

Ag Research: Double Digits to One

Publicly funded agricultural research has a high return on investment, but cuts in funding could inhibit progress in feeding the world.

by **Katie Allen**, Kansas State University

In the early 1800s, the world population for the first time reached more than 1 billion people. In 2010, the population reached 6.8 billion. Based on prior trends, the population is expected to reach 8.9 billion by 2050 and 9.75 billion by 2150.

“We’re going to have to feed them somehow, and we also want to increase the general standard of living,” said Julian Alston, agricultural and resource economics professor at the University of California–Davis. He spoke about the return on public investment in agricultural research as part of the 2013 Congressional Assistants Tour hosted by K-State Research and Extension Aug. 29-30.

According to Alston, the solution to feeding more than 9 billion people in the future is more public funding for agricultural research. The availability of safe, affordable food for a growing world population is important, as is the need to preserve natural resources used for farming. Alston said future challenges agriculture faces include competing demands for land and water, competing demands with biofuels, a changing climate, and co-evolving pests and diseases. All of these challenges require continued ag research that in the past has shown a great return on investment.

Alston has researched the impact public research funding has had on U.S. agriculture. The findings were published in a 2010 book he co-authored titled, *Persistence Pays: U.S. Agricultural Productivity Growth and Benefits from Public R&D Spending*. He found that \$1 invested in agricultural research has a return of about \$33.

“That’s a fantastically good investment,” Alston said. “There’s nothing I know that is as good an investment as that. It’s not just a monetary payoff, but in addition to that, it’s an investment in preserving resources. It’s assuring food security of the world. It’s assuring competitiveness of American farmers in a world where other countries are trying very hard to do better than we are.”

Alston said the benefit-to-cost ratio is so high because the United States is not spending enough on agricultural research. If the United States spent more, eventually it

would drive the benefit-to-cost ratio down to 1:1 — the point at which it will have done the socially optimal amount of research.

The U.S. Food, Conservation and Energy Act, otherwise known as the Farm Bill, budgets about \$150 billion in spending per year, but only \$3 billion is allocated for agricultural research. Ag research is the part of the Farm Bill budget that has the biggest payoff to society, yet it is an area where funding is shrinking.

Not only is public funding shrinking, but U.S. agricultural productivity relative to other countries has been on the decline. Countries such as China, Brazil and India are becoming more efficient and productive. Alston called this a big change in the world table and said if the United States does not increase public funding for ag research to help boost productivity, it will be importing more food.

“I think over time, progressively, we (U.S.) are going to be less competitive,” Alston said. “Our agriculture sector is going to become less important relative to the rest of the world. When you combine our slowing investment in productivity-enhancing technology with our propensity for regulating production, it’s going to be increasingly difficult for the United States to compete in agricultural production.”

Slow magic

There are reasons why public funding for ag research has declined, he said, adding that more people need to lobby for the cause. One reason people push aside the need for such funding might be the delay in payoff, maybe 25 or 50 years after that first dollar is invested. Most people want to see a quicker payoff.

Alston said the idea is that agricultural research and development is “slow magic.”

“It takes many years before the research spending has consequences in our farmers’ fields,” Alston said. “If we spend money today, it may take 25 years before it has its full impact on farm productivity.”

The research can be subtle, he said, likening ag research to drilling for oil. Drilling can lead to many dry wells, but every now and then, the drillers hit a gusher.

“Agricultural research is like that, and on

average, it’s been a complete bonanza,” Alston said. “Looking forward, we don’t know where the next bonanza is going to be. We just know in the past it’s been a very good investment, and there’s every reason to think in the future it will continue to be one.”

Alston said doubling the public funding for ag research is a good start to helping the United States remain productive and a player in feeding the world in the future. Doubling public funding to more than \$6 billion is a small amount in the scheme of things, considering how much it could benefit the United States in agricultural productivity, natural resource preservation and staying competitive globally.

Many private groups have stepped up to assist in ag research funding, which has helped as public funds diminish. However, Alston pointed out that a lot of agricultural research and development is necessary simply to prevent yields from falling, given the competition from ever-evolving pests and diseases and changes in climate.

“You’ve got to run hard just to stay in place,” Alston said. “You have to do a lot of investment just to keep up with nature.”

More state and federal dollars for research might also help make agriculture research more attractive for undergraduate and graduate students who want to pursue careers in science and prepare to take over for the majority of scientists who are retirement age and older.

The world will depend on the availability of public funding and knowledgeable scientists to carry the agricultural industry forward. That investment will help the billions of people around the world who suffer from malnutrition and live in poverty to become more productive, modernize and have access to markets, Alston said. Every dollar spent can help the United States continue to be a leader in this effort and stay at the forefront in feeding the world.



Editor’s Note: Katie Allen is a communications specialist, News Media and Marketing Services, for K-State Research and Extension.