

The Protein Gap

“[Food insecurity] is the principal threat to global security. Failure to address food security will result in increasing tension.”

– Dr. Alastair Summerlee, President, University of Guelph

When agriculture productivity lags, food gaps – the shortfall between supply and demand – appear. We believe meat, milk and eggs will become more expensive and less accessible. Consumers in Asia, Africa and Latin America will lack choices and have diminished ability to nourish their families with high quality animal protein. Consumers in the United States and Europe will find more limited options at higher prices.

But that’s decades away, right? Wrong! Take milk for example. **Even while dairy productivity has doubled in the past 50 years, it’s not keeping pace with population growth.** Globally, there’s 14 % less milk per person than in 1961.²³

The Dairy Gap

On average around the world today, we have access to about one 8-oz. glass of milk (or equivalent serving of yogurt or cheese) a day.²³ The global recommended intake is two glasses a day.²⁴ Current per capita milk production around the world isn’t meeting basic nutritional needs.

We assembled a team of researchers to study this issue. Informa Economics and Global AgriTrends validated the model. The findings of the **2013 GLOBAL FOOD FORWARD ANALYSIS** estimate that based on our current productivity path, we won’t even have access to a glass of milk a day on average by 2020.*

What We Have



What We Need



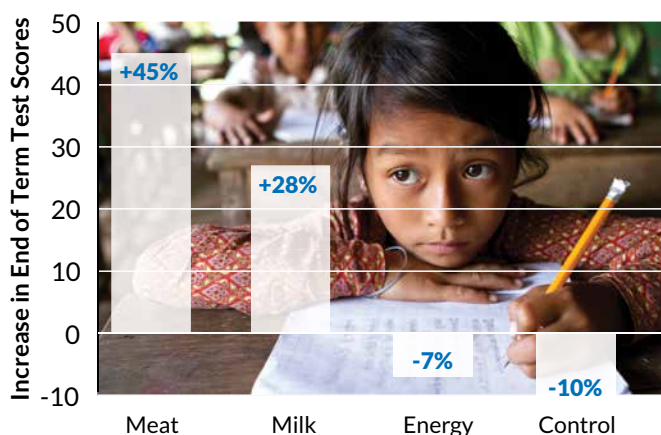
Based on our current production trends, nearly half the globe – **4.5 BILLION PEOPLE** – won’t meet their nutritional needs by 2040.[‡]

The Body and Brain Gap

If we look at securing everyone with the two glasses a day our bodies really need for growth and cognitive development, the gap grows to more than 4.5 billion people[‡] not able to meet their daily requirement for milk – 5 trillion servings short!^{§,25} Not only will we have a Dairy Gap, we’ll have a Body and Brain Gap.

A landmark observational study in Kenya demonstrates that when children’s diets are supplemented with meat or milk, learning and resulting test scores improve, particularly compared to those just given increased energy from oils and the control group given a typical meal.²⁶

Improving Test Scores With Meat and Milk (Over 5 School Terms)



Further, a recent paper, **ACHIEVING GLOBAL FOOD SECURITY: HOW THE NUTRITIONAL IMPACT OF ANIMAL SOURCE FOODS ENRICHES LIVES** by Elanco’s Bill Weldon, VP of Research and Development, and Susan Finn, RD and president of the American Council on Fitness and Nutrition, shows that when nutrition improves, health improves, learning improves and ultimately incomes and societies improve.²⁷

*Projection based on FAO demand estimates

[†]1 glass = 8 fluid ounces = 237 milliliters

[‡]Projection based on meeting RDI for global population

[§]1 serving = 150g or 4.9 oz



3 Top Solutions to a Food-Secure Tomorrow

There are many pathways that can have an impact on achieving a food secure world; however, research, experts, history and practical global execution point to three solutions that stand out as the most significant, can have the most impact and can be acted upon the quickest.

- 1. Innovation.** The products, practices and genetics that help farmers produce more food more sustainably – innovations that, in many cases, are already available, safe, regulated and proven. Experts from scientists to economists say it's the biggest part of the solution – 70%.¹ We must enable innovation more than any other time in our history.
- 2. Choice.** Farmers need to be able to choose the right practices for their operations. Consumers need to be able to choose food that fits their price, taste and nutritional needs. And we need regulators and policy makers to make science-based policy choices. Choice must not be taken away without a fact-based, legitimate reason from science-based regulators.
- 3. Trade.** The mechanism that allows us to produce food where it's more economical and sustainable and deliver it to people who need it. Pure economics and the environment prove that food must move from the most to the least productive areas for a food secure tomorrow. Politics need to be reduced while trade needs to increase in parallel with local advances in food production.

Given the urgency, prioritizing our solutions has never been more critical.

Solution #1: Innovation



The Power of Innovation: A Glass Half Full

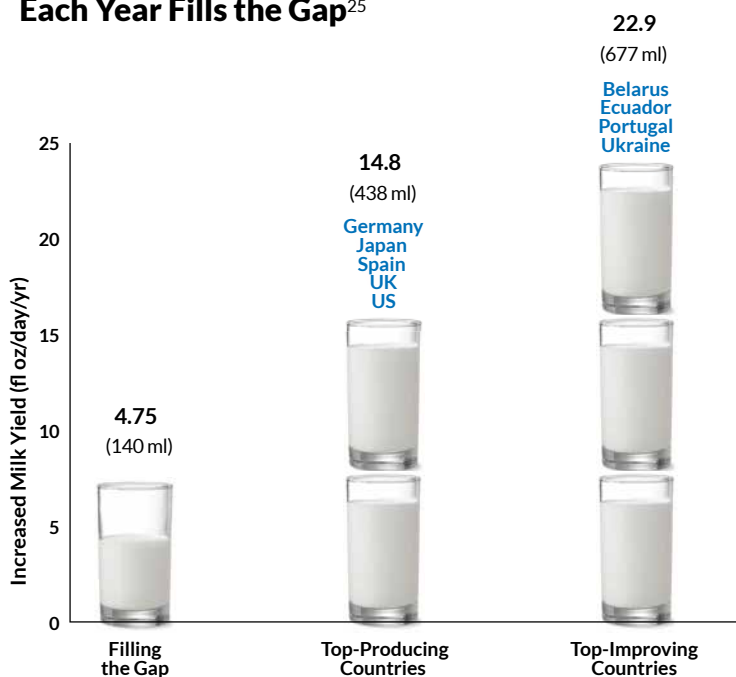
Innovation is at the center of the most challenging issues of our time. While there is resistance to innovation in food, we need to better understand the realities. Examples, like the milk story below, are often the best way to bring these to life.

With a predicted milk shortage, the Food Forward researchers evaluated opportunities to fill the gap.

On our current path – the same productivity and cow herd growth rates – we would have almost 40 million more dairy cows in 2050. That's significantly more feed and water. But that still wouldn't fill the gap. And given we're already exceeding our planet's resources, adding more cows simply isn't sustainable.

Today, globally one cow produces an average of 2 gallons each day. In leading areas, it's more than 7 gallons a day. Organic milk production yields on average at least 25% less than local conventional production.²⁹ Researchers predict we can fill the gap and freeze the footprint of milk production if every year, every cow increases her daily production just 4.75 oz. Many countries around the globe are already increasing at rates 3-4 times this through their use of innovation.²⁵

A Modest 4.75 oz. Daily Production Increase Each Year Fills the Gap²⁵

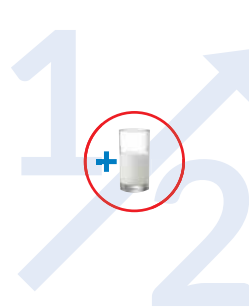


“Sustainable global food security is attainable if we have open minds on technology and focus on high productivity and efficiency. We cannot feed tomorrow’s world with yesterday’s technology.”

– Aalt Dijkhuizen, Wageningen University & Research Centre, The Netherlands

More Innovation, Not More Animals

1 Cow → **32 Glasses of Milk** currently produced each day + **Half a glass more²⁵** = **Enough Milk to meet future demand**

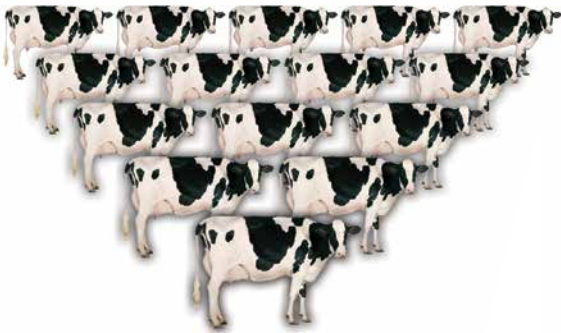


Simply by using practices available today or already in the pipeline, cows around the world can increase their output by a mere half glass per cow – enough to satisfy future global demand. Examples of such practices include:

- Fresh, clean water
- Feed optimization
- Vaccines
- Disease control
- Improved housing & comfort
- 3x a day milking
- Long-day lighting

Applying Today’s Technology to Add Half a Glass More, Dairy Producers Could Annually Save:²⁵

66 Million Cows*



*Cows and buffalo

747 Million Tons of feed and
388 Million Acres of farmland –
the size of Alaska



618 Billion Gallons of water –
the annual domestic use
of Germany, France
and the UK combined



Many farmers can’t take advantage of current innovations, practices or products. Solutions exist; access doesn’t.