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# GUIDELINES TO SELECTING LIQUID FEED FOR WINTER SUPPLEMENTATION OF PRODUCING BEEF COWS IN SOUTH FLORIDA

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## SELECTING A LIQUID FEED FOR THE SPECIFIC FEEDING SITUATION

### Pasture with winter/spring breeding season

Bahiagrass, 7% crude protein (CP), 45% TDN. Feed a liquid supplement during calving/breeding season to provide about 3 lbs of TDN and .75 to 1.0 lbs of CP/cow/day. This would require a liquid feed containing 15 to 20% CP. For cattle up to 4 years old, thin older cows (condition score 2 to 4 at breeding) or if cows are not separated by age, over 75% of the total CP should be natural protein. For cows 5 years and older, maintained in a separate herd and in good body condition (condition score 5 or more at calving), all added CP can be non-protein nitrogen (NPN).

Stockpiled hemarthria (or pangola), 5% CP, 55% TDN. Feed a liquid supplement during calving/breeding season to provide 1.5 lbs of TDN and .75 to 1.0 lbs of CP/cow/day. This would require a liquid feed containing 30 to 40% CP. For cattle up to 4 years old, thin older cows or if cows are not separated by age, over 50% of the total CP should be natural protein. For older cows kept in a separate herd and in good body condition, all added CP can be NPN. **Do not feed high NPN liquid feeds to hungry cattle.**

**Hay situations, with hay providing most of forage with winter/spring breeding season**

Good quality stargrass or bermudagrass, 10% CP, 55-60% TDN: no supplement needed.

Moderate quality stargrass, bermudagrass or bahiagrass, 7% CP, 50% TDN: supplement as with bahiagrass pasture above.

Hemarthria, 5% CP, 55% TDN: supplement as with stockpiled hemarthria pasture.

## WHAT TO LOOK FOR IN COMPARING LIQUID SUPPLEMENTS?

### Crude protein content

Total CP and % equivalent protein derived from non-protein nitrogen are on the feed tag. Natural protein can be calculated from these values as: natural protein (%) = total CP (%) - equivalent protein derived from NPN (%).

Where it can not be added, natural protein can be fed as a separate supplement to a liquid feed as a meal, range cube, or as a free-choice protein in a salt-mineral mix. Total CP of .75 to 1.0 lbs/cow/day needs to be provided in the liquid and dry mixes.

By-pass protein is protein not degraded in the rumen but digested in the true stomach and intestines. Such proteins could provide more and a better balance of amino acids to cattle, thus improved production. Liquid feed fed to grazing cows should contain by-pass protein when the addition of a natural protein is recommended. A by-pass protein value is not listed on the feed tag, but proteins like feather meal, blood meal, fish meal and cottonseed meal, contain by-pass protein and will be listed on the tag if they are added.

### Energy content

It is difficult to compare the energy contents of different liquid supplements because common energy values such as TDN are not given. The following feed tag values will assist in making such comparisons.

Moisture content. A liquid feed can contain from 20 to 40% (or more) moisture. Water contributes no energy and a liquid feed with less moisture usually has a higher energy value.

Total invert sugar. Sugars are the major source of energy in most liquid feeds. Invert sugar can be as high as 40 to 48%. The higher the better.

Fat content. Fat contains 2.25 time the energy of sugar or starch. The addition of fat increases the energy value of a liquid feed.

Ingredient composition. Good ingredients for making liquid feed are cane, citrus, beet and corn molasses. Molasses distillers solubles provides more protein and vitamins than molasses, but the energy value is much lower than the original molasses because sugars were fermented into alcohol. In comparison to molasses, molasses distillers solubles has a much higher ash content which provides no energy.

Estimated TDN. The TDN value of a liquid feed, as-fed basis, can be estimated using the above values with the following formula: TDN = total invert sugars (%) + natural protein (total CP - NPN) (%) + fat x 2.25 (%) + 8 x ((100 - % moisture) ÷ 78).

**Minerals and vitamins**

In terms of supplementation costs, these are less important than protein and energy and would not be needed if cattle consume adequate levels of a good mineral/vitamin supplement.

**Cost**

To figure cost, set a goal as to supplemental nutrient needs/cow/day and then determine what it will cost to meet this goal. For example: if one wishes to supplement older brood cows grazing bahiagrass pasture 3 lbs/cow/day of TDN and 1.0 lb/cow/day of total CP. Estimate the TDN (as-fed value) of the feed, say it is 52% in this example. The quantity of liquid feed that needs to be fed to provide 3 lbs/cow/day of TDN is 5.75 lbs (3 divided by .52). To provide 1.0 lb of CP divide 1.0 by 5.75 and multiply by 100 and this gives the % CP the feed should contain (crude protein % = 1.0 ÷ 5.75), which is 17% CP in this example. If the liquid feed selected sells for $115/ton it will cost $0.33 (33 cents)/cow/day ($115 ÷ 2000 x 5.75 lbs/cow/day).

If a liquid supplement is fed free choice, intake will vary with pasture, cattle, and type of supplement, thus affecting cost per cow per day. Intakes should be monitored and adjustments made for a cost effective supplementation program.