

Chris Barrett, Cornell University
Comments at Aspen Institute Congressional Program breakfast
July 24, 2025

Thank you, Charlie, and thanks especially to you Members for joining us this morning. My message is simple: Innovation is, and always has been, the engine of human progress. Food is the most fundamental human need. So our government and our nation must prioritize agrifood systems innovations.

Innovation enables us to save lives and to overcome biophysical constraints to our productivity, so that people live longer, better, more prosperous lives. The United States became a superpower with the highest living standards in human history largely because of its unrivalled propensity to innovate. Innovation takes many forms, from clever applications of science and engineering to develop new products and processes, like high-yielding seeds, or to new institutions that better organize people to pursue shared goals, like farm cooperatives and the farm credit system, to new policies that solve market failures and promote the common good, like WIC or agricultural extension.

US innovation leadership has been especially evident in the agrifood domain. The Land Grant University system created from the ashes of our Civil War became the envy of the world. Led by those universities, USDA, and private enterprises, the US overcame the horrors of the Dust Bowl in the 1930s and 1940s thanks to agrifood innovations like improved seed, novel synthetic fertilizers and pesticides, improved soil and water management practices, and clever machinery. US scientists helped engineer the Green Revolution that saved Asia and Latin America from famine in the 1960s and 1970s, earning an American plant geneticist and pathologist, Norman Borlaug, the Nobel Peace Prize in 1970 and a place in the National Statuary Hall here in the US Capitol.

Chris Barrett, Cornell University
Comments at Aspen Institute Congressional Program breakfast
July 24, 2025

But today US leadership in agrifood systems innovation is waning. We see the telltale signs all around us, in a ‘food polycrisis’ because many crises share a common cause, lagging agrifood systems innovation. Consider the following:

- After decades as the world’s breadbasket, a major net food exporter since our independence in 1776, the US has been a net food importer since 2019, as our food supply expansion has lagged increases in food demand.
- Average consumer food prices have risen more than 25% since January 2021, significantly faster than overall inflation. Food price inflation likewise signals supply growth not keeping pace with demand growth.
- As food prices rise, people switch to less expensive options. But the least expensive food products are also the unhealthiest – ultra-processed foods that rely on inexpensive synthetic additives plus sugars and fats made relatively cheap by policies that have consistently favored productivity growth in staple grains over vegetables, legumes and fruits. Consuming the cheapest, unhealthiest food is making us sick. Rapidly rising health care costs are due largely to diet-related illnesses, stressing government budgets, accounting for most personal bankruptcies, and slowing economic growth.
- Although farm prices are up 40% since 2021 and net farm income in the US has been higher each year since 2021 than in any prior recorded year, most farmers are struggling. Record US farm income – and lavish federal payments –are increasingly concentrated in the hands of a very few. Well over half of all US farms lose money on farming, so each year more go out of business. And with the median age of US farmers >57, a farm succession crisis looms.
- Higher inflation-adjusted food prices – 85% higher worldwide today than at their Dec. 1999 all-time low– and increased conflict around the world drive more people into hunger: 3.1 billion people now cannot afford a healthy diet.
- And food insecurity is causing war, not just resulting from conflict, as we see increasingly throughout Africa, Asia, and the Middle East.

Chris Barrett, Cornell University
Comments at Aspen Institute Congressional Program breakfast
July 24, 2025

As productivity growth on existing lands lags demand expansion, leading prices to rise, more land in the tropics gets drawn into cultivation and farmers turn more to agrochemical inputs to juice yields. That has multiple serious consequences:

- The next pandemic will likely originate in food systems. Agrifood systems are the source of most zoonoses emergent in humans since WWII. Plausibly COVID, but certainly Ebola, bird flu, swine flu, plague and other zoonoses are attributable to agricultural expansion into wildlands.
- All that land clearing and expanding demand for livestock products account for 25-35% of global GHG emissions, although agrifood systems could be a net carbon sink, not source, helping solve climate change, not amplify it.
- Agrifood systems are now the main driver of wild species extinction globally, and of water pollution – like the dead zone in the Gulf of Mexico, or harmful algal blooms in the Great Lakes and Finger Lakes – as well as a leading source of air pollution, mainly from the volatilization of ammonia from fertilizers.

I could continue with the litany of food-related crises but won't. The central point is clear: agrifood issues should concern all of us, not just farmers.

Many policy proposals respond to one or another of these serious concerns. But most fail to tackle a core structural cause: our failure to invest in agrifood systems innovation. So we get trapped in an expensive whack-a-mole game, knocking down one problem only to see another one rise more prominently in response. We need sustainable agrifood systems intensification, fueled by revitalized innovation, not just short-term, expensive, unsustainable, palliative measures.

So what can/should be done?

The highest priority is to sustainably boost healthy food productivity growth. That requires investing more and differently. US public agricultural R&D investment has fallen by one-third in 20 years and remains trapped in turn-of-the-millennium designs. We have fallen far behind China, even Europe, and are about to fall

Chris Barrett, Cornell University
Comments at Aspen Institute Congressional Program breakfast
July 24, 2025

behind Brazil and India. There's a direct link from reduced and calcified agrifood R&D to food polycrisis. That's the main thing to fix.

So what specific steps can the US government, specifically Congress, take to address the lagging agrifood systems innovation that is the structural cause of food polycrisis?

1. Set explicit productivity growth targets: 1.5-2.5% per annum AFS TFP growth domestically and globally. Globally, we have dipped to about 1.1% annually, with essentially zero growth in the US and Africa. And set those not solely in monetary value terms, but in terms of essential nutrients, too (e.g., iron, calcium, vitamin A) to prioritize nutrient-dense foods like vegetables, nuts, legumes and fruits. Then hold federal agencies and international agencies to those targets. Let them set science-based strategies to deliver those results.
2. Give agencies the resources to meet the targets. A letter sent to each of you earlier this month by more than 1,200 of us Members of the National Academy of Sciences made the case for federal investment in science. Double AFS R&D and extension budgets, by at least \$4bn/year. Fund the \$11 bn in deferred maintenance and urgently needed upgrading at US public university agricultural research facilities. And restore and expand investment in agrifood R&D in the low-income world. Agrifood R&D is one of the highest return public investments in the federal budget. Average benefit:cost ratio is 28:1! US agricultural R&D specifically generates a roughly \$20 payout per dollar invested. The returns are even higher (>30:1) to agrifood R&D in Africa, where most global food demand growth this century will occur.
3. Direct all agencies receiving federal funds to focus all increases in public AFS R&D on healthier, more resilient, sustainable products and methods, not conventional crops and methods, such as:

Chris Barrett, Cornell University
Comments at Aspen Institute Congressional Program breakfast
July 24, 2025

- Genetic modification of row crops to improve heat and water stress tolerance, and to fix atmospheric nitrogen and build pest and pathogen resistance so as to reduce the use of toxic chemicals;
 - Genetic improvement in fruits, vegetables, nuts, legumes, controlled environment agriculture to boost productivity and healthfulness;
 - Improved animal nutrition and genetics to reduce methane emissions and antibiotic resistance;
 - novel foods and feeds, like cultured meats, precision fermentation, and algal or insect-based feeds;
 - biocircular systems to recycle waste products into fertilizers and feed.
4. Leverage the private sector better by using policy tools like advanced market commitments (AMCs) and benevolent patent extensions (BPEs). Doubling federal R&D funding is a heavy lift. But it's petty cash for major corporations, especially those whose business model is innovation. We must incentivize firms to come up with effective, market-based solutions. Use AMCs – like we used for COVID and pneumococcal vaccines. Have VA hospitals commit to purchase antibiotic free alternative proteins with attractive nutrient profiles at the prevailing price of conventional protein sources to ensure an adequate market. Use BPEs to crowd in some of the ~\$2.6 trillion in S&P500 liquid cash assets sitting on the sideline. The Congress won't need to appropriate more if it empowers investors to extend existing patents on luxury goods in exchange for breakthrough discoveries that benefit society as a whole.
5. Invest in rural infrastructure, here and in Africa, especially in roads and renewable energy. Help farmers harness sunlight, methane from manure lagoons, wind and geothermal energy and to help small towns and cities convert vacant factory, military and warehouse space to controlled environment agriculture and novel feeds/foods production, to restore high quality jobs to rural areas as off-farm food production locates in rural areas. Novel foods/processes, renewable energy, and traditional agriculture complement one another; stop seeing them as competitors.

Chris Barrett, Cornell University
Comments at Aspen Institute Congressional Program breakfast
July 24, 2025

6. Stand firm against anti-science wherever and whenever it appears.

Humankind flourishes due to science and engineering-based innovation. The Europeans shot themselves in the foot resisting GMOs. Modern scientific advances (like CRISPR) enable more rapid, precise alteration of organisms than was ever feasible with slow, random natural selection or traditional plant and livestock breeding methods (including irradiation). Call out the privileged anti-scientists whose fear-mongering misinformation hurts not just their own communities but especially the world's rural poor, who most desperately need agrifood systems innovation.

7. Support safety nets as an essential complement to technological advance and a core statement of American values. R&D causes creative destruction; USG must protect those who might be casualties of broader progress. Fully restore, indeed expand, the US' pace-setting humanitarian work around the world that has been so thoughtlessly gutted, with the consequence that a projected 14.1 million people – including 4.5 million children under age 5 – will die avoidable deaths between now and 2030 relative to the US-led humanitarian response system that existed at the start of this year.

Thank you for your time and attention. And thank you for your leadership in revitalizing agrifood systems innovation in this country and around the world. Our, our children's, and especially our grandchildren's flourishing depends on it.

Please do not hesitate to have your staff reach out if I can be of any assistance.

Email: cbb2@cornell.edu Phone: 607-255-4489