

## Helping save the world, one slice of cheese at a time

by Hoard's Dairyman staff

THEY DON'T WEAR capes or have super powers, but little brown cows are helping to save the world. Really.

This comic-book-strange statement is actually true, albeit on a small scale, as a Washington State University animal scientist explained in her presentation at the American Dairy Science Association annual meeting in Denver in July. The specific details involve cheese, the milk it is made from, and the animals that produced it. Here's the short explanation:

- People all over the world like cheese, and they eat more of it every day. Demand for cheese has not only been growing for decades, it shows no signs of stopping. In the U.S. alone, 40 percent of all milk produced is made into cheese already, much of it destined for pizzas. This, too, is a trend that shows no signs of stopping.

- Milk is produced commercially by several kinds of animals, but the vast majority of cheese is made from milk produced by cows.

- As is the case with humans and all other kinds of mammals, cows consume water, food, and other natural resources in order to produce milk. Thus, they have a "carbon footprint" that may negatively impact the environment through production of carbon dioxide and other waste.

- Jersey cows produce milk with much higher levels of protein and butterfat than milk produced by some other dairy breeds, most notably Holsteins. Jerseys make up about 8 percent of the U.S. dairy cow population, whereas Holsteins account for about 89 percent.

### Solids levels drive cheese yield . . .

- The cheese yield capacity of a volume of milk is primarily determined by how much protein and butterfat it contains. Higher levels mean more pounds of cheese can be made from an equal amount of milk, which means the cheese plant operates more efficiently and uses less energy and other resources.



- Milk produced by Jerseys typically contains significantly more protein and butterfat than milk produced by Holsteins. In addition, since Jerseys are typically one-third smaller than Holsteins, producing milk requires less feed and water, less waste is produced, and less carbon dioxide is emitted into the atmosphere.

The bottom line, according to animal scientist Jude Capper, is the carbon footprint of Jerseys is 20 percent smaller than Holsteins. "Not only does the Jersey population conserve resources needed for cheese production, [but] the total environmental impact is lower," she said in her presentation.

It's a conclusion that will no doubt resonate with a consumer market that is growing ever more focused on the environment and on "green" production methods.

Capper and co-author Roger Cady of Elanco Animal Health reached their conclusions after a year-long study of herd performance records from nearly two million cows. More than 13,000 herds in 45 states were involved, and the milk they produced was enough to make about 1.1 bil-

lion pounds of Cheddar cheese. Major funding for the study came from National All-Jersey, Inc.

The study compared two milk production systems, one using Holsteins whose average mature body weight is 1,500 pounds, and the other using Jerseys (1,000 pounds mature body weight). Jerseys produce less milk by volume, but it contains substantially higher fat and protein content. For the manufacture of Cheddar cheese, expected yields are 12.5 pounds cheese per hundredweight of milk from Jersey milk, versus 10.1 pounds for milk from Holsteins.

In producing 1.1 billion pounds of cheese Capper and Cady determined that the differences between Jersey and Holstein production systems were significant:

### Less milk, but more Jerseys needed . . .

- 8.8 billion pounds of Jersey milk would be needed vs. 10.9 billion pounds of Holstein milk (19 percent less).

- 91,460 more Jerseys than Holsteins would be needed to produce that much milk.

- Total feed consumption would be 1.75 million tons less with Jerseys.

- Manure production would be 2.5 million tons less with Jerseys.

- Total water usage would be 32 percent less with Jerseys.

- Total land requirement would be 240,798 acres (11 percent) less with Jerseys.

- Total fossil fuel use would be 517.6 billion BTUs less with Jerseys.

- The 20 percent smaller carbon footprint for the Jersey production model was estimated to be equal to taking 443,900 cars off the road.

The smaller carbon footprint findings are explained by Jersey breed characteristics. Their lower total body mass reduces maintenance costs per animal, and the greater nutrient density of their milk dilutes maintenance resource requirements, especially water, over more units of cheese that are made.

"To produce the same amount of cheese you need more Jersey animals," said Capper. "Holsteins do have an advantage in milk yield per animal. That is overcome by the two-fold advantage the Jersey has. The animals weigh so much less and the milk they produce is a more nutrient-dense product." 