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PRODUCTION CHARACTERISTICS OF DUTCH LANDRAGE AND DUTCH YORKSHIRE PIGS AS RELATED TO THEIR SUSCEPTIBILITY FOR THE HALOTHANE-INDUCED MALIGNANT HYPERTHERMIA SYNDROME

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CORRELATED SELECTION RESPONSES TO UPWARDS AND DOWNWARDS SELECTION
FOR BACKFAT AND DAILY GAINS IN PIGS

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Index selection combining scores for backfat and daily gain was practiced in a selection experiment with upwards (HP-line) and downwards (LP-line) selection on the index. A control line was maintained from the 3. year. Results from 8 generations are presented: in this study. The LP-line (low growth, high backfat) showed higher standardized selection differentials, selection responses and realized heritability than the HP-line (high growth, low backfat) ($\hat{h}_{LP}^2 = .52$, $\hat{h}_{HP}^2 = .34$). Calculations of actual weights on backfat and daily gain in retrospect showed a shift towards backfat in the LP-line and towards daily gain in the HP-line. Joint estimates of realized h^2 and r_G of the index traits gave $\hat{h}^2 = .80$ for backfat and $.36$ in daily gain. Genetic correlation between the index traits was calculated to $.16$.

Correlated responses in slaughter traits showed higher values in the LP-line than in the HP-line. Joint estimates of r_G to the index showed favourable values for all slaughter traits except number of inverted teats. Correspondance to the r_G values estimated from half sib analyses in the control line were very good. Daily food consumption increased in both lines. Feed conversion ratio showed higher response in the HP-line than in the LP-line.

Regressions on generation number for litter size traits were all negative. Correlated responses to the index were unfavourable but genetic correlations between fertility traits and the index would have fallen in the range of $0 \pm .10$.

PRODUCTION CHARACTERISTICS OF DUTCH LANDRACE AND DUTCH YORKSHIRE PIGS
AS RELATED TO THEIR SUSCEPTIBILITY FOR THE HALOTHANE-INDUCED MALIGNANT
HYPERTHERMIA SYNDROME

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During a one year survey a total of 1,304 *Dutch Yorkshire* and 1,640 *Dutch Landrace* pigs were subjected to the halothane-test after their arrival at one of the national pig testing stations.

The average percentage reactors was 3.07 p. 100 in the *Dutch Yorkshire* breed and 22.2 p. 100 in the *Dutch Landrace* breed.

Death losses during the fattening period and during the transport of the sows to the slaughterhouse were almost ten times higher in reacting as in non-reacting *Dutch Landrace* pigs (5.27 p. 100 vs 0.56 p. 100).

In the *Dutch Landrace* breed significant differences were found between reactors and non-reactors in the growth traits of the boars and in all carcass and meat quality characteristics of the sows, which confirm previous observations. However, in the *Yorkshire* breed no significant differences were found in these traits between reacting and non-reacting animals. The conflicting results obtained in this breed are discussed.

It is suggested that the halothane-test will be most effective for elimination of stress-susceptibility and abnormal meat quality when used as a selection criterion in commercial pig breeding and selection of *Dutch Landrace* pigs.

HALOTHANE-TEST IN PIG BREEDING

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A simulation study describing the influence of direct and indirect selection on the gene frequency for hypersensitivity to halothane is presented in this paper. The factors studied are fitness, culling level on index, initial gene frequency and type of inheritance of the trait.