August 29, 2014

More than 9 billion.

That’s the United Nations’ current estimate for the world’s population by 2050, an increase of 34 percent. By some estimates, global food production will need to increase 70 percent over this same span to account for growing population, rising global consumer demand for diets with more meat, and biofuel uses, among other factors. This is a daunting challenge. Will generations to come live in an era of food scarcity, hampered by an undersupply of farmland, drought, pests, increased soil salinity, etc.? Or will our future be one of abundance? After a conversation earlier this month with leaders in the agriculture sector, I am optimistic - but also mindful of the trade-offs that must be thoughtfully considered.

While most population growth is expected to occur in developing countries, the world continues to look to the United States, the world’s largest producer and exporter of food, to take a lead role in developing substantially more productive agricultural systems.

Featured Website

The Food Corridor is connective tissue in our city, designed to link diverse parts of the city around the common economic, social, and ecological benefits of local food projects. Click here to read more: Raleigh Food Corridor.

Featured Contest

The 2015 SECU Emerging Issues Prize For Innovation is here! Win $50,000 to Turn Your Idea into Reality by clicking here.

Featured Contest

The 2015 Emerging Issues High School Prize for Innovation challenges teams of high school students to reflect on the past in order to help improve a community’s future. Click here to learn more.
Scaling Food Production Technology

Many of us without close ties to agriculture may not realize how high-tech farming has already become. The following practices are examples of technologies now in use:

- **Drones**: Also known also as unmanned aerial vehicle (UAV) systems, low- and slow-flying drones, packed with sensors, can make excellent surveys of the health of a farmer's crops, minimizing the time and costs of walking the fields or flying over in an airplane. By 2025, drone use in N.C. agriculture is expected to yield nearly $113 million in economic impact.

- **Auto-Steer GPS**: We're just starting to hear about the Google driverless car, but auto-steer tractors have been around for nearly a decade. With minimal operator intervention, GPS-based technology keeps tractors almost perfectly aligned during planting, which results in easier and more efficient harvest.

- **Precision Agriculture**: The use of sensors and the "cloud" is increasing our ability to collect and store real-time data on weather, air and soil quality, disease and drought pressure, crop maturity, and other key data. Using predictive analytics, farmers can be more proactive when it comes to planting, fertilizing, and harvesting their crops.

**Trade-Offs**

Although these new technologies have huge positive potential, there use implies significant cost, safety, and privacy concerns:
• **Cost of capital and infrastructure:** The return on investment for these technologies can be significant, but smaller farms in particular may struggle with up-front costs. In rural areas, broadband and wireless infrastructure to deploy these technologies remains limited.

• **Safety:** Drones might interfere with or even strike a manned aircraft. In March, a drone nearly collided with a passenger jet in Florida.

• **Privacy:** Who will own and control all the data gathered by these new systems? Will farmers have full access to this data if the systems are deployed via lease or contract, as is common? Will farmers get a full picture of how aggregators of this data are using this information?

In regards to drone safety issues, N.C. policy makers have begun to address some related concerns, implementing new regulations at the end of the legislative session. On June 3, 2014, the Federal Aviation Administration (FAA) issued a ruling prohibiting farmers and other commercial operators from using drones until the FAA institutes regulations for their safe integration into National Airspace. The FAA has until September of next year to release these regulations.

**Coming Up Next**

The infographic below illustrates examples of innovation currently reshaping the food pipeline. The chart suggests many intriguing possibilities for food’s future.

*Photo courtesy of the Institute for the Future,*
I am excited to see what the future of food has in store. As rapid change becomes the new norm, there is enormous potential to innovate and reshape food production, distribution, manufacturing, shopping, and even eating. Much of the innovation will force decisions about trade-offs—and likely at a pace faster than policy makers can address. One thing seems clear: not adapting is not an option.

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