TRENDS IN VOLUNTARY FEED INTAKE (APPETITE) IN THE NEWCASTLE/WEST OF SCOTLAND SELECTION LINE OF LARGE WHITE PIGS

Direcciones de ingesta voluntaria de alimentación (apetito) en la línea de selección de Newcastle/Oeste de Escocia de cerdos Grandes Blancos

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Since 1963, pigs of the Large White breed at the University of Newcastle-Upon-Tyne and the West of Scotland Agricultural College have been performance-tested on ad libitum feeding and selected on an index for economy of production (feed conversion efficiency and growth rate) and carcass lean content (based on fat measurements at minimum loin, C and K over the eye muscle). Feed efficiency and carcass lean content have shown a marked improvement but this has been associated with a decline in voluntary feed intake (appetite). This has been demonstrated by Chadwick 1977, Ellis, Smith and Laird 1978 and Ellis, Smith, Henderson, Whittemore and Laird 1982 by comparing the feed intakes of the selection line and a genetic control line derived mainly from the foundation breeding stock of the selection line.

In 1971 a performance test unit with huts and outside runs to accommodate three pigs on test was erected at the West of Scotland Agricultural College. The pigs on test had unrestricted access to pelleted feeds in a self-feeder and to a nipple water drinker. The data presented here refer to gilt performance tests from 1971 to 1981. The pigs were placed on test at approximately 25 kg live weight and completed test at 86 kg live weight. Pigs were weighed regularly and feed consumption was estimated on a weekly basis. Feed consumption and performance of the pigs were calculated by interpolation for the weight range 30-80 kg live weight for the test groups.

In 1971 the pigs were of the fifth generation of selection and in 1981 were of the twelfth and thirteenth generations of selection, the overall mean being 8.9 generations. In the early years the inbreeding coefficient was very low but, as the two co-operating herds had been closed to outside breeding stock since 1971, the inbreeding coefficient of the test groups had risen to 16.7 ± 0.6% by 1981. The mean for the 11-year period was 9.2%.

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The data of 412 test groups comprising 1119 gilts (295 groups of three gilts and 117 groups of two gilts) were analysed. Pelleted feeds of approximately 17.0-17.5% crude protein content were used throughout but, because of commercial demands, changes had to be made in the formulation of the feeds offered. A least squares computer programme was used to analyse the data, the following factors being considered: type of feed, year of birth, month of birth, number of pigs in test group, inbreeding coefficient and selection generation number.

The following performance traits were measured (means ± standard errors in parenthesis): daily feed consumption (2.35 ± 0.01 kg/day), daily live-weight gain (800 ± 3 g/day), feed conversion efficiency (2.94 ± 0.01 kg feed/kg live-weight gain), age at 30 kg (88.6 ± 0.4 days) and age at 80 kg (151.4 ± 0.5 days).

After adjusting the data for the changes in feed formulation the percentage of the variance accounted for by year of birth was small and in general non-significant, and so year of birth was ignored in the analysis. Seasonal effects, as represented by month of birth, were statistically significant (P < 0.001). Pigs born in the months January to May inclusive had below-average feed intakes and those born from June to December inclusive had above-average intakes. Similarly, pigs born from January to April inclusive and in October had lower growth rates. Feed conversion efficiency ratios were lowest for pigs born from February to May inclusive and highest for pigs born in the period August to November inclusive.

The number of pigs tested per group also significantly affected daily feed intake and feed conversion efficiency. Groups of two pigs consumed 0.07 ± 0.02 kg more feed per head per day than groups of three pigs and the feed conversion efficiency ratio was higher by 0.07 ± 0.02 kg feed/kg live-weight gain. These differences were highly significant (P < 0.001). There was no difference in growth rate between groups of two and three pigs.

After discounting the effects of feeds, month of birth and number of pigs per test group the effects of generation number and inbreeding coefficient were computed. Analyses indicated that neither generation number, i.e. the number of generations of selection, nor inbreeding had any significant effect on any of the traits. Thus voluntary feed intake was unaffected by the number of generations of selection and the level of inbreeding.

SUMMARY

Trends in voluntary feed intake (appetite) from gilt performance tests conducted over an 11-year period were analysed. After adjustment for various factors, such as type of feed and season of birth, the effects of inbreeding and the number of generations of selection were found to be non-significant. Thus no decline in appetite was detected in the selection line over the 11 years but since only pigs from the fifth and later
generations were included in the analysis it is suggested that the decline in voluntary feed intake must have occurred in the early generations of selection.

RESUMEN

Las tendencias en la ingesta alimentaria voluntaria (apetito) en los rendimientos de las cerdas primerizas se analizaron a través de pruebas realizadas durante un periodo de 11 años. Los reajustes de varios factores, tales como el tipo de alimento y estación del parto, los efectos de la consanguinidad y el número de generaciones de selección se encontraron no ser significativos. No se encontró una disminución de apetito en la línea de selección durante los 11 años, pero solo se incluyeron en el análisis cerdos desde la quinta a la última generación, se sugiere que la declinación voluntaria en ingesta de alimentos puede haber sobrevenido en las primeras generaciones de selección.

REFERENCES

