# EFFECT OF STRESS IN GILTS CAUSED BY FREQUENT CHANGES OF DIETS

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## Introduction

Gilts come in heat for the first time at the age of 6 to 7 month, but are moved in the sow herd a little time later at 100 to 120 kg of body weight. During this time gilts continue to grow.

In order to see if frequent changes of the diet cause stress to the gilts one experiment took place. The experimental model was based on frequent changes of the diet with five different recipes. In this experiment I will not register the effect of nutritional discrepancies between diets, but the effect of stress caused by the permanent change of the diet.

Material and methods

Five recipes were used. The recipes used are presented in Table 1.1.

Table 1. Recipes used in causing nutrition stress

| Receipts | Alternating recipes | | | | | | Control receipt | Differen -ces |
|---|---|---|---|---|---|---|---|---|
| | A | B | C | D | E | Average | | |
| Feed structure of receipts (%) | | | | | | | | |
| Maze | 6.5 | 97.8 | - | 77.2 | - | 36.3 | 50.0 | -16.30 |
| Barley | - | - | 97.8 | - | 77.2 | 35.0 | 25.0 | -10.00 |
| Wheat bran | 70.5 | - | - | 10.0 | 10.0 | 18.1 | 9,9 | -8.20 |
| Sunflower meal,extra | 19.9 | - | - | 9.8 | 9.8 | 7.9 | 5.0 | -2.90 |
| Soya bean meal,extra | - | - | - | - | - | - | 5.0 | +5.00 |
| Fish meal | - | - | - | - | - | - | 2.0 | +2.00 |
| Premix | 1.0 | - | - | 1.0 | 1.0 | 1.0 | 1.0 | 0.00 |
| Calcium carbonate | 1.5 | 1.5 | 1.5 | 1.5 | 1.5 | 1.5 | 1.5 | 0.00 |
| Salt (NaCl) | 0.6 | 0.7 | 0.7 | 0.5 | 0.5 | 0.6 | 0.6 | 0.00 |

The control lot received constantly the diet enlisted in the table 1.1. The experimental lot received each day successively a new diet out of the five enlisted diets. The average food intake of the experimental lot didn't differ significantly from the food consumed by the control lot.

| Chemical structure of receipts | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| Water | 11.47 | 13.70 | 13.70 | 13.05 | 13.07 | 12.56 | 13.24 | +0.68 |
| Crude protein | 18.50 | 8.24 | 9.08 | 11.66 | 12.32 | 11.99 | 13.45 | +1.46 |
| FAT | 5.74 | 3.53 | 1.43 | 4.53 | 2.87 | 3.61 | 2.72 | -0.89 |
| Nitrogen free extract | 46.05 | 69.22 | 66.95 | 61.94 | 60.08 | 60.86 | 60.84 | -0.02 |
| Fiber | 9.62 | 2.02 | 4.45 | 3.73 | 5.70 | 5.11 | 4.24 | -o.87 |
| Ash | 8.62 | 3.29 | 4.39 | 5.09 | 5.96 | 5.87 | 5.51 | -0.36 |
| Metabolisable energy | 2132 kcal / kg | 2855 kcal / kg | 2754 kcal / kg | 2684 kcal / kg | 2605 kcal / kg | 2607 kcal / kg | 2666 kcal / kg | +59 kcal / kg |
| TDN | | | | | | | | |

## Results

In order to demonstrate this assumption let us apply the Student's ***t*** to the differences registered concerning the chemical composition of the average food of the experimental group and the food that the control group received constantly.

Table 2 Discrepancies between average chemical composition of experimental group food and the one of the control group

| $\bar{x}$ = Chemical substances | Water | Crude protein | Ether extracts | Crude fibre | N free extract | Total ash |
|---|---|---|---|---|---|---|
| Discrepancy | + 0.68 | +1.48 | - 0.89 | - 0.02 | - 0.87 | - 0.36 |

Statistics of discrepancies are:

- n = 6
- $\bar{x} = 0.003$
- s = 0.85

the value of Student's *t* is:

$$t = \frac{\left|\bar{X} - \bar{x}\ \right|\sqrt{n-1}}{s} = \frac{0.003\sqrt{6-1}}{0.85} = \frac{0.0067}{0.85} = 0.0078$$

and for 5 degrees of freedom discrepancies are not significant.

## Discussion

As I refer in this experiment I shall not register the effect of nutritional discrepancies between diets, but the effect of stress caused by the permanent change of the diet.

Gilts were feed two times a day receiving dray food. For three weeks they received 2.2 kg of food every day. Beginnings with the day of insemination gilts were fed 20 days with 2.8 kg of feed per day. Between 21day of pregnancy till the day 73 they received again 2.2 kg of feed. Between the day 74 up to the end of gestation gilts were fed with 2.8 kg of food. After

parturition all gilts received the same food that consisted of 4.5 kg of combined food having 16% of protein and an energy concentration of 2590 kcal metabolizable energy per kg of feed. Stress was caused by very frequent changes of the diet. Diets didn't differ too much as nutrient value but changing them has influenced the reproduction performances in gilts. The effects of stress are presented in table 1.3.

Table.3.Effect of stress on reproduction performances in gilts

| Group of gilts | No. of gilts | Fertility | | | Culled of gilts | Prolificity | | | Piglets at 2 weeks | Mean weight g | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | | Return | % fertile | % farrow | | Total born | Born alive | % dead | | At birth | At 2 weeks |
| Exper | 26 | 4 | 84.5 | 80.8 | 3 | 8.33 | 7.73 | 7.2 | 6.9 | 1234 | 3150 |
| Contr | 26 | 2 | 92.3 | 92.3 | - | 9.40 | 9.00 | 4.2 | 8.4 | 1274 | 3400 |

## Conclusion

As it can be seen from the table 3. the rate of farrows is higher in control gilts with 11.5% and 3 gilts were culled of the experimental group. Less effect had the stress on the piglet's weight at birth because the mother protects them during gestation. However the growth of piglets after birth has suffered because the udder was in worse condition at farrowing.

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