

SELECTION FOR MAXIMUM LOIN EYE AREA AND MINIMUM
BACKFAT THICKNESS IN DUROC SWINE

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by

CHING HSONG CHANG

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Approved by:

John D. Wheat
Major Professor

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CHAPTER I

INTRODUCTION

The rapid rise in the standard of living and changes in dietary habits during the past three decades have greatly increased the demand for lean meat. To meet this demand, there has been intensive selection for more muscle and less fat in swine. At the same time, the producer must have prolific, rapid gaining pigs with low feed conversions if he is to economically produce this type of pig. Meat quality as well as quantity must be emphasized if selection results in progress toward this goal.

Heritability estimates for backfat thickness from previous studies varies from 0.12 to 0.84 (Lush, 1936; Blunn and Baker, 1947; Johansson and Korkman, 1950; Whatley, Jr. and Enfield, 1957; Zoellner et al., 1963). Heritability estimates for loin eye area varied from 0.44 to 0.79 as reported by Fredeen (1953), Depape (1954), Craft (1958), Enfield and Whatley, Jr. (1961), Jensen, Craig and Robison (1967), Omtvedt (1968) and Arganosa, Omtvedt and Walters (1969). The demand for more heavily muscled hogs and carcasses and the relatively high heritability estimates for loin eye area and backfat thickness encouraged research aimed at reducing backfat and increasing loin eye area. Jensen et al. (1967) and Arganosa et al. (1969) reported negative genetic correlations of -0.06 and -0.22 between backfat thickness and loin eye area. These studies indicated that selection against backfat thickness and / or for loin eye area should be slightly effective in reducing carcass backfat and increasing loin eye area. Dillard, Robinson and Legates (1962), Hetzer and Harvey (1967),

Gray *et al.* (1968) and Berruecos, Dillard and Robison (1970) reported selection was effective in reducing backfat thickness.

The purposes of this study were: (1) to develop a well-musched line of Durocs by index selection based on thinner backfat and larger loin eye area, and to maintain a control line by random selection from the same base population, (2) to investigate correlated response in production traits, carcass proportions and meat quality and (3) to determine if an increase in muscling results in undesirable effects such as PSS and PSE.