Summer Protein Supplementation for stocker cattle and nursing calves on rangelands

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Good spring rains, good spring grass, but… possibly lower nutritional value in summer and fall. ***Bottomline:*** *Stocker cattle producers and cow/calf operators might consider protein supplementation as a management tool from July to marketing in the late summer and early fall.*

The Panhandle and Plains regions have received welcome abundant rainfall this spring resulting in good to excellent forage production. However with these conditions, the greater tonnage of production is expected to have a lower protein concentration and lower energy value than in years when rainfall is not as abundant or distributed differently. A low rate of protein supplementation from July until marketing in September or October can improve market weights of stocker cattle and weaning calves.

Performance response of stocker cattle Summer protein supplementation of stocker cattle has been evaluated on shortgrass prairie in northeast NM and western Kansas, mixed grass prairie in northwestern and western Oklahoma, and tallgrass prairies in central Oklahoma - range types representing the varied rangelands of the Texas Panhandle and Plains. In these studies, stocker cattle ***gained an additional 0.25-0.45 lb/day*** when fed a ***high protein (38-41%) supplement*** at a rate ***equivalent to 1 lb/hd/day*** (7 lb/hd/wk). This is an additional 22-30 lb gain over a 75 day period. The ***supplement efficiency*** (lb supplement/lb of added wt) ranged from about 4:1 to less than 2:1. If an ionophore is added to the supplement, gains and efficiency improve further.

The supplement does not have to be delivered daily. If an ionophore (monensin, lasalocid) is in the supplement, then the 7 lb of feed/wk should be delivered in no less than 3 feedings/wk of about 2.33 lb/hd. If no ionophore is fed, then the supplement can be delivered in as little as 2 feeding/wk of 3.5 lb/hd. A suitable self-fed product can also be used. Ionophores cannot be delivered in self-fed products unless the feed product has been approved and is labelled for self-feeding.

Performance response of nursing calves Studies have shown that nursing calves can also benefit from protein supplementation in the summer. Oklahoma research demonstrated that calves provided the ***equivalent of 1 lb/day*** of a ***high protein (38-41%) creep feed***, in this case a salt-limited protein meal, responded similarly to the yearlings with increased gain and a ***supplement efficiency*** around 3:1.

Creep feeding requires a "creep area" be constructed that can only be accessed by the calves. Most often, the creep feed offered is a self-fed dry feed product placed in the creep area.

Hand-fed products, such as range cubes, can also be used as a creep feed but will be delivered into troughs in the creep area on a schedule similar to that mentioned above for supplementing stockers. The calf creep feed can also contain ionophores. Again, ionophores can only be offered in self-fed products labelled for self-feeding.

Cost:benefit To determine the economic benefit of either supplementing stocker cattle or creep-feeding calves, compare the ***marginal cost of the weight added by supplement*** to the ***marginal value of the weight added by the supplement***.
As mentioned above, the supplement efficiency reported with these nutritional management programs ranges from 2:1 to 4:1 (lb supplement/lb added weight). The ***marginal cost of the weight added by the supplement*** is calculated by multiplying the supplement efficiency by the cost per lb of supplement (feed cost + delivery cost). Some example costs using the supplement efficiencies reported from research trials are shown in table 1 below. For example, at a 3:1 supplement efficiency and supplement cost of $450/ton, the marginal cost is $0.675/lb of added gain from the supplement.

Table 1. *Marginal cost of added weight gain at different supplement efficiencies and different ton costs*

Supplement efficiency, lb suppl/lb added wt	**Supplement Cost (feed only), $/ton ($/lb)**	
	350 (0.175)	**450 (0.225)**
	Marginal Cost of Added Weight ($/lb)[1]	
2	0.35	0.45
3	0.525	0.675
4	0.70	0.90

[1]Marginal cost of added gain, $/lb =
(Supplement feed cost + supplement delivery cost)*Supplement efficiency

Table 2. Examples of Marginal Value of Added Weight at different base weights with different price slides/rollbacks

		Rollback or Slide, $/cwt				
		5	**10**	**15**	**20**	**25**
Base wt	**Base price, $/cwt**	**Marginal Value of Added Weight, $/lb**				
500	230	2.00	1.70	1.40	1.10	0.80
	250	2.20	1.90	1.60	1.30	1.00
	270	2.40	2.10	1.80	1.50	1.20
700	205	1.75	1.25	0.85	0.45	0.05
	215	1.85	1.35	0.95	0.55	0.15
	225	1.95	1.45	1.05	0.65	0.25

The ***marginal value of added weight*** is calculated using the projected market values ($/hd) of the unsupplemented and supplemented calves (value of added wt = [$/hd market value supplemented calf - $/hd unsupplemented calf]/[Market wt supplemented calf - market wt unsupplemented calf]). Table 2 illustrates some examples at different base weights and price slides/rollbacks.

With today's market structure the ***marginal value of added weight is ranging from about $1.00 to $1.80 for 5 cwt calves and 7 cwt stockers***. As seen in table 2, this varies and can change depending on the market slides/rollbacks that are set in play. Using costs reflecting today's market for high protein cubes and feed commodities (table 1), cost of added weight is ranging from $0.35 to $0.90/lb depending on efficiency and feed price.

In light of the welcome rainfall this spring and hopefully into the summer, forage production should be greater than in normal years. But, the nutritional value of the forage may be lower than normal. Low rate protein supplementation can enhance gains in these conditions and today's market structures for calves and stockers can provide incentive to put on more weight with supplements.

For more information, contact your local Texas A&M Agrilife Extension Service agricultural agent or Dr. Ted McCollum at ft-mccollum@tamu.edu or 806-336-3190.