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Inheritance of Some Reproductive Traits by Young Bulls

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Summary

Several reproductive traits of yearling Polled Hereford bulls were evaluated during and immediately after a 140-day feeding test. Results indicate that concentration of sperm and percentages of live sperm are heritable and genetically independent of each other. Heritability was low for sex drive or libido.

Experimental Procedure

Seventy-two Polled Hereford bulls on a 140-day feed test at the KSU Beef Research Center in 1974-75 were used in this experiment. Beginning when they were approximately eight months ago, we observed each bull for five minutes every four weeks and recorded the bull's sexual behavior with an ovariectomized heifer in standing estrus. Sex drive or libido was measured as the bull's age in days when he first successfully mounted the heifer, penetrated, and ejaculated. Semen from each bull was collected by electroejaculation when they were approximately 12½ months old after the 140-day test. Concentration and percentage of live sperm were recorded.

The data were analyzed by least squares procedures. Sire and barn were held constant. Heritabilities and genetic correlations were calculated using paternal half-sib method.

Results and Discussion

Means, heritabilities, and genetic correlation for the traits are given in table 5.1. Both concentration and percentage of live sperm were significantly affected by sire ($P < .05$). However, sex drive had little sire influence.

Bulls with more libido (younger at first successful service) tended to have semen with higher concentrations of sperm, but lower percentages of live sperm. Percentage of live sperm and concentration have only a small positive genetic relationship. High heritabilities for concentration and percentage of live sperm make them traits that could be successfully selected for in a breeding program.

Table 5.1 Means, heritabilities and genetic correlations of reproductive traits.

| Trait | Mean | Heritabilities (on diagonal) and genetic correlation (off diagonal) | | |
|----------------------------|-----------|---------------------------------------------------------------------|---------------|-------|
| | | Libido | Concentration | %Live |
| Libido ^a | 382 days | .14 | | |
| Concentration ^b | 33.7 x 10 | -.63 | .81 | |
| Live sperm (%) | 58.6 | .69 | .13 | .95 |

^aLibido is measured as age (in days) at which bull first successfully serves a female.

^bSperm per cc of semen.