

Linear Measurements

Rotokawa Cattle Company has developed an important new tool called a “spider graph” for evaluating and demonstrating the strengths and weaknesses of a bull or cow’s body conformation. The conformation is a critical indicator of how well the animal will function for the producer. I first saw a graph of this type in France, used to illustrate progeny performance in sheep, and applied the concept to evaluating cattle.

Breeding is the art of making pairs—combining complementary traits. Breeders can use our spider graphs to identify weak traits in individual animals and correspondingly strong points in potential mates, to create offspring with a perfected body conformation. Basically we take key measurements of the animal’s body, and compare certain measurements to other measurements on the same animal in order to determine key ratios. Then we represent those ratios in a visual layout that makes the animal’s breeding potential clear at a glance.

The basic linear measurement approach has been used for centuries to evaluate cattle, but in utilizing and refining it, I have drawn on work done over a period of years by Jan Bonsma, Burl Winchester, Karney Redman and Gearld Fry. Bonsma understood the significance of measurement and wrote about it in *Man Must Measure, Livestock Production, 1983*, but the task of distilling Bonsma’s ideas into a system fell to Winchester and Redman, who wrote a pamphlet titled *Why Measure?* in 1988. In recent years Gearld Fry has popularized this approach, and it was Gearld who introduced me to the importance of linear measurement. Since then I have verified the validity and significance of this system, not only through my field

experience throughout North American, in New Zealand, Argentina, Uruguay, England, and France, but also through my experience in marketing meat to stores and restaurants throughout the Northeast.

The measurements used for the ratios in the Rotokawa Spider Graphs are rump length, two-thirds body length, total top line, heart girth, flank girth, shoulder width, rump width and hip height. From these eight measurements we determine five key ratios that reveal balance and structural correctness for grass production.

Structural correctness indicates durability and longevity. Animals that are long-lived and will breed back consistently for many years are critical for financial success. Also, the ratios allow us to predict volumes of meat. Animals that exceed the excellence standard indicated on the graph will have a higher percent of meat in the high-value areas of the animal: the loin and rib areas.

What follows is a description of the graphs, how they are plotted, and how the breeder can use them. This method will indicate the general potential of a particular animal to thrive in an 100% grass-fed program, and identify areas of weakness or strength:

1) “Heart girth” indicates the **heart girth compared to top line**. The heart girth should be at least equal to the top line, and every inch of heart girth that is greater than the top line adds 37 pounds of red meat to the high-value areas of the animal. Adding heart girth to your meat animals is the easiest way to increase the value of the carcass and earn more money per animal in your herd. The “0” on the spider graph is set at equal; “0” indicates that the heart girth equals the top line.

2) **“Shoulder width”** is the comparison of the rump length (not the rump width) to the shoulder width. The rump length is the measurement from the hooks to the pins, and when compared to the shoulder width is indicative of masculinity and the presence of testosterone. The male is all about the shoulders. (The female is all about the rump.) The bull should have shoulders at least 2" wider than the rump length as a young bull, and a mature bull should have shoulders at least 4" wider than the rump length. The “0” on the spider graph is set at +2," the minimum for a good bull.

3) **“Rump width %”** is the comparison of the hip height of the bull to the rump width. A higher percentage is indicative of volume of meat in the rump area. We expect the bull to be 44% as wide as he is tall. Wider is better—the “0” on the spider graph is set at 44%.

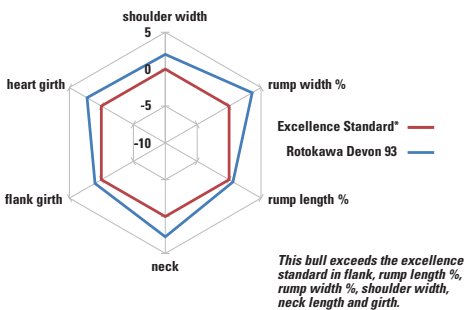
4) **“Flank girth”** is a comparison of the flank girth to the heart girth. On a bull, we would like to see these numbers be equal. A “0” on the spider graph indicates that the flank girth equals the heart girth. Equal is the ideal, but bulls will be greater or less in this measurement.

5) **“Rump length %”** is the comparison of the rump length to the two-thirds body length of the bull. This two-thirds length is measured from the rear of the animals to the point on the back bone directly above the point of the shoulder. The “0” in the spider graph is set at 37%.

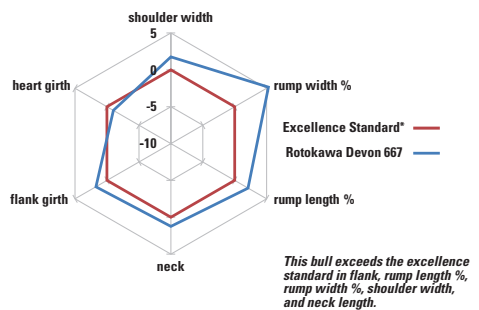
Remember all animals have strong points and weak points. Each spider graph shows an excellent standard compared to ratios of a particular animal that may fall short of the standard or may exceed it. These graphs will help producers make more informed choices on breeding. All of our the Rotokawa® bulls are “prepotent,” that is, they have the “bull power” to impact their offspring in a consistent way—but they do have different strengths. You can see from the spider graphs which ones are stronger in the heart girth, rump width percent, and in the shoulder measurements.

In summary our Rotokawa spider graphs provide specific criteria for breeding decisions that can be documented and communicated to others.

ROKAWA DEVON 93



ROKAWA DEVON 667



*Determined from the work of Jan Bonsma, Burl Winchester, Karney Redman and Gearld Fry.