

## Get ready for super-efficient cattle — and a better relationship with consumers

**Top researcher says big data and genomics are game changers, but winning the trust of consumers is equally key**

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In the ever-changing landscape of Canadian agriculture, efficiency is the new watchword.

“If we can increase efficiency of production by about five per cent in Alberta, we can save producers about \$100 million a year — even if only one-third of livestock producers adopt those efficient improvements,” said Erasmus Okine, vice-president of research at the University of Lethbridge.

As the world population grows to nine billion by 2050, livestock producers will need to produce more meat with less land, water, and feed, Okine said at the Farming Smarter conference last month.

“The demand for meat is supposed to increase by about 55 per cent, and this is due to about three billion moving into the middle class in emerging economies like China and India,” he said.

“We — among the six countries that can actually say we feed the world — will have to provide this food in a safe, affordable, nutritious, and environmentally sustainable manner.”

Canadian producers have “always done very well” at increasing efficiency in their production practices. From 1977 to 2007, producing the same amount of beef required 70 per cent of the animals, 81 per cent of the feed, 88 per cent of the water, and 67 per cent of the land.

“For those who want to count carbon, it’s resulted in a 16 per cent decrease in the carbon footprint of the beef animal,” said Okine. “We do very well here.”

Livestock agriculture has made those leaps through genomics and innovations such as ‘big data,’ he said. And it needs to do more of that.

“Big data in the livestock industry is what will propel us to be able to feed the world. That is what is going to get us there, and that’s what we’re using in the livestock industry.”

### Residual feed intake

One of those ways is to drive down feed costs, which account for 25 to 40 per cent of the total production bill.

“If you can increase your efficiency in terms of feeding, that is huge,” said Okine, citing one of his research areas, residual feed intake.

“Residual feed intake is the difference between what we expect the animal to eat for the 2.2 pounds of daily gain we want versus how much it actually eats to gain the 2.2 pounds,” said Okine.

“Some of these animals eat less for the same amount of gain, but some eat more for the same amount of gain.”

And through genomics, scientists are able to select those more efficient animals with heritability of about 40 per cent for those traits.

“Once you select a bull that is low residual feed intake, it will pass on those genes to the calves, and by using that in a commercial setting, we’re able to show that in a pen of 200 animals, the efficient ones cost less in terms of feed intake,” said Okine, adding less efficient animals can cost an extra \$25 or more per head.

“If you look at it in terms of the actual amount of all feeders, the calculations show about \$19 million to \$38 million of savings. And if you add the cows, it would be about \$54 million to \$110 million.”

‘Social trust’

But while genomics and big data will help producers feed the world more efficiently (while saving some money, too), “science is not enough.”

“What we need to do in terms of feeding ourselves and feeding the world is to take a look at shared values,” he said. “I know the science. I can use the science. But what is the point of using the science if we don’t have shared values?”

“Most people who are not in the livestock arena don’t particularly care how much we know — until they know how much we care.”

In order to create those shared values, the agriculture industry as a whole needs to look at “three pillars.”

“The science is there to help us feed the world,” said Okine. “The challenge is trying to maintain a sustainable balance in terms of the economic, the environmental, and the social pillars.”

Of course, it’s important to be economically viable, he said.

“We need a return on investment. We want to increase productivity and increase profitability.”

But the industry also needs to look at “ethically grounded” production that includes environmental sustainability and “social trust.”

“We need to have the social trust — not licence — through responsibility, respect, fairness, and the truth about what we do,” he said.

“Our future in Alberta requires very innovative and intricate solutions to address the important issues facing us on the environmental side, the societal side, and the economic side.”