

## FOCUS: BUSINESS / STRATEGY

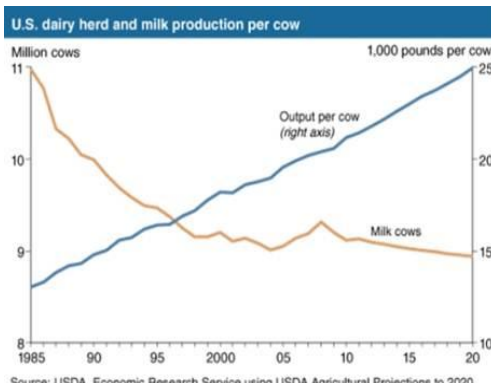
### Fast Forward Faster

*“This apparent disconnect between projected population increases, and the resulting increased demand for agricultural products and diminishing investment in agriculture provide members of the broader agriculture, food and energy communities with the opportunity to build on past successes and create entirely new paths forward.”*

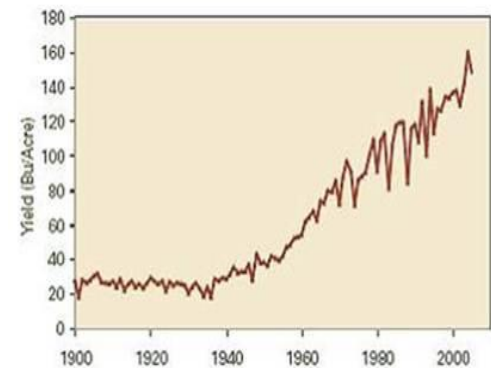


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The accompanying charts showing increases in milk production and maize yields in the United States are excellent examples of the progress made over the past century in increasing agricultural productivity.



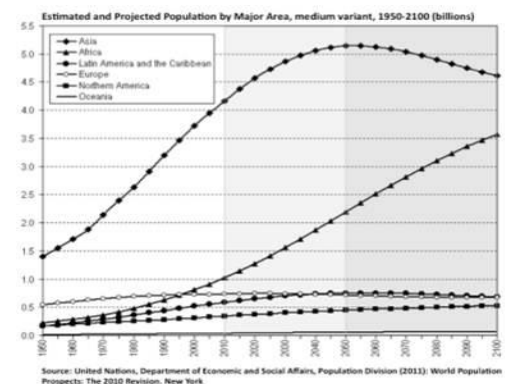
Although different for every county or region, technical advances involving an array of areas including engineering, genetics, chemistry and information systems, to name but a few, have played a leading role in the ability of agriculture to deliver these increases. Combined with influential economic, trade and social policies and a variety of partnerships involving numerous private and public sector participants, they have facilitated and enabled development of a system of agricultural production unprecedented in human history. This system, for all of its strengths and weaknesses, currently supports production of food, feed, fuel and fiber for a world population of nearly 7 billion people.



Looking ahead, the world's population is expected to reach an estimated eight billion people by 2030, and approximately nine billion by 2050. With the possibility of a nearly 30 percent increase in world population by 2050, the ability of the world's current system of agricultural production to meet basic food, feed, fiber and fuel needs is being scrutinized as never before, especially since this larger population will, on the whole, be more affluent and more demanding. In addition to established needs for increased production and productivity, agricultural enhancements are being evaluated for their ability to deliver desired results equitably and sustainably

and more than ever, meeting the challenges of climate change and environmental protection.

To a large extent, past enhancements to the agricultural segment have been based on technical improvements. Many of these technical improvements have enjoyed the combined benefits of time, availability of relatively easily accessed resources (land, energy, and genetics) and sustained public and private sector investment and partnership.



(Continued)

With less than twenty years until 2030 and just shy of forty years until 2050, time is clearly at a premium. Many past technical enhancements have required ten to twenty years to reach the stage of market introduction and added years for broad grower adoption. Likewise, the value of resources that have been critical to agricultural production and productivity in the past (e.g., land, genetics, energy) seems poised to increase rather dramatically through 2050. Finally, the rate of growth in traditional agricultural technology research and development, especially from public sources, has been characterized as being in a state of “underinvestment” in terms of forgone benefits and ability to meet future food, feed, fuel and fiber demands (Beintema and Elliot, 2009 – includes figure).

With the challenges agriculture faces as a result of forecast increases in global population, it would be easy to conclude that the prospect of flat investment in the discovery and development of new technologies for agriculture means that the possibility of providing food, feed, fuel and fiber for a 2050 population of nine billion people might simply be out of reach.

Considering past achievements and results, this conclusion makes perfect sense and indeed makes a strong case for an immediate increase in this type of investment. However, for reasons including lack of perceived return on investment, high barriers to business entry due to industry consolidation and limited public funding resources, it seems unlikely that such traditional forms of investment will materialize.

Evaluation and advancement of new technologies, development of novel business and public/private partnerships, entry of new sector participants and implementation of enhanced go to market strategies are a few elements that merit consideration by today’s agricultural, food and energy leaders. In meeting global demands and creating attractive investment and business opportunities, it is essential that these leaders identify critical elements of a rapidly changing and more closely integrated agricultural, food and energy system and act on them in a focused, timely fashion.

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Figure 1: Annual growth rates in agricultural R&D spending, 1976-2000

