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USE OF THE BREEDING SOUNDNESS EVALUATION AS A MANAGEMENT PRACTICE FOR SELECTING SANTA GERTRUDIS BULLS

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SUMMARY

The Breeding Soundness Evaluation (BSE) is a simple and rapid method of evaluating herd sire prospects for both natural and artificial mating systems. The use of a 2 stage selection program involving the BSE as the second stage and a minimum scrotal circumference (SC) to select herd sires was associated with an increased proportion of bulls in subsequent generations meeting minimum requirements. By selecting for SC the importance of semen quality in the BSE results became more important as time passed.

OBJECTIVE

This study was designed to determine the effect of using selection based on the BSE on young bulls over an extended period of time and its effect on the quality of bulls in subsequent generations.

PROCEDURES

A total of 2,863 Santa Gertrudis bulls were evaluated over an 8 year period (Y1-Y8) on 2 divisions of the King Ranch (RD1, RD2). The bulls were 20-22 months of age at the time of testing. Scrotal circumference and semen quality were recorded for each bull. Semen quality consisted of percent motile spermatozoa (MOT), progressive motility (PMOT), and percent normal spermatozoa (NORM). All semen was collected by electroejaculation of the bull. Points were given for SC, MOT, and NORM according to the BSE scoring system set up by the Society for Theriogenology. A total score (SCORE) was obtained for each bull. Bulls with SC<30.0 cm were not tested in Y1-Y4, and in Y5-Y8 bulls with SC<32.0 cm were not tested.

RESULTS

There was no difference in SC between ranch divisions (RD1 and RD2) over the 8 year period, so data from both divisions were combined for futher analysis (Table 1). The percentage of bulls that passed the BSE increased over time (Figure 1). There were 2 years that had

decreased numbers of bulls passing the BSE (1980, 1983). These decreases can be explained, in part, by the weather during those years. The bulls were tested during the fall and winter of the year and during these 2 years there were periods of below freezing temperatures which could have depressed semen quality. Figure 1 shows that the BSE passing rate returned to acceptable levels in 1984 after the decrease in 1983. Mean SC for bulls that passed or failed the BSE are shown in Figure 2. The SC of all bulls increased over time, including those bulls that failed the BSE. This increase did not become apparent until 1980. By this time bulls that were being tested had been sired by bulls that had been selected during the first 3 years. By 1984 all bulls had similar SC, regardless of whether they passed or failed the BSE (Figure 3). The SC of only those bulls that were tested are shown in Table 2. The bulls that passed the BSE had larger SC than those that failed over the entire 8 years. Table 3 shows that BSE score is highly positively correlated with SC, as is to be expected since SC is used to develop SCORE. The table also shows that MOT and NORM are also positively correlated with SC. This indicates that it may be possible to increase the minimum SC and make further improvements in the breeding soundness of bulls based more on semen quality.

TABLE 1. SCROTAL CIRCUMFERENCE (SC) ON TWO DIVISIONS OF THE KING RANCH OVER AN 8 YEAR PERIOD

RANCH DIVISION	SC^a (cm)
RD1	$35.2 \pm .1^b$
RD2	$35.1 \pm .08^b$

[a]Least squares mean ± standard error.

[b]Values with the same superscript are not different (P>.10).

TABLE 2. SCROTAL CIRCUMFERENCE (SC) OF TESTED BULLS (N=2,810) THAT PASSED OR FAILED THE BSE

TEST RESULT	SC^a (cm)
Passed	$35.8 \pm .07^b$
Failed	$34.5 \pm .1^c$

[a]Least squares mean ± standard error.

[b,c]Values with different superscripts are different (P<.0001).

TABLE 3. CORRELATION OF SCROTAL CIRCUMFERNCE WITH BSE TRAITS OVER ALL YEARS AND RANCH DIVISIONS

	PMOT	TRAIT MOT	NORM	SCORE
R-Value	+.033	+.169	+.133	+.488
P <	.077	.0001	.0001	.0001

FIGURE 1. PERCENT OF BULLS PASSING THE BSE

YEAR P<.0001

Y = .696 X + 71.004   r = .313
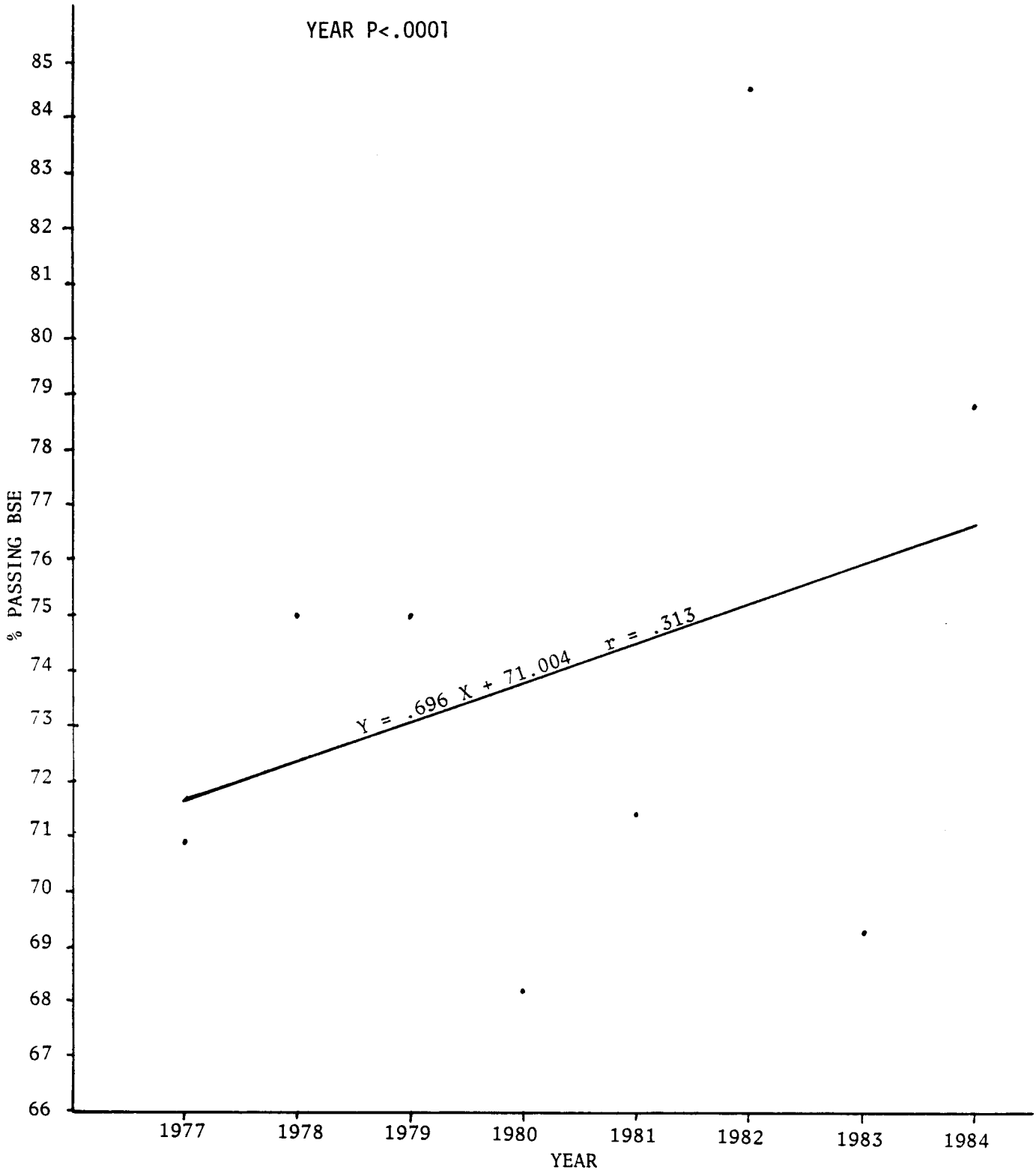
FIGURE 2. SC OF BULLS THAT WERE TESTED

YEAR P<.0001

BULLS FAILING

ALL BULLS TESTED

BULLS PASSING

SC (cm)

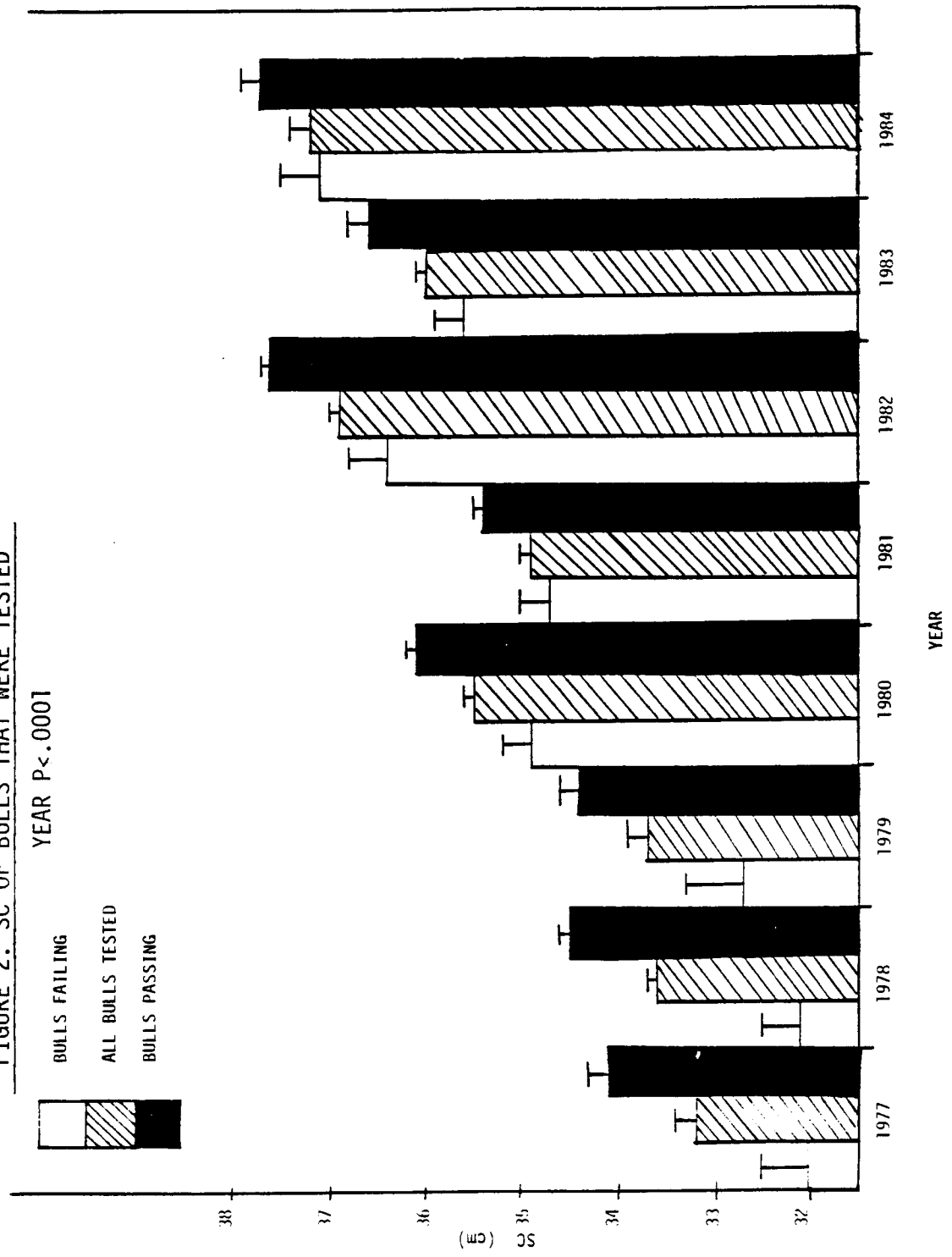YEAR

1977 1978 1979 1980 1981 1982 1983 1984

FIGURE 3.   DIFFERENCE IN SC BETWEEN BULLS PASSING AND FAILING THE BSE