

# Over a Thousand BSE's Using the New Form

R.L. Carson, DVM

J.G.W. Wenzel, DVM

Department of Large Animal Surgery and Medicine

College of Veterinary Medicine

Auburn University, Alabama

## Introduction

Beginning in the Fall of 1992 the Society for Theriogenology adopted a new form for evaluation of breeding soundness of bulls. To be a satisfactory potential breeder under these guidelines, a bull must pass all four parts of the examination. The four parts consist of an acceptable physical examination, minimum scrotal circumference based on age, minimum progressive motility of 30%, and minimum morphology of 70% normal cells. Failure to meet the standards of any portion of the examination means unsatisfactory or deferred classification. The three possible classifications are satisfactory potential breeder, unsatisfactory potential breeder, or deferred classification. Deferred classification replaced the old classification of questionable potential breeder and allows for reevaluation at a specified time for conditions which might improve.

## Materials and Methods

Client bulls were evaluated by the authors using the bull breeding soundness examination standards and forms established by the Society for Theriogenology. Physical examination, internal and external genital palpation, and scrotal measurements were performed on each bull. Semen was collected by electroejaculation and evaluated for motility and morphology. Bulls with poor motility or high numbers of secondary abnormalities initially were recollected.

The bull population consisted of bulls being sold in bull sales, recent purchases, bulls being offered for sale and herd bulls. Breed composition was primarily beef with a small number of Holsteins. Records for 1993, 1994, and January through May of 1995 were reviewed and numbers tabulated. Data was recorded for total number of bulls, number satisfactory, number unsatisfactory, and number deferred. These same parameters were also recorded for various ages as shown in Table 1. Additionally, numbers were recorded for fifteen possibilities for unsatisfactory or deferred classification (Table 2). Each time a bull was presented was considered one

examination. Thus, a small number of bulls may have been presented more than once due to reevaluations.

**Table 1.** Age Strata of Bulls Examined for Breeding Soundness. 1993, 1994, Jan-May 1995.

≤ 15 mo	> 36 ≤ 48 mo
> 15 ≤ 18 mo	> 4 ≤ 5 yr
> 18 ≤ 21 mo	> 5 ≤ 6 yr
> 21 ≤ 24 mo	> 6 ≤ 7 yr
> 24 ≤ 36 mo	> 7 yr

**Table 2.** Reasons and Combinations for Unsatisfactory or Deferred Classification 1993, 1994, Jan-May 1995.

Physical Examination
Insufficient Scrotal circumference
Unacceptable Morphology
Unacceptable Motility
Physical and Scrotal Circumference
Physical and Morphology
Physical and Motility
Scrotal Circumference and Morphology
Scrotal Circumference and Motility
Motility and Morphology
Physical, Scrotal Circumference, and Morphology
Physical, Scrotal Circumference, and Motility
Scrotal Circumference, Motility, and Morphology
Physical, Morphology, and Motility
Physical, Scrotal Circumference, Morphology, and Motility

## Results

The number of bulls examined is given by age in Table 3. As seen in this table, the majority of bulls examined were under four years of age with the largest group being > 24 ≤ 36 months of age. The disposition of all examinations for all years is shown in Table 4. Of the 1276 bulls examined, 802 (62.85%) were classified as satisfactory, and 474 (37.15%) were classified as ei-

ther unsatisfactory or deferred (369 (28.92%) unsatisfactory and 105 (8.23%) deferred.

A breakdown of breeding soundness examination results for each age group (Table 5) revealed similar percentages of unsatisfactory classification for all ages until bulls were over 5 years of age, at which point the percentage increased. The percentage deferred was greatest (15.1%) for bulls 15 months and younger.

The reasons bulls were classified as unsatisfactory or deferred are shown in Table 6 for all ages. The major reason was unacceptable sperm morphology (52.11%), followed by insufficient scrotal circumference (12.45%), and scrotal circumference and morphology combined (10.97%).

**Table 3.** Age Distribution of Bulls Examined for Breeding Soundness 1993, 1994, Jan-May 1995.

Age	Number	% of Total
≤ 15 mo	146	11.4
> 15 ≤ 18 mo	179	14.03
> 18 ≤ 21 mo	211	16.50
> 21 ≤ 24 mo	129	10.10
> 24 ≤ 36 mo	273	21.40
> 36 ≤ 48 mo	129	10.10
> 4 ≤ 5 yr	108	8.50
> 5 ≤ 6 yr	58	4.55
> 6 ≤ 7 yr	21	1.64
> 7 yr	22	1.72
Total	1276	100%

**Table 4.** Breeding Soundness Results All Ages 1993, 1994, Jan-May 1995.

Disposition	Number	% of Total
Satisfactory	802	62.85
Unsatisfactory & Deferred	474	37.15
Unsatisfactory	369	28.92
Deferred	105	8.23

**Table 5.** Breeding Soundness Results by Age 1993, 1994, Jan-May 1995.

Age	Satisfactory	Unsatisfactory	Deferred	Unsat & Deferred
≤ 15 mo	83 (56.85%)	41 (28.1%)	22 (15.1%)	63 (43.15%)
> 15 ≤ 18 mo	125 (69.83%)	40 (22.35%)	14 (7.82%)	54 (30.18%)
> 18 ≤ 21 mo	125 (59.24%)	61 (28.91%)	25 (11.85%)	86 (40.76%)
> 21 ≤ 24 mo	83 (64.34%)	37 (28.68%)	9 (6.98%)	46 (35.65%)
> 24 ≤ 36 mo	179 (65.5%)	80 (29.30%)	14 (5.15%)	94 (34.43%)
> 36 ≤ 48 mo	86 (66.67%)	35 (27.13%)	8 (6.20%)	43 (33.3%)
> 4 ≤ 5 yr	68 (62.96%)	35 (32.41%)	5 (4.63%)	40 (37.0%)
> 5 ≤ 6 yr	31 (53.45%)	22 (37.93%)	5 (8.62%)	27 (46.5%)
> 6 ≤ 7 yr	10 (47.62%)	10 (47.62%)	1 (4.76%)	11 (52.38%)
> 7 yr	12 (54.55%)	8 (36.36%)	2 (9.1%)	10 (45.45%)

**Table 6.** Reasons for Unsatisfactory and Deferred All Bulls 1993, 1994, Jan-May 1995.

Reason	Number	% of Unsatisfactory and Deferred
Physical Examination	45	9.49
Scrotal Circumference (SC)	59	12.45
Unacceptable Morphology	247	52.11
Unacceptable Motility	1	0.21
Physical & SC	5	1.05
Physical & Morphology	24	5.06
Physical & Motility	0	0
SC & Morphology	52	10.97
SC & Motility	2	0.42
Motility & Morphology	20	4.23
Physical, SC, & Morphology	2	0.42
Physical, SC, & Motility	0	0
SC, Motility, & Morphology	10	2.11
Physical, Motility, & Morphology	6	1.27
Physical, SC, Motility & Morphology	1	0.21
Total	474	100%

## Discussion

Most of the bulls presented for examination were under five years of age. This appears to be influenced by several factors. Most bulls enter herds or are sold as potential breeders in our region at young ages. The more active breeding use years appear to be between the ages of 2 and 5 years. Aged bulls (over 5 years of age) either have left herds for various reasons, or owners erroneously assume that since they have performed in the past, they are satisfactory.

Almost 29% of all the bulls examined were unsatisfactory. At first the number might appear high, but considering the wide range of ages and different factors which might render a bull unsatisfactory, this number is probably a true reflection of all bulls in our region. Only 8.23% of the bulls examined were deferred. In most cases these bulls were young and the authors' opinions were that these bulls were immature and had a good chance of becoming satisfactory in time. Also, bulls were deferred which had conditions that carried a good prognosis for recovery.

The percentage of bulls classified as unsatisfactory did not vary much by age until bulls were over five years of age. Then the percentage that were unsatisfactory increased for a variety of reasons. The aged bulls in the study tended to be unsatisfactory most frequently due to poor semen quality. Another possibility is that the owners of the aged bulls presented may have already suspected a problem, and therefore, this may not be a representative sample of the aged bull population. The largest percentage of bulls which were deferred was in the age group of 15 months or younger. It was the authors' opinions that many of these bulls were immature and would improve with time.

The age group which had the highest percentage of satisfactory classification (69.8%) was the  $>15 \leq 18$  month category. This information may be somewhat biased due to this being a common age group for an Alabama Beef Cattle Improvement Association sale, which usually has a large consignment of bulls and is included in this study's population. These bulls are screened for physical soundness prior to consignment and require a scrotal circumference of 32 cm. Thus, bulls consigned to this sale are usually the better quality bulls and have been screened quite well before being presented for breeding soundness examinations.

By far, the main reason that bulls were classified as unsatisfactory and deferred was unacceptable semen morphology. This fact emphasized the importance of assessing semen morphology counts. The second and third reasons for unsatisfactory and deferred classifications were insufficient scrotal circumference with acceptable semen parameters and insufficient scrotal circumference with unacceptable semen morphology. The numbers of these two reasons are very similar. Of the 474 bulls examined, 111 (23.4%) were unsatisfactory or deferred due to insufficient scrotal circumference. Almost half of them (52) would have been unsatisfactory due to unacceptable morphology alone. Predictably, bulls with scrotal circumferences under 30 cm, regardless of age, tended to have unacceptable morphology. Physical problems accounted for the fourth most common reason bulls were unsatisfactory or deferred. These included, but were not limited to, eye problems, lameness, penile and preputial injuries, periorchitis, epididymitis, vesiculitis, and cryptorchidism (2 bulls). Only one bull of the 474 was classified as unsatisfactory for insufficient motility alone. Bulls with insufficient motility tended to have also unacceptable morphology. Twenty bulls of the 474 (4.23%) fell into this category (Table 6). Only 4 bulls were found to be aspermic. Three of the four were found to have physical reasons which could account for the absence of spermatozoa in the ejaculate. Two had large sperm granulomas in the epididymides and the other had severe testicular fibrosis. No detectable reason for aspermia was noted in the fourth bull. Bulls which had severe testicular degeneration and were producing only spheroids were counted with the unacceptable motility

and morphology group.

When the combined reasons are evaluated, unacceptable morphology had an influence in 360 of the 474 unsatisfactory or deferred bulls while motility had an influence on only 39. Frequently, bulls with acceptable motility had unacceptable morphology. This serves to illustrate the erroneous nature of evaluation of only motility when performing semen evaluations.

**Over 37% of the bulls presented (Table 4) were not suitable for the breeding pasture on the day examined. This fact illustrates how vital breeding soundness examinations are to the cattle industry and how important it is that these examinations be done completely and properly.**

## References

- Ball, L., Ott, R.S., Mortimer, R.G. and Simons, J.C. Manual for Breeding Soundness Examination of Bulls. *J. Soc. Theriogenology*, No. XII, 1983, 65 pp. Barth, A.L. and OKO, R.J. *Abnormal Morphology of Bovine Spermatozoa*. Iowa State University Press, Ames, Iowa. 1989. Bartlett, D.E.: Theriogenology: From Concept to Reality. *Proc. Soc. For Theriogenology AGM*, Denver, Colorado. Pp 221-234 (1984). Bierschwal, C.J.: Revised Breeding Soundness Procedures. *Proc. Soc. For Theriogenology AGM*, Lexington, Kentucky pp 128-130 (1976). Blom, E.: The Ultrastructure of Some Characteristics Sperm Defects and a Proposal for a New classification of the Bull Spermogram. *Atti del VIII. Simposio Int. Di Zootechniz. Milan*, pp 125-139 (1972). Carroll, E.J., Ball, L. and Scott, J.A.: Breeding Soundness in Bulls - a Summary of 10,940 Examinations. *J.A.V.M.A.* 142:1105-1111 (1963). Chenoweth, P.J.: Examination of Bulls for Libido and Breeding Ability. In *Veterinary Clinics of North America. Symposium on Herd Health Management - Cow-Calf and Feedlot*. W.B. Saunders Co., Philadelphia. 1983 pp 59-74. Chenoweth, P.J. and Ball, L.: Breeding Soundness Evaluation in Bulls. In ed. D.A. Morrow *current Therapy in Theriogenology*. W.B. Saunders Co., Philadelphia. 1980 pp 330-339. Chenoweth, P.J., Hopkins, F.M., Spitzer, J.C., Larsen, R.E.: Guidelines for Using the Bull Breeding Soundness Evaluation Form. *Theriogenology Handbook B-10* (1993) Lagerlof, N.: changes in the Spermatozoa and in the Testes of Bulls with Impaired or Enhanced Fertility. *Acta. Path. Et Microbiol. Scand. Suppl.* 19:254 pp (1934). Saacke, R.G., DeJarnette, J.M., Nebel, R.L. and Nadir, S.: Assessing Bull Fertility. *Proc. Soc. Theriogenology AGM*, San Diego, California. Pp 56-69 (1991). Spitzer, J.C.: Influences of Nutrition on Reproduction in Beef Cattle. In ed D.A. Morrow *Current Therapy in Theriogenology (2nd Ed.)*. W.B. Saunders Co., Philadelphia, 1986 pp Spitzer, J.C., Hopkins, F.M., Webster, H.W., Kirkpatrick, F.D. and Hill, H.S.: Breeding Soundness Examination of Yearling Beef Bulls. *J.A.V.M.A.* 193:1075-1079 (1988). Wiltbank, J.N. and Parish, N: Evaluation of Bulls for Potential Fertility. *Proc. Soc. For Theriogenology AGM*, Milwaukee, Wisconsin. Pp 141-154 (1982).