

# **rbST improves milk production efficiency... and saves the planet      ...Jude Capper, PhD**

In last month's newsletter I reported how improvements in dairy genetics, nutrition, health and welfare during the second half of the 20<sup>th</sup> century allow us to now produce more milk, using fewer resources. This improves the productive efficiency (milk output per unit of resource input) of dairying and also considerably reduces the carbon footprint per gallon of milk. This is increasingly important as environmental concerns are highlighted by media articles, considered in government policy and cited as components of consumer's food-buying decisions.

The dairy industry therefore faces a considerable challenge: how do we continue to produce enough milk to supply both domestic and export markets, while making the most efficient use of resources? We can improve energy efficiency in our homes by turning off lights and appliances when we're not using them, but we can't 'turn off' a dairy herd at the end of the day – it has a fixed nutrient cost for maintenance regardless of whether the animals are growing, dry, pregnant or lactating. The answer is to spread those "fixed costs" over more units of milk production by increasing milk yield per cow.

Our group at Cornell University has recently investigated the effect of using rbST to improve productive efficiency. Using rbST gives an average increase in milk yield of 10 lb per cow thus allowing the same amount of milk to be produced using fewer resources, and reducing total environmental impact by 9%. That's an impressive figure, but what does it mean?

Well, let's compare two dairy populations, A and B. Both are producing the same amount of milk (31 billion lb), but population A includes one million cows supplemented with rbST, whereas population B doesn't use rbST. To produce the same amount of milk, the rbST-supplemented population requires:

- 334,000 fewer animals (182,500 cows plus 151,500 heifers)
  - 2.5 million fewer tons of feed
- 540,000 fewer acres of cropland (plus reduced soil erosion, fertilizer and fossil fuel use)
- Improved efficiency in the rbST population also saves:
- Enough fossil fuels to heat ~16,000 households
  - Enough electricity to power ~15,000 households
- Enough water to supply ~10,000 households

Perhaps most importantly, the reduction in the annual carbon footprint is equivalent to taking ~400,000 cars off the road, or planting ~300 million trees.

As a scale-neutral technology, using rbST also has beneficial environmental effects at the farm-level. In the average 150-cow herd, rbST use allows the same amount of milk to be produced using 245 fewer tons of feed, 53 acres less cropland and 132,000 fewer gallons of water. This leads to a reduction in the annual carbon footprint equal to taking 38 cars off the road, or planting ~28,000 trees.

As the global population increases, it is essential that, as an industry, we continue to use technologies and management practices that allow us to make the most efficient use of resources to produce sufficient safe, healthy, nutritious milk. Using rbST, or any other

technology or management practice that improves productive efficiency, will improve the environmental and economic sustainability of dairy production. In this case, 'got rbST?' also means 'got environmental sustainability'.

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