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Effects of Limit-feeding Finishing Swine on Performance and Carcass Measurements

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Summary

Two feeding trials with 138 crossbred pigs with an average initial weight of 129 pounds were conducted to determine the effects of limit feeding on average daily gain, feed efficiency and carcass measurements. Pigs were fed either ad libitum, restricted to 80 or 85% of ad libitum intake, or restricted to 2, 4 or 8 hours access to self-feeders.

Average daily gain was decreased ($P < .05$) by reducing feed intake to 80 or 85% of ad libitum, and restricting pigs to 2, or 4 hours access to feed. Pigs allowed 8 hours access to feed gained at the same rate, with similar feed intake as pigs fed ad libitum. Feed efficiency was not different for any of the restricted fed treatments. However, pigs restricted to 80% of ad libitum had the best feed efficiency.

Barrows and gilts responded similarly to restricted feeding.

Introduction

There is renewed interest in methods that will improve feed efficiency and produce a leaner carcass. It is often suggested that limit-feeding will improve both feed efficiency and carcass lean to fat ratio.

The present feeding trials were conducted to evaluate the effects of limit-feeding of finishing pigs on average daily gain, feed efficiency and carcass measurements.

Experimental Procedures

General Procedures:

Pigs were selected from the University herd on the basis of sex and weight and randomly allotted to treatments. Feed intake was measured each week for pigs fed ad libitum. Pigs restricted to a percentage of ad libitum were hand-fed once per day the average daily quantity of feed consumed the prior week by the ad libitum fed pigs. Pigs restricted to a timed access to self-feeders had the feeder placed in their pens and then removed after the set time had elapsed.

All pigs were fed the same 14% crude protein milo-soybean meal supplemented with synthetic lysine to contain .8% lysine.

Forty-eight pigs from each trial were slaughtered at approximately 220 pounds to obtain carcass measurements.

Trial I. Ninety-six crossbred barrows with an average initial weight of 124 pounds were randomly assigned by weight to one of the four treatments with four replications per treatment. Treatments were: 1) ad libitum feeding, 2) restricted to 85% of ad libitum, 3) restricted to 2 hours access to self-feeders, 4) restricted to 8 hours access to self-feeders.

Pigs were housed in a modified open front, totally slatted floor, finishing facility with six pigs per pen. Restricted fed pigs were allowed a feeder space per pig. Pigs restricted to 85% of ad libitum intake were fed their restricted quantity of feed once daily in self-feeders.

Trial II. Forty-eight crossbred pigs (24 gilts and 24 barrows) were selected with an average initial weight of 139 pounds. Pigs were randomly assigned by sex and weight to one of the following four treatments: 1) ad libitum feeding, 2) restricted to 85% of ad libitum, 3) restricted to 80% of ad libitum, 4) restricted to 4 hours access to self-feeders.

There were six replications of the four treatments (three replications of barrows and three replications of gilts). Pigs were housed in an open front building with a solid concrete floor with two pigs per pen.

Pigs restricted to 80 or 85% of ad libitum were fed once daily on the floor. Pigs restricted to 4 hours access to self-feeders were allowed a feeder space per pig.

Results and Discussion

Pig performances in Trial I are shown in Table I. Pigs restricted to either 2 hours access to feed or 85% ad libitum gained slower ($P < .05$) than pigs fed ad libitum. Pigs restricted to 8 hours access to feed had the same feed intake and gained at the same rate as pigs fed ad libitum. Feed intake of pigs restricted to 2 hours access to feed had a similar feed intake, daily gain and feed conversion as pigs restricted to 85% of ad libitum. Feed efficiency was similar for all treatments.

Table 1. Pig Performance (Trial I)^a

| Feeding method | Feed intake, lbs | ADG, lbs | F/G |
|---------------------------------|------------------|----------|------|
| Ad libitum | 7.00 | 1.74 | 4.02 |
| Restricted, 85% of ad libitum | 5.87 | 1.47 | 4.00 |
| Restricted, 2 hr access to feed | 5.59 | 1.50 | 3.93 |
| Restricted, 8 hr access to feed | 6.95 | 1.67 | 4.18 |

Carcass measurements of pigs in Trial I are shown in Table 2. There were no significant differences in backfat thickness, loin eye area or percent muscle due to feeding method. Pigs restricted to 2 hours access to self-feeders tended to have less backfat and 3 percent more muscle than pigs fed ad libitum.

Table 2. Carcass Measurements (Trial I)^a

| Feeding method | Slaughter weight (lbs) | Hot Carcass wt. (lbs) | Backfat (in) | Loin eye area (in ²) | % muscle |
|---------------------------------|------------------------|-----------------------|--------------|----------------------------------|----------|
| Ad libitum | 228 | 166 | 1.15 | 4.91 | 53.48 |
| Restricted, 85% of ad libitum | 229 | 172 | 1.00 | 4.91 | 53.91 |
| Restricted, 2 hr access to feed | 227 | 164 | .96 | 5.16 | 55.51 |
| Restricted, 8 hr access to feed | 237 | 176 | 1.16 | 5.25 | 54.12 |

^aEach value is the mean of 12 observations.

Pig performance in Trial II are shown in Table 3. Restricted fed pigs (all treatments) consumed less feed and gained slower ($P < .05$) than pigs fed ad libitum. There were no significant differences among treatments in feed efficiency. However, pigs restricted to 80% of ad libitum had the best feed efficiency.

Table 3. Pig Performance (Trial II)^a

| Feeding method | Feed intake, lbs | ADG, lbs | F/G |
|---------------------------------|------------------|----------|------|
| Ad libitum | 7.08 | 1.89 | 3.75 |
| Restricted, 85% of ad libitum | 6.05 | 1.65 | 3.71 |
| Restricted, 80% of ad libitum | 5.72 | 1.63 | 3.53 |
| Restricted, 4 hr access to feed | 6.45 | 1.65 | 3.88 |

^aEach value is the mean of 6 pens.

There were no differences in carcass measurements due to feeding method (Table 4.).

Table 4. Carcass Measurements (Trial II)^a

| Feeding method | Slaughter weight (lbs) | Hot Carcass wt. (lbs) | Backfat (in) | Loin eye area (in ²) | % muscle |
|-----------------------------------|------------------------|-----------------------|--------------|----------------------------------|----------|
| Ad libitum | 242 | 179 | .98 | 5.69 | 55.98 |
| Restricted, 85% of ad libitum | 232 | 173 | .94 | 5.60 | 56.27 |
| Restricted, 80% of access to feed | 231 | 173 | .87 | 5.33 | 56.16 |
| Restricted, 4 hr access to feed | 235 | 177 | .92 | 5.60 | 56.08 |

^aEach value is the mean of 12 observations.

There was no sex by feeding method interaction. This suggests that both barrows and gilts respond similarly to limit-feeding.