

## FORAGE

# Rainfall and forage data guide stocking decisions

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**The adage** “you cannot manage what you do not measure” has many applications, including stocking rate or, more accurately, carrying capacity.

However, in the management of beef cattle operations, carrying capacity has traditionally received little attention. There are several factors for this: the development of fertilizer-

efficient introduced grasses, cheap fertilizer, cheap hay and several decades of good rainfall beginning in the early 1980s. Fertilizer and hay are now much more expensive. Rainfall has become less dependable with drought reminiscent of the 1950s being experienced in 2011 and 2012. In spite of changing conditions, most producers were reluctant to adjust stocking rate until forced to do so by the drought, and, even then, few have begun monitoring (much less

managing) carrying capacity. Now is the time to begin active management of carrying capacity and, thus, your stocking rate.

Where does a producer begin? A good place to start is monitoring monthly rainfall on the ranch using a “water year” table and comparing numbers to the long-term monthly average (Table 1). The water year rainfall table for an operation allows a producer to determine the percentage above or below the long-term

**Table 1.**  
Water Year Rainfall for South-central Oklahoma (updated 3/1/2013)

Month	Local long-term monthly rainfall			2011-2012 water year monthly rainfall				2012-2013 water year monthly rainfall			
	30-year average	cumulative total	% 30-year average	2011-2012	cumulative total	% 30-year average	variance from	2012-2013	cumulative total	% 30-year average	variance from
	inches	inches	percent	inches	inches	percent	average	inches	inches	percent	average
October	4.12	4.12	10	2.07	2.07	5	-5	1.54	1.54	4	-7
November	2.89	7.01	18	6.74	8.81	22	5	0.54	2.08	5	-12
December	2.44	9.45	24	2.05	10.86	27	4	1.72	3.80	10	-14
January	1.84	11.29	28	4.26	15.12	38	10	1.84	5.64	14	-14
February	2.20	13.49	34	1.27	16.39	41	7	2.49	8.13	21	-14
March	3.40	16.89	43	5.79	22.18	56	13	1.70	9.83	25	-18
April	3.61	20.50	52	2.77	24.95	63	11				
May	5.47	25.97	65	2.12	27.07	68	3				
June	4.47	30.44	77	3.30	30.37	77	0				
July	2.45	32.89	83	0.70	31.07	78	-5				
August	2.52	35.41	89	2.13	33.20	84	-6				
September	4.24	39.65	100	2.27	35.47	89	-11				
	<b>39.65</b>			<b>35.47</b>							

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**Table 2. Example of a Critical Date Forage Assessment Form using the reserve herd day approach**

Forage assessment form using reserve herd days (RHDs)

Assessment date 6/1/2013

**Annual estimate of livestock demand**

Cattle	Qty	Weight	Annual livestock demand		
			Per day	Days/year	Per year
Cows	84	1,200	2,621	365	956,592
2-year old cows	12	1,000	312	365	113,880
Yearling heifers	15	800	312	365	113,880
Bulls	5	1,600	208	365	75,920
Weaned steers	45	600	702	90	63,180
Weaned heifers	45	600	702	90	63,180
			4,857		1,386,632

**Grazing demand to date**

Grazing demand			Livestock demand		Months grazed	Total grazing demand
Cattle	Qty	Weight	Per day	Per month		
Cows	84	1,200	2,621	78,624	2	157,248
2-year old cows	12	1,100	343	10,296	2	20,592
Yearling heifers	15	900	351	10,530	2	21,060
Bulls	5	1,600	208	6,240	2	12,480
Weaned steers	n/a					
Weaned heifers	n/a					
			3,523	105,690		211,380

**Forage production to date**

Graze+RHDs	% Annual
Grazed	211,380
RHDs	100,386
Hay	88,000
Total	399,766
% of Annual=	29

**Critical dates and expected production**

Date	% Annual	Total lbs
Jun 1	30	415,990
Jul 1	65	901,311
Aug 1	90	1,247,969
Nov 1	100	1,386,632

average that the actual precipitation is at the end of each month, thus indicating approximately how much to adjust the stocking rate during the growing season (assuming the producer is stocked for an average year).

The second variable to measure is actual forage production. There are several methods to assess forage production. Depending on the type of management employed, the best method will vary. Estimates of forage production need to be determined at critical dates in the operational plan. A few suggested dates for estimating forage production for the Southern Great Plains region are June 1, July 1, Sept. 1 and at frost when, respectively, about 30 percent, 65 percent,

90 percent and 100 percent of annual perennial warm-season grass production is expected to be produced.

A forage assessment form is the tool needed to estimate forage production. There are many different ways to construct a forage assessment form. In Table 2, a reserve herd day approach is used in the assessment, which is often easier when practicing managed rotational grazing. Initial critical information includes identification of critical assessment dates; an estimate of forage demand at critical date assessment and anticipated for the year; an estimate of the total amount of production anticipated for the grazing period (normally a year for cow-calf

**Forage Inventory to date (Grazed + RHDs)**

Grazing RHDs					
Pasture	Forage	Total acres	Reserve days	Cattle	Estimated forage reserve
1,4,5,8	Bg	80	21	Cows	55,037
2,6	Bahia	40	20	2-yr	6,864
3	Bg	20	30	Yrlg hfr	10,530
7	Bg	20	7	Cows	18,346
9	Bahia	20	2	Cows	5,242
10	Annuals	20	21	Bulls	4,368
Lbs forage grazing					100,386
Reserve grazing days					28
Reserve grazing months					0.9

Hay	(Acres)	(Qty/ac)	Bales	Weight	Reserve
Hayfield	25	1	25	1,200	30,000
Ryegrass hay			58	1,000	58,000
Lbs hay					88,000
Reserve hay days					25
Reserve hay months					0.8

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operations); and an estimate of the amount of forage produced (on-hand, grazed and hayed) at the time of assessment. All forms will include pasture inventory information such as pasture identification, forage type and estimated production.

Adequate rainfall covers up many poor management practices and allows producers to ignore the man-

agement of stocking rate. It often takes extreme circumstances – like an extended drought – before stocking rates are adjusted. Unfortunately, adjustment is usually made after the land (forage) resource has been misused to the point that it will take multiple years to recover – if recovery is even possible. However, astute managers can distinguish themselves

during periods of extended drought by managing stocking rates to match carrying capacity through the use of tools to monitor rainfall and forage production. The key to sustaining forage resources for long-term optimization of carrying capacity (regardless of rainfall) is active management of stocking rates. ■