

PUBLICATIONS

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Forage Research in Texas

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Location: Angleton

FACTORS RELATED TO FORAGE DIET SELECTION
BY YEARLING STEERS

OBJECTIVE:

To elucidate forage factors governing diet selection by yearling steers.

PROCEDURE:

Fourteen, crossbred (3/4 Hereford 1/4 Angus), yearling steers were individually penned and randomly assigned to one of three treatments. Three animals were given only fresh chopped ryegrass, harvested daily, three more were given only sorghum silage plus 200 g CSM daily, and the remaining steers were given both forages in separate containers. Both forages were offered *ad lib.* during the 10-day intake trial and at 90 percent of *ad lib.* during the 7-day, total collection digestion trial.

Forages were sampled daily for dry matter determination. For laboratory analyses sorghum silage, orts and feces were composited for entire trial periods, but ryegrass was composited for no more than 3-day periods so that composition changes with time could be ascertained.

RESULTS AND DISCUSSION:

The sorghum and ryegrass were sufficiently different in composition and digestibility (Tables 1 and 2) to allow steers given both forages to select preferred levels of digestibility ($68 \pm .8\%$ DOM) in their diets. They also exhibited a preference for levels of indigestible NDF (INDF) that approached the apparent maximum capacity of 'sorghum only' steers for INDF. Indeed, previous experiments indicate a requirement for >8 g INDF/kg BW^{.75} daily to avoid the intake reduction shown here by 'ryegrass only' steers (Table 3). The relatively small standard deviation values for all intake parameters by 'sorghum only' steers suggest that physical capacity was the limiting intake factor for that diet.

Comparison of fiber analyses and IVDMD values (Table 2) for ryegrass values showed no change with time. Cold, cloudy weather prevailed throughout the trials.

These data suggest that the ideal forage for yearling steers has 68% DOM and 11% INDF. Whether these values hold for other classes cattle should be investigated.

TABLE 1

Composition and component digestibilities of ryegrass and sorghum silage

| Component | Ryegrass | | Sorghum | |
|---------------------|----------|---------|---------|---------|
| | Amount | Digest. | Amount | Digest. |
| Organic matter | 87.0 | 77.7 | 94.3 | 56.4 |
| NDF ¹ | 43.3 | 73.6 | 56.2 | 44.0 |
| Lignin ² | 2.6 | -- | 5.1 | -- |

¹Organic matter basis²Van Soest permanganate method

TABLE 2

In vitro dry matter disappearance for ryegrass and sorghum silage

| Fermentation time, hr. | IVDMD ¹ | | | |
|------------------------|--------------------|------|------|------|
| | 12 | 48 | 96 | 144 |
| Forage | | | | |
| Ryegrass | 75.3 | 90.4 | 93.8 | 94.0 |
| Sorghum silage | 52.4 | 68.9 | 72.4 | 77.1 |

¹Organic matter basis

TABLE 3

Voluntary intakes of ryegrass and sorghum silage

| Treatment | Intake ¹ | | | |
|----------------------|------------------------|----------------------|------------------|-------------------|
| | Ryegrass ² | Sorghum ² | DOM ³ | INDF ⁴ |
| | g/kg VW ^{.75} | | | |
| Ryegrass only | 72 ± 7.1 | --- | 49 ± 4.8 | 4 ± .4 |
| Sorghum only | --- | 58 ± 1.6 | 33 ± .9 | 15 ± .4 |
| Ryegrass and Sorghum | 58 ± 8.4 | 40 ± 9.8 | 60 ± 3.2 | 14 ± 1.9 |

¹Values are means ± standard deviations²Dry matter³Digestible organic matter⁴Indigestible neutral detergent fiber = 144-hr in vitro residue