

The Onefour research herd is up for sale

Research highlights

Posted Aug. 16th, 2013 by [Debbie Furber](#)
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Closing the books on the 86-year-old research substation

The Onefour Research Ranch [herd dispersal sale on November 28](#) at the Balog Cow Palace in Lethbridge will mark the end of 86 years of range and livestock research at this storied ranch hugging the U.S. border in Alberta's southeastern corner.

It is one of several hallmark Agriculture and Agri-Food Canada facilities and programs lost in the shuffle to streamline agricultural research and services across the country since the 2012 budget came down. Operating as a substation of AAFC's Lethbridge Research Centre (LRC), Onefour had its livestock genetics research program transferred to the University of Alberta in 2005. The rangeland research component will be transferred to AAFC's research centre at Swift Current, Sask., leaving the beef research program at LRC to concentrate on its work with feedlot cattle.

In recent years, the breeding program at Onefour under the management of Ian Walker has been geared toward raising market-acceptable commercial cattle selected for optimal maternal performance on the range, balanced with feedlot efficiency and carcass quality, explains Byron Templeton of XTC Hereford Farms, Lethbridge, who chairs the Canada/Alberta Livestock Research Trust (CALRT).

The trust was formed in 1990 with a volunteer board of producers and industry people to facilitate timely commercial transactions when buying and selling cattle for LRC and providing feed and all other supplies required to care for the cattle at Onefour. It also serves as a sounding board to give industry perspective on research trials.

The CALRT owns the Onefour herd and all proceeds from the sale of Onefour cattle go into the trust with profits supporting beef research at LRC. AAFC pays the lease on the provincial Crown land comprising most of the ranch, maintains the facilities, and looks after staffing.

All of the cattle produced at Onefour, with the exception of the replacement heifers, are sent to the LRC feedlot at weaning and most of the steers wind up in research programs. Cows and heifers not retained in the breeding program or required for research have been an important revenue stream that will dry up after ranch operations wind down.

"CALRT will still exist after ranch operations cease, though its workload will likely be lighter," Templeton says. Cattle for LRC research programs will be sourced from the marketplace

with a view to purchasing market-acceptable calves that will have the best salvage value possible at the end of the research projects.

CALRT board member Jamie Christie of Alberta Prime Beef at Picture Butte heads up the marketing program, which for research cattle is a different ball game because science needs blue-tag data from the packers and there is no sort, he explains. They are usually sold in small groups that aren't necessarily uniform because they're not all fed the same ration given that LRC does a lot of research looking at the feed value of various feedstuffs and feed-processing methods.

"That said, Ian has a great eye for cows. These are good, good-quality cattle that when finished are respected by packers. They have been well accepted by Cargill because they fit into the branded programs very well," he comments.

Carcass data from the past three years show that 81.4 per cent of the 616 finished calves (481 steers, 115 heifers, 20 bulls) graded Canada AAA or higher with the dressing percentage averaging 60.47.

As of early July, the fate of Onefour's 42,000-acre short-grass prairie range was uncertain. It has been an important site for research in other fields of science through the years as well and today is home to at least 23 federally listed species at risk. The provincial government has already designated parts of the ranch as a Heritage Rangeland Natural Area.

The Alberta Wilderness Association is seeking protected status for the entire range to keep it intact for Prairie research and grazing for local producers.

Research highlights

Range and livestock development were central to the federal government's goals in 1927 when it established Dominion Range Experiment Station, Manyberries, so named because the station received its mail at the post office there. However, the station was located in the Onefour district with a post office at the Wetherelt farm on the SE3-27-1-4-W4, ergo the name, Onefour.

The station eventually acquired the farm and it was later discovered that a saving on postal delivery charges could be had if the old Onefour post office could be relocated at ranch headquarters on SW2-15-2-4, where a village-like atmosphere had evolved with ranch and research facilities, homes for employees and community buildings, including a store and school. The name change to Onefour followed accordingly.

Allan Ross, CALRT secretary and former manager of Onefour from 1978 to 2000, provides a rundown of some of the major research projects as detailed in the book 75 Years of Research, 1927-2002, Research Substation, Onefour, written by former head of the animal science section, Dr. John E. Lawson.

CALRT board member and Canadian Cattlemen Association's research director Reynold Bergen says a lot of the production practices that Western Canada's beef industry is based

on, and a lot of everyday knowledge that producers take for granted exists because of the research that was done at Onefour.

The Dominion's experimental farms service branch had dispatched two agrologists to the area to determine why settlers had been abandoning their homesteads in droves. They identified soil that produced light crops, inadequate rainfall, heat and high winds, and grasshoppers as the main reasons.

This set the direction for research during the first 25 years dealing with reclamation work, developing water resources, evaluating grazing capacity, determining climate effects, assessing various forages and feed supplements and establishing management procedures for cattle and sheep handling, treating and marketing. Recommendations were laid out for dehorning, castrating, branding, parasite control, mineral supplementation, spaying heifers, breeding yearling heifers and artificial insemination.

Cattle-breeding programs to evaluate breeds and crosses for hardiness and productivity and to develop selection methods and technology started in 1950 with several long-term (15 to 20 years) projects. Work with Cattalo (cattle-buffalo cross), Brahman-British crosses, a Highland-Hereford line and the Ross project with dairy and Red Angus sires on Hereford cows, identified the advantages of hybrid vigour.

Ross recalls that when he started as a ranch hand in 1971, the program was midway through a 20-year genetic selection study to evaluate feedlot performance in Angus and Hereford lines fed either a high-energy diet (HED, 80 per cent grain, 20 per cent hay) or a medium-energy diet (MED, hay only).

Calves fed the MED had fewer digestive disturbances, bloats and founders, while those retained as cows produced more milk and offspring with heavier weaning weights than those fed the HED. Yearling bulls in the HED program had lower sperm reserves and at two years of age produced only half as many sperm with inferior quality compared to bulls managed on MED.

No sire-diet interaction was found, implying that individual animals with genetics for superior post-weaning gain would retain that advantage relative to other individuals in the same group whether fed HED or MED. Similarly, when given an HED ration, bull calves from the cows in the MED program grew as fast as those from cows in the HED program.

Next came another long-term study, the foreign cattle-breeding evaluation project, that looked at the productive value and feed efficiency of crossbred cattle using Hereford, Angus, Shorthorn, Charolais, Simmental and Limousin cattle for a total of 10 firstcrosses with the Hereford-Angus cross as the control. The heifers were bred Red Angus or Beefmaster and the mature cows to the three exotic breeds or Chianina.

This project, carried out at Manyberries and in the Parkland region at Brandon, evaluated the environmental and genetic effects on pre- and post-weaning performance of some 3,700 calves in all. Rankings were established for terminal sires of the calves and sires and dams of the cows.

Location differences were significant. The environment at Manyberries resulted in lower lifetime production efficiency than at Brandon, leading researchers to conclude that, while rankings for mature breed crosses may be similar among locations, their rankings for net productivity weren't likely to be constant in differing environments.

Researchers found that the NRC feeding guidelines would need to be adjusted to address environmental variation and that the recommendations for lactation feed requirements for all crosses had been underestimated.

Project data and simulated ranches were used to model the relative profitability of each of the crosses in both environments. It was learned that the breed of the terminal sire was an important consideration when determining the profitability of a dam cross. For example, a certain cow cross could rank first when bred to a terminal sire of one breed, but way down the list when bred to a sire of another breed.

Profitability was largely determined by the percentage of calves weaned and calf weight, with calving difficulty and feed requirements having a lesser effect. However, researchers concluded that reproductive performance should not be sacrificed for heavier weaning weights and, in a commercial herd, cow performance is more important to profitability than the terminal sire breed.

The performance of calves from firstcross cows was shown to be superior to that of backcross (one-quarter- and three-quarter-cross) females. As little as one-eighth of a change in breed composition could significantly affect carcass traits.

The top-performing first-crosses from this project formed the herd for a bioeconomic efficiency study of delved-into genetic parameters needed to assess breeding strategies, including the calculation of direct and maternal heritabilities, and phenotypic and genetic correlations on growth and carcass traits. It was discovered that simple tools, such as the bull's scrotal circumference and heifer growth traits, were good predictors of lifetime pregnancy rates.

At the turn of the century, new computer programs allowed researchers to use data from these long-term studies and the Angus and Charolais herds at Onefour to advance the technology for selecting economically important traits. Some of this work looked at the influence of eating patterns, preconditioning, shrink during transportation and real-time ultrasound on selecting for carcass merit.

When this program was transferred to the University of Alberta, most of the Charolais and Angus herds were leased to the university's Kinsella Ranch. Onefour has rebuilt a commercial herd, currently numbering 235 first-cross Hereford-Angus and 450 straight Black Angus cows and heifers.

Onefour cow herd

Walker, who has managed the station since 2000, worked with the Onefour crew for nine years in the '80s before he went on to manage AAFC's Kamloops ranch.

He looks for bulls with moderate EPDs from proven cow lines and older dams, adding that the actual birth weight of a bull's dam is just as important as the bull's own birth weight EPD. Particular attention is paid to milking ability to produce females with ample milk for calves but not so much that they won't be able to maintain body condition and rebreed on time.

Each dam is scored on conformation and mothering ability at calving. The top 200 to 250 Angus cows are bred to herdsire-quality bulls to produce fertile, moderate-type females with longevity in their lines that do well on native grass.

The replacements are wintered in the yard where they are weaned on to a ration of grass hay and screening pellets containing 20 per cent barley, which he starts feeding at about a pound per head per day, working up to 2.5 pounds. The pellets are pail fed daily so the heifers get used to having people walking near them. This makes a huge difference down the road if the crew has to lend a hand at calving, though only nine of the 240 heifers that have calved in the last two years have needed assistance.

The bulls went out for 45-day breeding seasons with the heifers on June 2 to start calving March 1, and with the cows on July 2 to start calving April 5.

Normally, the breeding season for the replacements is only 30 days and conception rates have averaged 85 to 90 per cent for the past five years. The conception rates for the cows have averaged 90 to 95 per cent, with close to 80 per cent of the calves coming in the first 21 days of calving this spring.

Average weaning weights in early October for the past three years have been 508 pounds for the heifers and 543 for the steers.

"This is an extremely rare opportunity to purchase a set of reputation, proven cows," says Bob Balog of Balog Cow Palace.

"All successful ranches keep good records, but because of the research, the amount of data on these cows is magnified three to four times. If you are building a new herd, you'll be 20 years ahead with a group of uniform cows of this calibre."

– **Debbie Furber** *is a field editor for Canadian Cattlemen at Tisdale, Sask. This feature appeared in the August 2013 issue (pages 8 to 11).*