Post Rock Answers
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Barrett Simon
Post Rock District – Livestock

Water: Questions & Answers

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Most cattle producers fully understand the importance of water. After all, providing an adequate supply of clean, fresh, water is the cornerstone of animal husbandry. There are very few things that compare to the feeling of finding thirsty cows grouped around a dry tank on hot day. Water is important, and in situations where the water supply is limited or we are forced to haul water, one of the first questions we find ourselves asking is "how much water do those cows need"?

The old rule of thumb is that cattle should consume 1 to 2 gallons of water per 100 lbs of bodyweight. Accurately determining the amount of water cows will voluntarily consume is difficult and is influenced by several factors (ambient temperature, moisture and salt content of the diet, body weight, lactation etc.). Water consumption increases linearly as ambient temperature increases above 40° Fahrenheit such that cows require an additional gallon of water for every 10 degree increase in temperature. Additionally, lactation also directly increases the amount of water required by beef cows. The table below summarizes the daily water requirements of beef cows of several different body weights, milk production levels and ambient temperatures (Adapted from Spencer, 2016).

		Average Daily Temperature, °F		
		40	**65**	**90**
Cow weight, lb	**Milk Production, lb/d**	**Gallons of Water/day**		
1100	0	8.2	10.8	13.4
	10	10.5	13.1	15.7
	25	12.8	15.4	17.9
1300	0	9.2	11.8	14.3
	10	12.2	14.8	17.4
	25	14.5	17.1	19.7
1500	0	10.2	12.7	15.3
	10	14.0	16.5	19.1
	25	16.3	18.8	21.4

Another question that often comes up related to water is "how much water will my tank hold?" The capacity of circular stock tank may be calculated using the equation below.

Circular tank capacity, gallons =

[3.14 x radius^2 (inches) x depth (inches)]/231

Using this formula a 12 foot stock tank with 24 inch sides would hold 1691 gallons of water, which is enough water for approximately 85, 1300 lb, lactating beef cows, producing 25 lbs of milk/day on 90°F day.

The third question that often follows is how much tank access is required for a given number of cows. A minimum of 15 inches of linear trough space per head is recommended and at least 10% of the animals in the pasture should be able to drink from the tank at once if the distance to the tank is relatively close. In a larger pasture, where cattle are traveling longer distances to water, providing linear trough space for 30% of the animals in the pasture is suggested to allow more animals to access the tank at once and avoid over-crowding. (Pfost et al., 2000). The circumference of a round stock tank may be calculated using the equation below.

Circular tank circumference inches = 3.14 x diameter (inches)

A 12 foot diameter round stock tank (144 inches) provides 452 linear inches of drinking space, and would provide drinking space for a maximum of 30 head (15 inches/head).

As we can see by working through these calculations, the amount of linear drinking space provided by a tank, rather than capacity or volume of the tank, often determines the number of tanks required for a pasture or grazing site.

Water is important. The daily water requirements of beef cows in this article are estimates and water consumption varies greatly during the summer months when the temperatures exceed 90° Fahrenheit. Therefore, these recommendations are minimum guidelines. There are a number of excellent resources available on the web, regarding livestock water requirements and water site development

References

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