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## Part II

Feedlot Performance of Eight Hybrid Sorghum  
Grains and Three Hybrid CornsR.L. McCollough, C.L. Drake, and G.M. Roth

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Introduction

A 126-day feedlot trial was used to determine feedlot performances and nutritional values of eight hybrid sorghum grains and three hybrid corns (table 10, part I).

Materials and Methods

Each steer was implanted with 24 mg of diethylstilbestrol (DES) at the start of trial, and was weighed at noon on two consecutive days at the start and end of the trial. Respective means were used for starting and ending weights. The cattle were hand-fed twice daily. Carcass data were collected at slaughter.

The steers were started on a 50-50 ration of dehydrated alfalfa pellets and one of the hybrid grains, and brought to an all-concentrate ration in three weeks.

Results and Discussion

Table 15 shows that the steers on high oil corn ate less ( $P < .05$ ) than those on Acco BR-1023. There was no significant difference in average daily gain. Differences among feed efficiencies of the nine hybrids (15 head per treatment) were highly significant ( $P < .001$ ). Steers fed BR-1023 had the poorest feed efficiency (10.23); those fed E-57, the best (7.68). The hybrids are ranked by feed efficiency in table 16. Yellow endosperm hybrids and regular corn tended to have better feed efficiencies than white endosperm hybrids.

Table 16 compares feed efficiency of regular corn with those of bird resistant, yellow endosperm, and white endosperm hybrid sorghums. DeKalb E-57 was the only sorghum with better feed efficiency than regular corn. The four yellow endosperm sorghums had 95.1% the feed efficiency value of corn. The two white endosperms' feed efficiency was 85.82% that of regular corn, and 90.25% that of four yellow endosperm hybrid sorghums. Feed efficiency of yellow endosperm hybrids was 9.75% better than that of white endosperm hybrids.

Table 17 gives carcass data. Backfats were different ( $P < .01$ ) among hybrids. Jumbo-C had the least (0.41 inch) backfat; G-766W,

the most (0.64 inch). Differences in marbling or quality grade were not significant. BR-1023 gave a lower ( $P<.05$ ) dressing percentage than did other hybrids.

Table 18 compares feedlot performance of nonsheltered and sheltered animals. Steers in sheltered lots gained faster ( $P<.005$ ), ate less ( $P<.001$ ), and had 24.77% better feed efficiency ( $P<.001$ ) than those in nonsheltered lots.

Comparison among eleven hybrids fed in sheltered lots are shown in table 19. There were no significant differences in ADG or feed/day among hybrids. There was a significant ( $P<.05$ ) difference for feed efficiency among hybrids.

### Summary

Eight hybrid sorghum grains and three hybrid corns were fed in all-concentrate rations for 126 days to 139 Angus steers. There were 15 head per treatment (five individually fed in sheltered lots and 10 group fed in two lots of five each). The steers fed Acco-1023 (bird resistant) gained the least, had the lowest dressing percent, and poorest feed efficiency.

Feed efficiency data from this study indicates that a 105 pounds of yellow endosperm or 116.5 pounds of white endosperm sorghum grain would produce the same gain as 100 pounds of regular yellow dent corn. Feed efficiency of the 4 yellow endosperm hybrids was 9.75% better than that of the 2 white endosperm hybrids.

Table 15. Feedlot data: seven hybrid sorghums, three hybrid corns<sup>a</sup>, 126 days, winter, 1970-1971, dry matter basis, all-concentrate rations, 15 head per hybrid (least square means).

| Hybrid        | Endosperm        | Feed/day,<br>lbs.   | ADG,<br>lbs. | Cost/cwt. <sup>b</sup><br>gain | Feed<br>efficiency |
|---------------|------------------|---------------------|--------------|--------------------------------|--------------------|
| E-57          | Y <sup>c</sup>   | 15.78 <sup>fg</sup> | 2.06         | 15.99                          | 7.68 <sup>f</sup>  |
| Regular corn  | --               | 15.32 <sup>fg</sup> | 2.09         | 17.51                          | 7.75 <sup>f</sup>  |
| G-766W        | Y                | 16.28 <sup>fg</sup> | 2.05         | 16.78                          | 8.07 <sup>f</sup>  |
| NK-222        | Y                | 16.19 <sup>fg</sup> | 1.98         | 17.31                          | 8.32 <sup>f</sup>  |
| R-109         | Y                | 17.03 <sup>fg</sup> | 2.00         | 17.76                          | 8.54 <sup>f</sup>  |
| RS-671        | W <sup>d</sup>   | 16.46 <sup>fg</sup> | 1.91         | 17.34                          | 8.84 <sup>fg</sup> |
| High oil corn | --               | 15.00 <sup>g</sup>  | 1.72         | 20.25                          | 8.96 <sup>fg</sup> |
| Jumbo-C       | W                | 15.80 <sup>fg</sup> | 1.74         | 19.18                          | 9.21 <sup>fg</sup> |
| BR-1023       | WBR <sup>e</sup> | 17.64 <sup>f</sup>  | 1.78         | 21.24                          | 10.21 <sup>g</sup> |

<sup>a</sup> Rank according to feed efficiency

<sup>b</sup> Cost of sorghum ration \$2.08/cwt. Cost of corn ration \$2.26/cwt.

<sup>c</sup> Yellow endosperm.

<sup>d</sup> White endosperm.

<sup>e</sup> Bird resistant.

<sup>fg</sup> Means with different superscripts differ significantly ( $P < .05$ ).

Table 16. Comparison of Feed Efficiencies of Nine Hybrids. Fed Winter 1970-1971.  
Fifteen Head/Hybrid.

| Hybrid                   | Endosperm        | Feed efficiency | % value of <sup>a</sup> |         |                    |                   |
|--------------------------|------------------|-----------------|-------------------------|---------|--------------------|-------------------|
|                          |                  |                 | Regular corn            | BR-1023 | 4 yellow endosperm | 2 white endosperm |
| G-766W                   | y <sup>b</sup>   | 8.07            | 104.13                  | 79.04   | 99.02              | 89.36             |
| R-109                    | Y                | 8.54            | 110.19                  | 83.64   | 104.78             | 92.57             |
| E-57                     | Y                | 7.68            | 99.23                   | 75.32   | 94.36              | 85.16             |
| NK-222                   | Y                | 8.32            | 107.35                  | 81.49   | 102.08             | 92.14             |
| RS-671                   | w <sup>c</sup>   | 8.84            | 114.06                  | 86.58   | 107.47             | 97.70             |
| BR-1023                  | WBR <sup>d</sup> | 10.21           | 131.74                  | --      | 125.27             | 113.07            |
| Jumbo-C                  | W                | 9.21            | 118.84                  | 90.21   | 113.01             | 101.99            |
| High oil corn            | --               | 8.96            | 115.61                  | 87.76   | 109.93             | 99.22             |
| Regular corn             | --               | 7.75            | --                      | 75.91   | 95.09              | 85.82             |
| 4 yellow endosperms avg. |                  | 8.15            | 105.16                  | 79.82   | --                 | 90.25             |
| 2 white endosperms avg.  |                  | 9.03            | 116.52                  | 88.44   | 110.78             | --                |

<sup>a</sup>Values above 100 indicate poorer feed efficiency, those below 100, superior feed efficiency. The amount above or below is the percentage increase or decrease in efficiency.

<sup>b</sup>Yellow endosperm

<sup>c</sup>White endosperm

<sup>d</sup>Bird Resistant

Table 17. Carcass data from steer fed one of nine hybrid grains, 15 head per treatment, winter, 1970-1971.

| Hybrid        | Fat thickness, in.   | Yield Grade | Marbling <sup>e</sup> | Dressing %         | Quality grade <sup>f</sup> |
|---------------|----------------------|-------------|-----------------------|--------------------|----------------------------|
| G-766W        | 0.64 <sup>a</sup>    | 3.41        | 16.20                 | 62.00 <sup>a</sup> | 10.50                      |
| R-109         | 0.55 <sup>abc</sup>  | 3.06        | 15.25                 | 61.52 <sup>a</sup> | 10.15                      |
| E-57          | 0.57 <sup>abc</sup>  | 3.19        | 14.30                 | 61.55 <sup>a</sup> | 9.65                       |
| NK-222        | 0.56 <sup>abc</sup>  | 3.23        | 15.40                 | 61.67 <sup>a</sup> | 10.20                      |
| RS-671        | 0.60 <sup>ab</sup>   | 3.29        | 14.50                 | 61.74 <sup>a</sup> | 9.80                       |
| BR-1023       | 0.44 <sup>cd</sup>   | 2.93        | 13.90                 | 59.28              | 9.35                       |
| Jumbo-C       | 0.41 <sup>d</sup>    | 2.73        | 15.60                 | 61.33 <sup>a</sup> | 10.30                      |
| High oil corn | 0.48 <sup>bcd</sup>  | 2.85        | 15.50                 | 61.52 <sup>a</sup> | 10.15                      |
| Regular corn  | 0.53 <sup>abcd</sup> | 3.00        | 16.95                 | 61.86 <sup>a</sup> | 10.90                      |

Least Square Means

a,b,c,d Means with different superscripts differ significantly (P<.05).

<sup>e</sup>Average small-14, average modest-17

<sup>f</sup>Average good-3, average choice-11

Table 18. Sheltered compared with nonsheltered animals. All concentrate rations, winter 1970-1971.

| Item           | Sheltered<br>(5 head/treatment) | nonsheltered<br>(10 head/treatment) | P     |
|----------------|---------------------------------|-------------------------------------|-------|
| Gain, lbs./day | 2.05                            | 1.80                                | <.005 |
| Feed/day, lbs. | 15.15                           | 17.19                               | <.001 |
| Efficiency     | 7.69 <sup>a</sup>               | 9.57                                | <.001 |

<sup>a</sup>Least square means and efficiency cannot be reconstructed from mean gain and mean intake.

Table 19. Feedlot performance of 11 hybrids fed individually in sheltered lots.

| Hybrid           | No. head | ADG  | Feed/day | Efficiency          |
|------------------|----------|------|----------|---------------------|
| G-766W           | 5        | 2.21 | 15.04    | 6.89 <sup>bc</sup>  |
| R-109            | 5        | 1.95 | 15.88    | 8.39 <sup>ab</sup>  |
| E-57             | 5        | 2.14 | 14.66    | 6.89 <sup>bc</sup>  |
| NK-222           | 5        | 2.13 | 15.94    | 7.66 <sup>abc</sup> |
| RS-671           | 5        | 1.98 | 16.32    | 8.35 <sup>ab</sup>  |
| BR-1023          | 5        | 1.76 | 15.20    | 9.16 <sup>a</sup>   |
| Jumbo-C          | 5        | 1.89 | 14.75    | 7.82 <sup>abc</sup> |
| High oil corn    | 5        | 1.81 | 13.39    | 7.62 <sup>abc</sup> |
| Regular corn     | 5        | 2.51 | 15.09    | 6.26 <sup>b</sup>   |
| 2/3 waxy         | 2        | 2.23 | 15.58    | 6.95 <sup>bc</sup>  |
| High lysine corn | 2        | 2.03 | 13.73    | 6.75 <sup>bc</sup>  |

Least square means

abc Means with different superscripts differ significantly (P<.05).