Macedonian Journal of Animal Science, Vol. **2**, No. 3, pp. 293–296 (2012)
118 In print ISSN 1857 – 6907
Received: July 7, 2009 On line ISSN 1857 – 7709
Accepted: November 30, 2009 UDC: 636.4.082.4.084.51
Original scientific paper

EFFECTS OF FEEDING LEVELS ON REPRODUCTION PERFORMANCE

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An experiment was conducted using 30 replacement sows (distributed in 3 groups) with the aim to study the effects of three nutrition levels during pregnancy. The experiment began with mating the sows and it lasted till the weaning of pigs at 35 days of age. During the pregnancy each sow from the group 1 (control) received 2.2 kg/day until the day 80 and 2.7 kg/day from the day 81 to farrowing, those from the group 2, 1.9 kg/day per sow for the entire period, and the group 3, 3.6 kg/day per sow received compound feed containing 13 % of crude protein. During lactation all sows had free access to compound feed containing 15.5 % crude protein. The nutrition level during pregnancy did not affect the number and weight of piglets in the litter at birth and weaning, but had direct effects on the gain of mothers during pregnancy and adverse effects on feed intake and gains of sows during lactations.

Key words: sows; pregnancy; feed; piglets; effects

ЕФЕКТИТЕ ОД НИВОТО НА ИСХРАНА ВРЗ РЕПРОДУКТИВНИТЕ ПЕРФОРМАНСИ

Овој опит е изведен на 30 маторици (распоредени во три групи) за да се истражи ефектот на три нивоа на исхрана во текот на гравидноста. Опитот започна со оплодување на маторициите и траеше до одбивање на прасињата на 35-тиот ден од возраста. Во текот на гравидноста секоја маторица од групата 1 (контрола) до 80-тиот ден примаше 2,2 kg храна на ден и од 81-иот ден до опрасувањето 2,7 kg /ден. Маторициите од групата 2 добиваа 1,9 kg храна на ден во целиот период, додека третата група беше хранета дневно со 3,6 kg храна која содржеше 13% сурови протеини. Во текот на лактацијата сите маторици имаа слободен пристап до комбинираната храна со 15,5% сурови протеини. Нивото на исхраната во текот на гравидноста немаше ефект врз бројот и тежината на прасињата во леглото при раѓањето и при одбивањето, но имаше директен ефект врз прирастот кај мајките за време на гравидноста, но немаше ефект врз консумацијата на храната и прирастот на маторициите во текот на лактацијата.

Клучни зборови: маторица; бременост; храна; прасиња; ефект

INTRODUCTION

Since the issue of increasing the number of litter, the number of piglets and the size of litter for each and every sow is of primary importance to the growth of such species, which also serves as the very basis for the production of meat we undertook the afore-mentioned study in the widely-known breed *Large White*. The purpose of the study is to look into the extent of effect of the nutrition level on several reproductive features and on the period of pregnancy in sows.

MATERIAL AND METHOD

The experiment was conducted using 30 replacement sows in total which were divided in three groups, by keeping them as individuals and equals with respect to the indicators such as pedigree, age and live weights. The experiments started with the replacement sows which at the time of mating had an average live weight of roughly 110 kg, continued with the pregnancy period, lactation one or otherwise the latter pertaining to the weaning of piglets at their 35th day of age.

The first group of control would take in 2.2 kg of feed per day until they reached their 80th day, whereas right after the 81st day they would take in 2.7 kg of feed per day.

The second group of experiment would take in 1.9 kg per day per sow for each period of time.

The third group of experiment would take in 3.6 kg/days of feed combined with 13 % crude

protein. Prior to forrowing the percentage of proteins was 13.17 %, while during the lactation period it was 15.50 % (see Table 1).

At the same time the live weight of sows has been the focus of control in:

– the 110th day of pregnancy,
– after birth,
– upon weaning,
– feed consumption.

In every 10 days the average sample of feed has been taken and chemical tests have been accordingly administered.

The data obtained were subject to a further statistical processing.

Table 1

Components % and nutritive value of feed mixtures used

Ingredients	Pregnancy	Lactation
Maize	48.50	45.70
Wheat	25.00	20.00
Wheat bran	15.00	16.00
Soybean meal	5.40	8.50
Sunflower meal	–	5.00
Alfalfa meal	3.00	–
Bone meal	–	2.00
Dicalcium phosphate	0.45	0.10
Carbonate calcium	1.50	1.55
Salt	0.40	0.40
Premix/Min.*	0.15	0.15
Premix/Vita.**	0.16	0.60
*Nutritive value of feed****		
Metabolizable energy (MJ/kg)	12.62	12.52
Crude protein (%)	13.17	15.50
Crude fiber (%)	3.59	3.04
Crude fat (%)	3.17	2.63
Lysine	0.48	0.64
Methionine + Cystine	0.46	0.54
Threonine	0.42	0.50
Tryptophan	0.15	0.18
Calcium	0.78	0.77
Phosphorus	0.46	0.51

*1 kg of mineral mixture contains: Fe 60.2 g; Cu 5.1 g; Co 0.42 g; Zn 45.4 g; I 0.3 g.

**1 kg of vitamin premix contains: Vita. A 750000 IU; Vita. B_1 0.2 g; B_2 0.6 g; Vita. D3 7200 IU; Dicalcium pantothenate 2 g; Choline chloride 5 g; Vita. PP 0.4 g; Vita. E 3.5 g.

*** Content of ME (MJ/kg) and amino-acids has been determined in line with the data coming from literature.

RESULTS AND DISCUSSION

In order to create a clear and full picture of the feed provided, the average of consumption, ME (MJ), the proteins taken in the three groups based on their physiological status we are providing these tables below.

Table 2

Daily provision of sows with nutritive substances during pregnancy

Components	Group 1		Group 2	Group 3
	Up to the 80th day	After the 80th day		
Feed /kg	2.2	2.7	1.9	3.6
ME in MJ	27.8	34.1	24.0	45.4
Crude protein, g	290	356	250	474
Lysine, g	10.6	13.0	9.1	17.3
Meth. + Cystine, g	10.1	12.4	8.7	16.6
Threonine, g	9.2	11.3	8.0	15.2
Tryptophan, g	3.3	4.0	2.8	5.4

Table 3

Average intake of feed, metabolizable energy and protein per sow during pregnancy and lactation

Components	Groups		
	1	2	3
	Average consumption per sow during pregnancy in total		
Feed/kg	274 ± 4.24^a	219.4 ± 2.60^b	416 ± 6.85^c
Energy in MJ	3463 ± 53.45^a	2768 ± 32.66^b	5257 ± 86.52^c
Protein, kg	36.14 ± 0.56^a	28.89 ± 0.34^b	54.87 ± 0.90^c
Feed, kg	179.4 ± 4.68^a	192.1 ± 5.4^b	171.1 ± 5.52^c
Energy in MJ	2246 ± 59.13^a	2404 ± 68.63^b	2142 ± 69.11^c
Protein, kg	$27.81 \pm 0.73+$	29.77 ± 0.85^b	26.53 ± 0.86^c

If the first control group (supposed to be at 100 %) has taken in 274.4 kg of feed, it turns out that the 2nd and the 3rd groups have taken in 219.4 and 416.6 kg of feed respectively which falters in the limits between 80–150 % when compared to the first group.

The biggest amount of feed during lactation has been the intake by sows of the 2nd group which

is roughly 5.49 kg/day (total 192.1), which is 7 % higher than that of the 1st group and 12 % higher than that of the 3rd group.

At a time the traits for the 3rd group are 4.89 kg/day and 171.1 kg respectively. These data have been confirmed even by authors including Mullan, Williams (1989), Pittigrey, Tokach (1991), Pond et al. (1986)).

In order to see the values that a few take reproduction traits taken on for the three groups we are providing them in Tables 4 and 5.

Table 4

Body weight data of sows

Traits	Groups		
	1	2	3
Live weight of sows (kg)			
in mating	110.1 ± 5.22	109.6 ± 4.50	111.2 ± 4.60
the 110th day of pregnancy	169.5 ± 4.72[a]	154.1 ± 5.84[b]	182.7 ± 5.18[c]
after birth	153.4 ± 6.12+	138.8 ± 6.34[b]	165.6 ± 4.94[c]
at weaning	153.8 ± 4.92[a]	148.1 ± 8.14[b]	155.0 ± 5.48

Table 5

Average performance of sows

Traits	Groups		
	1	2	3
Number of piglets born alive	9.2 ± 2.09	8.7 ± 1.74	9.5 ± 2.24
Live weight at birth			
of litter, kg	10.60 ± 2.82	11.16 ± 2.66	12.16 ± 3.36
of each piglet, kg	1.16 ± 0.18	1.29 ± 0.22	1.26 ± 0.12
Number of piglets weaned	8.2 ± 1.40	8.3 ± 1.49	8.4 ± 1.50
Live weight at weaning			
of litter, kg	52.17 ± 12.78	55.01 ± 12.80	58.27 ± 11.22
of each piglet, kg	6.36 ± 1.00	6.56 ± 0.66	7.04 ± 1.04

As it can be seen the smallest live weight on the 110th day is shown by sows belonging to the 2nd group which on average is 154.1 kg. While prior to the experiment in the 1st group (control group) the increase of weight on average reaches 54 %, in the 2nd group 41 %, and in the 3rd group 64%, which is 9.1 % less in the 2nd group as compared to the 1st and 7.8 higher in the third group.

The overall absolute increase of weight is 58.1; 44.4 and 71.5, respectively.

It would also be of interest the data of the live weight of sows after giving birth and of the piglets in the weaning period, which for the second group are 153.4 and 153.8 kg which are compatible with each-other.

CONCLUSIONS

1. The increase of the level feed from 1.9 to 3.6 kg/day impacts the reduction of feed consumption in the lactation period up to 12 %.

2. The productive traits of the sow undergo the same increase.

3. The reduction of feed to 1.9 kg/day impacts negatively the reproduction traits of the sows.

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