Carbon hoofprint: Cows supplemented with rbST reduce agriculture's environmental impact

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Milk goes green: Cows that receive recombinant Bovine Somatotropin (rbST) make more milk, all the while easing natural resource pressure and substantially reducing environmental impact, according to a Cornell University study to be published in the *Proceedings of the National Academy of Sciences* (June 30, 2008.)

Producing milk uses large quantities of land, energy and feed, but rbST – the first biotech product used on American farms — has been in agricultural use for nearly 15 years. Now it is found to reduce the carbon hoofprint by easing energy, land and nutritional inputs necessary to sustain milk production at levels sufficient to meet demand.

This research found that, compared to a non-supplemented population, giving rbST to one million cows would enable the same amount of milk to be produced using 157,000 fewer cows. The nutrient savings would be 491,000 metric tons of corn, 158,000 metric tons of soybeans, and total feedstuffs would be reduced by 2,300,000 metric tons. Producers could reduce cropland use by 219,000 hectares and reduce 2.3 million tons of soil erosion annually.

In 2007, there were 9.2 million cows in the United States. For every one million cows supplemented with rbST, the world would see an environmental saving of 824 million kilograms of carbon dioxide, 41 million kilograms of methane and 96,000 kilograms of nitrous oxide.

For every one million cows supplemented with rbST, the reduction in the carbon footprint is equivalent to removing approximately 400,000 family cars from the road or planting 300 million trees.

"Supplementing cows with rbST on an industry-wide scale would improve sustainability and reduce the dairy industry's contribution to water acidification, algal growth, and global warming," says Judith L. Capper, Cornell post-doctoral researcher, and the lead author of "The Environmental Impact of Recombinant Bovine Somatotropin (rbST) Use in Dairy Production," *PNAS*.

Joining Capper on the paper: Dale E. Bauman, Cornell professor of animal science and the corresponding author; Euridice Castaneda-Gutierrez, former Cornell post-doctoral researcher; and Roger A. Cady, of Monsanto, St. Louis. Cornell funded the research.

"Sustainability is important in agricultural production, with an emphasis placed upon meeting human food requirements while mitigating environmental impact," said Bauman. "This study demonstrates that use of rbST markedly improves the efficiency of milk production, mitigates environmental impact including greenhouse gas emissions and reduces natural resource requirements such as fossil fuel, water and land use."

Source: Cornell University