

Make cheese from Jersey milk

By SARAH MUIRHEAD

WITH more than 40% of U.S. milk production allocated to making cheese, using nutrient-dense milk produced by smaller Jersey cattle results in substantial reductions in water and land use, fuel consumption, waste output and greenhouse gas emissions compared to using milk from Holsteins.

Per unit of cheese, the carbon footprint (in total carbon dioxide equivalents) for Jerseys is 20% less than for Holsteins.

These were the key findings from a lifecycle assessment study Dr. Jude Capper of Washington State University presented July 13 at the Joint Annual Meeting of five North American scientific societies for animal agriculture, including the American Dairy Science Assn. and the American Society of Animal Science.

"Not only does the Jersey population conserve finite resources needed for cheese production," Capper said, but "the total environmental impact is lower."

Conclusions were based on a year of dairy herd performance information from nearly 2 million dairy cows in more than 13,000 herds located in 45 states.

Capper and co-author Dr. Roger Cady of Elanco Animal Health broke new ground with this study by analyzing farm milk production required for the annual manufacture of 500,000 metric tons (1.1 billion lb.) of cheddar cheese.

They compared two production systems: one using the large-breed Holstein cow (average mature bodyweight of 1,500 lb.) and the other using the smaller Jersey cow (1,000 lb.).

Characteristically, the Jersey produces less milk when measured by volume, but the milk has a substantially higher fat and protein content. For the manufacture of cheddar cheese, expected yields are 12.5 lb. of cheese per hundredweight of milk from

Key Points

- Carbon footprint of Jerseys 20% smaller than Holsteins.
- Energy savings could heat 6,000 homes.
- Jerseys consume less feed and produce less manure.

Jerseys compared to 10.1 lb./cwt. from Holsteins.

Capper and Cady quantified the environmental impacts of producing cheddar cheese from these two sources of milk. The production system model factored in all primary crop and milk production practices up through and including milk harvest. It did not include transportation to the manufacturing plant, production and sales systems.

They determined that to produce 500,000 mt of cheddar cheese:

- Just 8.8 billion lb. of Jersey milk was needed — 19% less than the required amount of Holstein milk (10.9 billion lb.).

- More Jerseys (91,460 animals) were needed to produce the same amount of cheese as Holsteins, but that represents just 0.5% of the total U.S. dairy cattle population.

- Despite the greater number of animals, the total body mass of the Jersey population was 26% smaller (276 million fewer total pounds) compared to the Holstein population.

- Jerseys consumed 1.75 million tons less total feed and produced 2.5 million tons less manure compared to Holsteins.

- Water use was reduced 32% for Jerseys, conserving 66.5 billion gal. of water, equivalent to the needs of 657,889 U.S. households.

- The land required for Jersey production dropped 240,798 acres — 11% less than the land required to support the equivalent cheese production from Holsteins.

- The Jersey system used



MILK CHOICE: A new study shows that using milk from Jersey cows (right) for cheese production has environmental advantages over using Holstein milk.

fewer fossil fuels than the Holstein system. The savings of 517,602 million Btu in fossil fuel consumption is equivalent to freeing up the energy necessary to heat 6,335 U.S. homes per year.

- The 20% smaller carbon footprint for the Jersey system is equivalent to removing 443,900 cars from the road annually.

The study's findings can be explained by Jersey breed-specific characteristics that both reduce and dilute maintenance overhead in the production system.

The lower total body mass of Jerseys reduces maintenance costs per animal, and the greater nutrient density of Jersey milk dilutes maintenance resource requirements — especially for water — over more units of cheese.

"Water use in Jerseys comes

down because there is more fat and protein in milk," Capper noted. "The savings is not just water intake for the smaller animals but will carry through in transport and processing the milk into cheese."

"This study demonstrates that the number of animals in a population is not a good proxy for body mass," Capper added. "In previous work, we assumed that the number of animals in a system equaled bodyweight. More animals meant greater bodyweight and, thus, greater environmental impact. In this study, because Jerseys weigh so much less than Holsteins, even though more animals are needed to produce the same amount of cheese, the total body mass comes down. Going forward, we need to account for differences in body size among animals."

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

Dairy scientists attending the Joint Annual Meeting said they were not at all surprised by the findings because of the levels of fat and protein in Jersey milk.

When asked if similar comparisons might be made in the beef sector, Capper said it deserves further consideration.

Major funding for this research was provided by National All-Jersey Inc., which represents 1,000 producer members and promotes the increased production and sale of Jersey milk and milk products. ■

USDA seeks comments on sheep, goat program

THE U.S. Department of Agriculture announced July 23 that it is seeking comments on an interim final rule that establishes a National Sheep Industry Improvement Center (NSIIC) program, consistent with the 2008 farm bill.

The purpose of NSIIC is to strengthen and enhance production and marketing of sheep or goat products in the U.S. through infrastructure development, business development, production, resource development and market and environmental research.

American Sheep Industry Assn. (ASI) president Glen Fisher said the group "is pleased to have the rules issued as interim as this provides a chance to get a board appointed and the program operational by the end of the year."

"ASI secured the farm bill au-

thorization and sought for the center to be overseen by the Agricultural Marketing Service at USDA," Fisher added.

A board of directors will manage NSIIC's general operations. Board members will include four active sheep or goat producers, two finance and management experts, one person experienced in lamb, wool, goat or goat product marketing and the USDA undersecretaries of agriculture for rural development and research, education and economics.

Nominations for board members may be submitted by any eligible national sheep or goat organization whose membership consists primarily of active sheep or goat producers.

The interim final rule was published in the July 23 *Federal Register*. ■

Resource center to provide facts on sustainable beef

THE new Sustainable Beef Resource Center (SBRC) has been created to provide useful, science-based information to the entire food chain.

SBRC was formed at the suggestion of beef producers and branded-beef marketers who recognized the need for a centralized source of facts about technologies used in sustainable beef production.

SBRC currently is working with third-party experts to create an environmental impact model and economic analysis of technologies used to help produce wholesome, affordable beef. It also maintains a library of data previously assembled by the Growth Enhancement Technology Information Team (GET IT).

"SBRC members clearly see our organization's role as that of a go-to resource for associations, coalitions,



academia and other industry stakeholders — organizations that already are trusted information sources regarding how beef is produced," SBRC chairman Paul Parker said. "This allows us to zero in on research that can fill information gaps as the industry continuously improves its ability to produce safe, wholesome beef affordably while using fewer natural resources."

SBRC's library of research includes six white papers on topics ranging from the 50-year impact of pharmaceutical technologies on beef to the economic and environmental benefits of current-day beef management practices.

The organization's web site, at www.SustainableBeef.org, features beef production facts and talking points about the environmental and economic benefits of beef technologies.

The SBRC web site additionally highlights materials used in a recent "eco-friendly and eco-nomical" marketing campaign that focused on two topics of interest to consumers: food affordability and environmental sustainability.

SBRC members include marketing and technical representatives from leading U.S. animal health companies. ■