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J. D. Reed
South Dakota State University

T. D. Rich

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Influence of Growth Rate from Three to Twelve Months
of Age on Reproductive Characteristics of Boars

J. D. Reed and T. D. Rich

Little definitive information is known concerning the influence of nutrition on boar development and subsequent fertility. In single studies conducted at the University of Kentucky on boars less than one year of age and at the University of Wisconsin on mature boars, it was concluded that development and functional capacity of the boar reproductive system is relatively resistant to the effects of under- and over-feeding.

The objective of the present study was to evaluate the influence of growth rate from 3 to 12 months of age on the onset of puberty, libido and fertility of boars.

Experimental Procedure

Six related crossbred boars (predominantly Yorkshire) were allotted to three treatment groups when they were 90 days of age and remained on these planned growth rates until one year of age. The three treatments consisted of adjusting the feed level to control rate of gain at approximately 0.75 lb. per day (Group I), 1.25 lb. per day (Group II) and 1.75 lb. per day (Group III). The boars were fed a 14% corn-soy diet once daily in individual crates, provided water ad libitum and housed in adjacent pens. Feed levels were adjusted bimonthly depending upon weight gains.

Boars were teased with estrus females twice weekly beginning at 5 months of age. A boar was classified to have reached puberty when an ejaculate containing motile sperm cells could be obtained by the gloved hand collection technique.

At one year of age, libido and fertility were estimated by breeding each boar to 6 or 7 gilts. Libido was estimated by determining the time it required for the boar to detect a gilt in estrus and to complete copulation. Fertility was estimated by determining the embryo survival of 30 to 35 day pregnant gilts.

Results

The actual growth rates obtained are shown in figure 1. During the experimental period of September through March, the average daily gains were 1.0, 1.3 and 1.5 lb. per day for Groups I, II and III, respectively.

Age at puberty of boars in Groups II and III, along with one boar in Group I, ranged from 167 to 185 days (table 1). Boar 73-8 in Group I did not reach puberty until 262 days of age.

Differences in libido of these boars are shown in table 2. Boars grown at the slower rate (Group I) tended to take longer to detect gilts in estrus and slightly longer to gain intromission than boars in Groups II and III. There were

no differences in libido between Groups II and III. This is a crude estimate of libido but indicates that a slight depression might occur subsequent to under nutrition. Similar results have been reported in bulls.

Subsequent to the different nutritional regimes, there was no indication of an alteration in fertility (table 3). There were no significant differences in pregnancy rate or embryo survival among any of the treatment groups.

Summary

Preliminary results gathered from six related crossbred boars suggest that growing boars at or near 1 lb. per day may increase age at puberty and depress libido but does not appear to alter subsequent fertility.

Table 1. Influence of Growth Rate on Age of Puberty in Boars

Treatment group	Boar	Age at puberty (days)
I	73-8	262
	77-7	185
II	73-10	183
	77-3	167
III	73-7	171
	77-4	171

Table 2. Influence of Growth Rate from 3 to 12 Months of Age on Libido at 12 Months of Age

Treatment group	Detection time ^a (minutes)	Intromission time ^b (minutes)	Ejaculation time ^c (minutes)
I	3.4	2.8	4.8
II	1.9	2.0	4.7
III	1.9	1.8	5.7

^a Detection time is the period of time from entering the pen until the boar located a gilt in estrus.

^b Intromission time is that period of time from detecting the gilt in estrus until gaining intromission.

^c Ejaculation time is that period of time from intromission until dismounting from the gilt.

Table 3. Influence of Growth Rate From 3 to 12 Months of Age on Subsequent Fertility

Treatment group	No. gilts pregnant per no. bred	No. embryos per no. CL ^a	No. live per no. CL ^a
I	14/14	175/205 (85.4%)	170/205 (82.9%)
II	11/12	138/158 (87.3%)	138/158 (87.3%)
III	10/11	141/163 (86.5%)	139/163 (85.3%)

^a CL implies corpus luteum which can be used to estimate the number of eggs shed (ovulation).

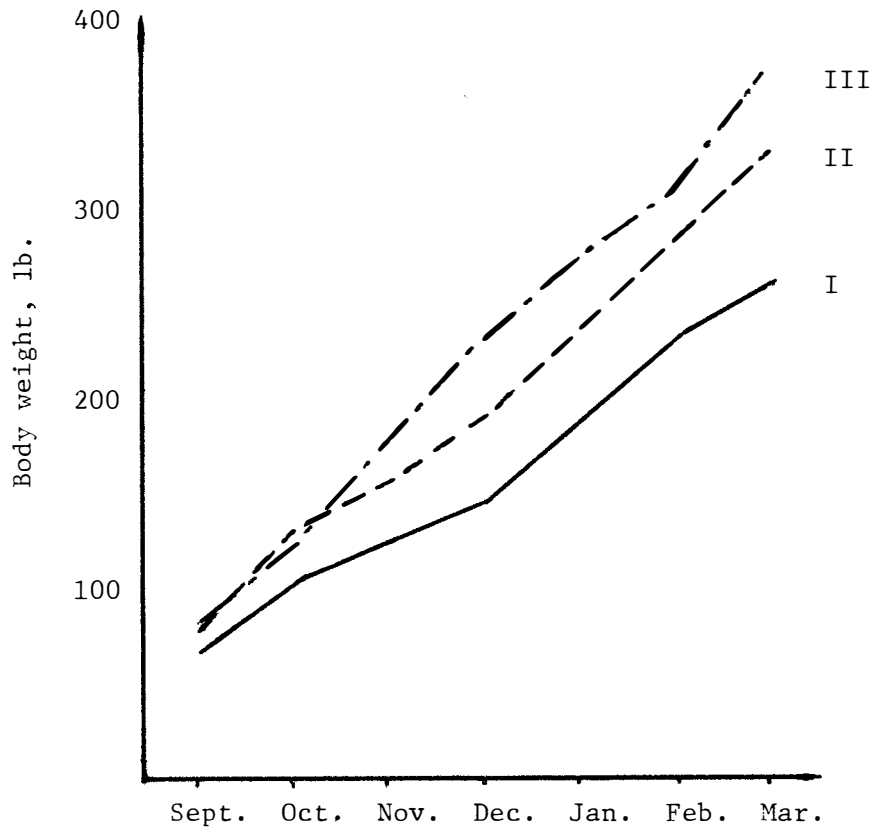


Figure 1. Average body weights for individual treatment groups during the growing period.