

Is there a better way to show heifers?

These Georgia scientists reveal their most consistent finding: show heifers are well under the weight of their commercial counterparts.

by William M. Graves

VER 5,600 entries have been exhibited in the Georgia Commercial Dairy Heifer Program since it began in 1997. Yet, this isn't your typical show. The most unique thing is that heifers are shown by weight, not by birth date or breed.



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Youth participate in showmanship and weight classes. After 20 weight classes and four divisions, our Georgia Farm Bureau president presents our grand champion with a \$1,500 check. It has been very successful and continues to grow thanks to the efforts of Georgia's dairy producers, FFA instructors and 4-H agents.

As educators, we have often wondered, "Is there a science to heifer shows?" We have worked to improve our project by elevating participation, developing more enforceable rules and raising weight limits to encourage more correct growth before animals are returned to the farms.

We had also reported on a study completed by Mathew London, one of our former show-

men turned scientist (*Hoard's Dairyman* September 25, 2011, issue, page 594). In London's first study, 1,744 commercial dairy heifers shown from 2007 to 2010 were evaluated to determine the relationship between weight, age and average daily gain (ADG) to show placing.

Our first concern was akin to those at other shows, the ability of exhibitors to adjust ADG values by manipulating birth dates. We found out that the ADG for the heifers shown were below industry guidelines. Further, ADG and placing were virtually unrelated. Wither height had the highest correlation to placing. Perhaps that is what we should use to group our heifers.

Developing a "heifer mass index"

Like most research, we generated more questions than answers. After our first studies, we were curious how well show heifers compared to commercial heifers across Georgia. One of my outstanding dairy students, Debra Sires White, returned to UGA to answer this question.

Why is this important? Producers strive to raise replacement heifers as efficiently as possible. Producers ideally want to breed heifers at 14 to 15 months of age so they calve between 22 and 24 months. To achieve this goal, heifers must be of adequate skeletal size and weight by weaning, puberty, breeding and calving.

We wanted some type of heuristic proxy. Heuristic is a "rule of thumb" or a guide to follow when making a choice or decision. A proxy is the ability to do something without actually doing it. The best example would be body mass index (BMI). It uses weight and height but does not actually measure body fat.

We were interested in developing an index using our information that would be useful and wanted to continue to evaluate the relationship between growth measurements and show placing. Is there a more scientific way to distribute animals to classes? Can we develop a Heifer Mass Index (HMI)?

The second part of the study was to evalu-



TO SHOW IN GEORGIA'S COMMERCIAL DAIRY HEIFER SHOW, heifers must be born between March 1 and September 30 and in the exhibitor's possession by November 15. But, a heifer's weight takes precedence over her birth date. The state show is held at the end of February the following year.

ate the similarities and differences between growth measurements of show heifers versus those from actual farms in Georgia.

Show heifers consistently underweight

The study took place over two years and involved 494 Holstein heifers shown at the Georgia Junior Livestock Show in Perry. Data collected included birth date, weight, head length, wither height, hip height, thurl width and tail length. ADG and HMI were calculated. County, affiliated organization, weight class and placing were also collected. An additional 293 Holstein heifers from three farms across Georgia were also evaluated.

We found wither height to be the most predictive of placing, followed by head length. HMI was significant but did not appear as predictive of placing. Show heifers had a lower HMI score than farm heifers at the same age. Show heifers also weighed less for their age than farm heifers. ADG for show heifers slowed as heifers got older, while ADG rose for farm heifers as they aged.

UGA research has shown that cows that are heat stressed deliver smaller calves, with females weighing 6 to 10 percent less at birth and approximately 16 percent less at maturity. We adjusted the Pennsylvania State standard values 10 percent (an average of the 6 to 16 percent) to represent expectations for Georgia heifers as shown in the graph.

Nonshow heifers from this study were very close to values estimated by adjusting the Penn State Growth Monitor Spreadsheet to account for heat stress found in Georgia. Show heifers were consistently below this. HMI values for show heifers indicated that they are underfed. This can lead to stunted growth and can delay or suppress estrus. Winning the show and developing heifers for production purposes are different goals. However, show participants and those working with youth must be educated about proper development of heifers so that show animals can still return to the farm and be ready to breed at normal ages.

Hip height and body weight of heifers can be useful predictors of milk yield, according to a recent study at Iowa State University using data from 134,469 daily milk records. Cows with higher hip heights as calves produced more milk during the first six weeks of lactation. Intermediate weight calves produced more milk than lighter or heavier weight calves. We hope to look at the relationship between height, weight and mass of show heifers after calving.

We have developed information on growing show heifers for our leaders, parents and youth to follow. We have also developed a scorecard for commercial heifers. Frame is allotted 30 percent, dairy form and strength 40 percent, and rear feet and legs 30 percent.

The scorecard takes growth into consideration. All heifers should have a body condition score between 2.75 to 3.25 at breeding and 3 to 3.5 at calving. Heifers that lack growth and condition should be discriminated against. Heifers with strength of front end, width of rump and thurls and depth of body should place over older heifers that appear sharper with a BCS less than 2.5. Small heifers may be deep and, therefore, strong for their size. We hope more judges will follow these guidelines and look for wider, deeper, younger heifers.

136 February 25, 2016

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