declining again. Land in principal crops today is still well below the peaks of the 1930s and 1980s.

The fluctuations in cropland indicate land is continuously going in and out of production based on demand and revenue opportunities, and that the actual area devoted to crops is larger than can be calculated in a year or even in several years.

Recent studies have shown that lands that were once in crop in the past return to crop when demand or revenue warrants the transition back<sup>10</sup>.

## Farms and Land in Farms (1900–2017)

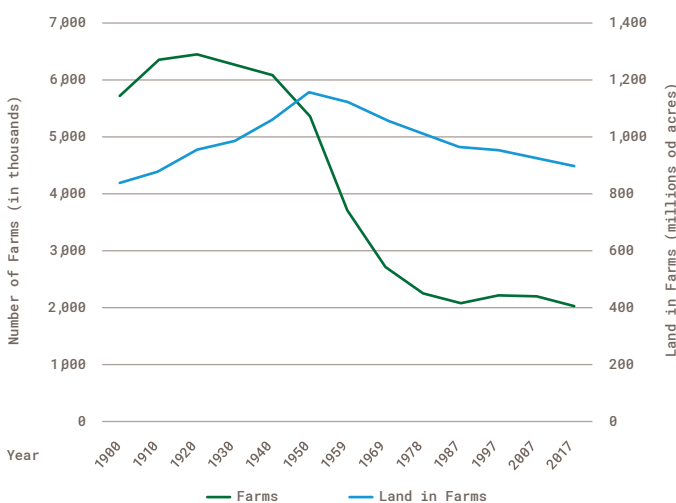


Figure 3. Fewer farms with more acreage in farms in the U.S. over time (USDA ERS)

## United States Urban and Rural Populations (1900–2020)

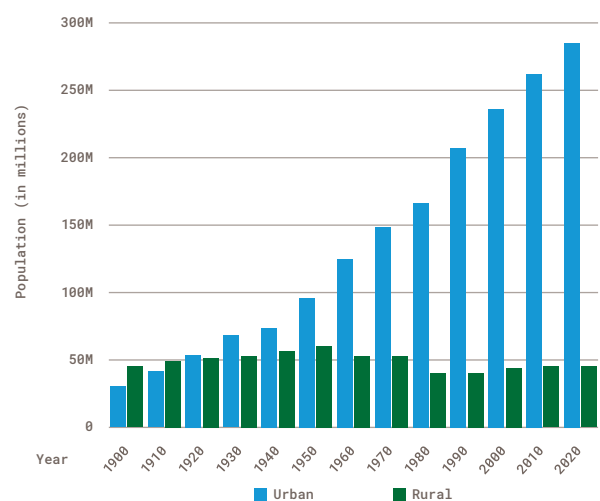


Figure 4. Changes in % of rural and farming populations (USDA ERS)

<sup>8</sup>Dimitri, C., Efland, A., and Conklin, N., 2005. "The 20th Century Transformation of U.S. Agriculture and Farm Policy", United States Department of Agriculture, Economic Information Bulletin Number 3.

<sup>9</sup>Crop Production Historical Track Records, 2019, United States Department of Agriculture, National Agricultural Statistics Service, ISSN: 2157-8990.

<sup>10</sup>Copenhaver, K.L., 2022. Combining Tabular and Satellite-Based Datasets to Better Understand Cropland Change, Land, 11: 714.

## United States Exports in Millions of Dollars (1970 Dollars)

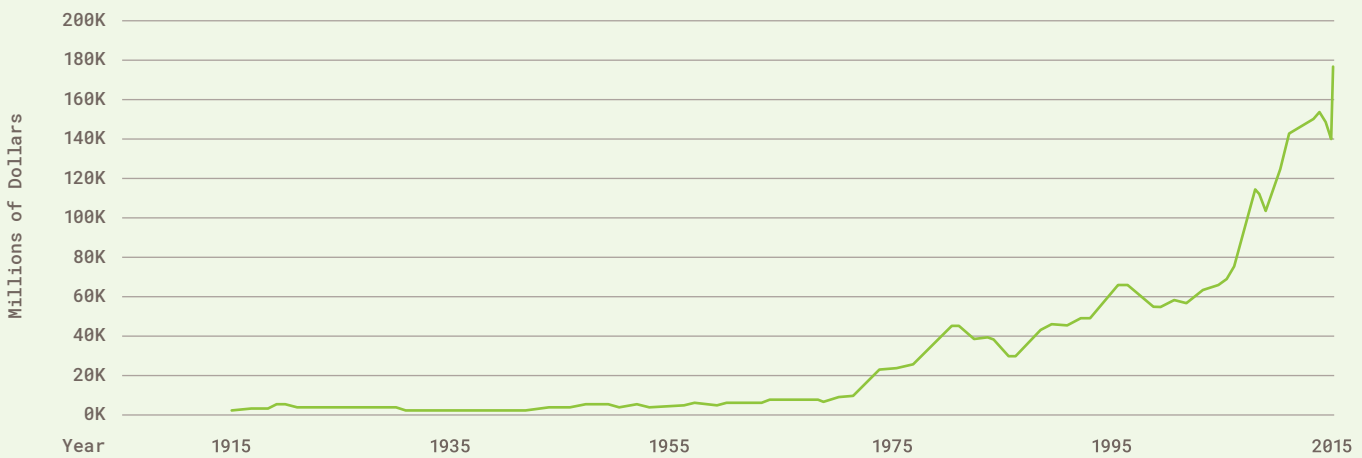


Figure 5. USDA ERS

The data shows that farmers will return previous fields to production rather than convert natural lands to farmland.

Rotations and other decisions also impact land usage. The movement of land in and out of agriculture, at a snapshot in time, may look like land is being converted to agriculture, but it is actually part of a trend that shows that fewer acres can be used to produce more crops in the long term.

This can be seen in overall land use since 1982. Land use has been fairly stable for rangeland and pastureland, increases for natural forest and large increases in developed land, along with declines in cropland<sup>11</sup>.

## Planted Acres in Principal Crops in the U.S. (1929–2019)

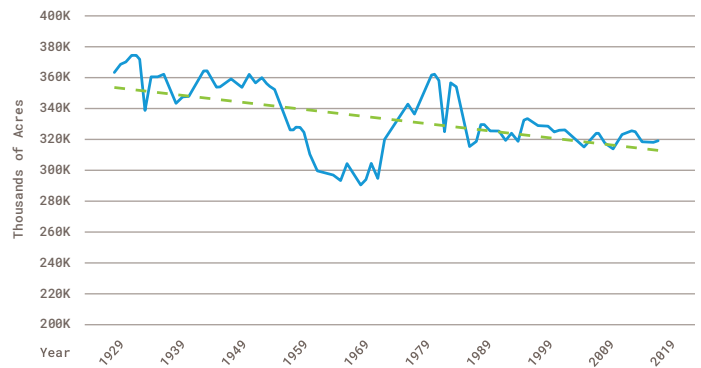


Figure 6. Principal Crop Acreage in the United States from 1929 to 2016 (USDA NASS)

## Total Cropland in the U.S. (1850–2017)

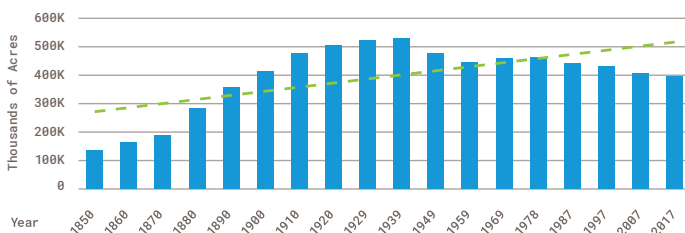


Figure 7. Total Cropland in the United States since 1850 according to the USDA Census



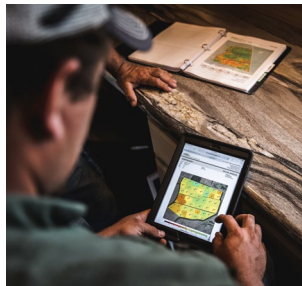
<sup>11</sup> U.S. Department of Agriculture. 2020. Summary Report: 2017 National Resources Inventory, Natural Resources Conservation Service, Washington, DC, and Center for Survey Statistics and Methodology, Iowa State University, Ames, Iowa. [https://www.nrcs.usda.gov/sites/default/files/2022-10/2017NRI\\_Summary\\_Final.pdf](https://www.nrcs.usda.gov/sites/default/files/2022-10/2017NRI_Summary_Final.pdf)

# The Future of American Agriculture



With continuing improvements in crop genetics, machinery and inputs there is no reason to believe that yield improvements should not continue. The U.S. Department of Agriculture (USDA) forecasts improving yields through 2030<sup>12</sup>.

Agricultural producers spend a lot of time actively managing their land and understand it better than perhaps anyone. Their livelihood depends on the weather, and they are concerned about climate change and want to help. Studies have found that most U.S. growers realize the climate is changing<sup>13</sup>. As agriculture moves forward, practices such as conservation tillage and planting cover crops will capture carbon without reducing productivity. U.S. agriculture can help mitigate climate change, produce food for the world and stay within the existing crop footprint while leaving natural areas pristine.



## USDA Yield Forecast (2019–2030)

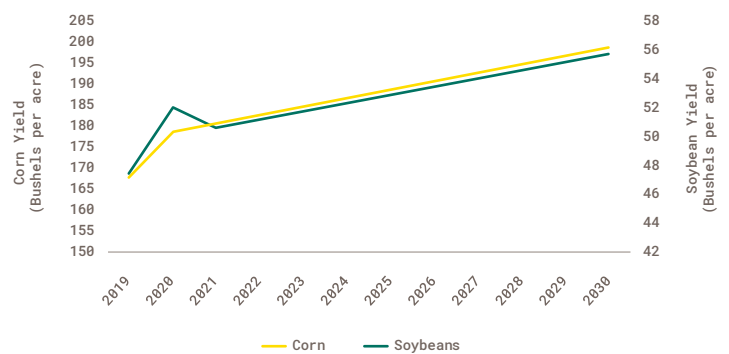


Figure 8. Project Yields for Soybeans and Corn to 2023 (USDA ERS)

## Major Land Uses in the U.S. (1982-2017)

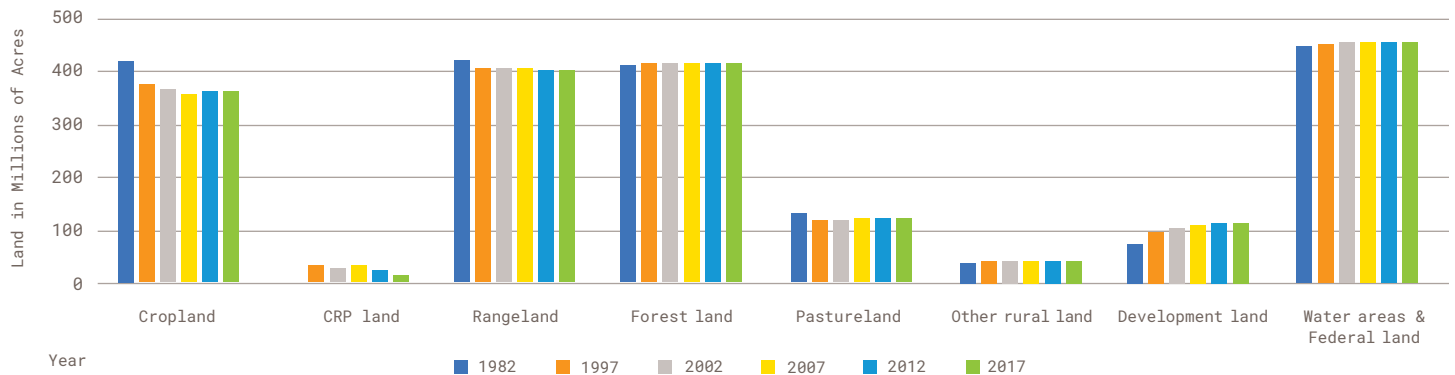


Figure 9. United States Land use in 1982 compared to 2017 (USDA NRCS)

<sup>12</sup> USDA Agricultural Projections to 2030, 2021. Interagency Agricultural Projections Committee, online.

<sup>13</sup> Arbuckle, J. G., Prokopy, L. S., Haigh, T., Hobbs, J., Knoot, T., Knutson, C., and Widhalm, M. (2013). Climate change beliefs, concerns, and attitudes toward adaptation and mitigation among farmers in the Midwestern United States. *Climatic change*, 117(4), 943-950.





## References

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5. Gates, P.W., "The Farmer's Age: Agriculture 1815-1860", Holt, Rinehart and Winston, 1960.
6. Alston, J.M. and Pardey, P.G., "Innovation, Growth and Structural Change in American Agriculture" Chapter in The Role of Innovation and Entrepreneurship in Economic Growth, University of Chicago Press, 2022.
7. USDA-NASS. 2022. Quick Stats. United States Dept. of Agr - Nat'l Ag. Statistics Service, Washington, D.C. URL: <https://quickstats.nass.usda.gov> [accessed June 2022]
8. Dimitri, C., Efland, A., and Conklin, N., 2005. "The 20th Century Transformation of U.S. Agriculture and Farm Policy", United States Department of Agriculture, Economic Information Bulletin Number 3.
9. Crop Production Historical Track Records, 2019, United States Department of Agriculture, NationalAgricultural Statistics Service, ISSN: 2157-8990.
10. Copenhaver, K.L., 2022. Combining Tabular and Satellite-Based Datasets to Better Understand Cropland Change, Land, 11: 714.
11. U.S. Department of Agriculture. 2020. Summary Report: 2017 National Resources Inventory, Natural Resources Conservation Service, Washington, DC, and Center for Survey Statistics and Methodology, Iowa State University, Ames, Iowa. [https://www.nrcs.usda.gov/sites/default/files/2022-10/2017NRI\\_Summary\\_Final.pdf](https://www.nrcs.usda.gov/sites/default/files/2022-10/2017NRI_Summary_Final.pdf)
12. USDA Agricultural Projections to 2030, 2021. Interagency Agricultural Projections Committee, online.
13. Arbuckle, J. G., Prokopy, L. S., Haigh, T., Hobbs, J., Knoot, T., Knutson, C., and Widhalm, M. (2013). Climate change beliefs, concerns, and attitudes toward adaptation and mitigation among farmers in the Midwestern United States. Climatic change, 117(4), 943-950.



Learn more about U.S. Soy and the American landscape at [ussoy.org](http://ussoy.org).

