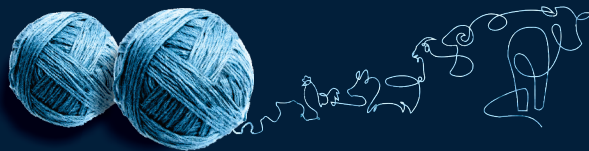


12th
INTERNATIONAL
SYMPOSIUM

MODERN
TRENDS
IN LIVESTOCK
PRODUCTION



P R O C E E D I N G S

9 -11 October 2019, Belgrade, Serbia

Institute for Animal Husbandry

Belgrade - Zemun, SERBIA

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INVITED PAPERS

BODY SCORE CONDITION OF SOWS AND THE THIN SOW SYNDROME AS HEALTH PROBLEMS ON COMMERCIAL FARMS

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Review paper

Abstract: In this article we presented body score condition of sows and thin sow syndrome. In modern pig farming more and more attention is paid to body condition score. On most commercial farms feeding of gilts and sows is based on body condition. The goal is that sow does not gain or lose too much of a body weight between farrowing and insemination. Maintenance of body weight (condition) of sows within the optimum value (3 points in the time of farrowing and 2.5 during mating) over their lifetime can result in optimal reproductive results. In contrast, inadequate control of condition of the sow may lead to difficulty in farrowing and occurrence of health problems. The syndrome of thin sows is a disease of complex etiology. In 75% of cases, the main causes are qualitative and quantitative malnutrition, also unfavorable housing conditions for sows. Less frequently, the syndrome can be caused by presence of endoparasite *Hyostrogylus rubidus*. In the presenting article during a year period, the occurrence of weight loss in sows during lactation at one commercial farm was observed. The health status of lactating sows and piglets were also registered. The loss of body weight was mostly detected in sows in the second lactation. Corrections in the feeding technology and better conditions for sows during lactation period are crucial for managing the thin sow problem on the commercial farm.

Key words: body score condition, thin sow syndrome, sows

Introduction

Today more attention is paid to assessment of body condition score of pigs. Body condition score is the most reliably performed by measurement of the thickness of adipose tissue in the back of sows using ultrasound machines, but nevertheless it is often done only visually (*Hutu and Onan, 2008; Bojkovski et al., 2003, 2013; Petrujkić et al., 2011; Maes et al., 2004*). Visual grading system of body condition can be subjective and in large percentage measures may depend on the competence of assessors. For example, in one Canadian study, sows with body condition score of 3 had adipose tissue in the back from 9 to 28 mm. Additional information on the measurement of body fat on back and body condition of sows on three farms in the state Minnesota (USA) indicate that between 18 and 40 percent of sows have back fat smaller than 13 mm. Also, it is measured that sows with body condition score of 3 have from 9 to 24 mm of adipose tissue on the back. American and Canadian authors recommend that less than 20% of sows on the farm should have less than 15 mm of adipose tissue in the back. Based on this data it is tendency to develop nutritional method in sows during pregnancy which is going to be based on the thickness of adipose tissue on the back (i.e. body condition score). The goal is to minimize the variations in quantity of adipose tissue on the back between pregnancy sows so that at farrowing stage it is approximately 19 mm (at last rib). American researchers measured adipose tissue on the back and estimated body condition in total of 731 sows with goal to determinate „accuracy of nutrition” of pregnant sows based on the body condition score. The body condition score was in weak correlation ($r^2 = 0.19$) with thickness of adipose tissue on the back. For example, sows with body condition score of 3 had adipose tissue thickness between 7.5 and 23 mm. This proves that it is necessary to find more objective procedure for measurement of body condition (as ultrasound for example) in order to adjust nutrition level and minimize variation in thickness of adipose tissue of sows (*Coffey and Parker 1999; Petrujkić et al., 2011; Straw, 2006; Simeunović et al., 2016*).

The thin sow syndrome is a condition characterized by anorexia and weight loss. Usually, it appears as a consequence of errors in sows' nutrition during partition and lactating period, as well as different failures in production technology on the farm. The condition may results as a combination of parasitism (helminth or mange), low environmental temperatures and inadequate feed intake, particularly during lactation. I mean real Serbia climatic conditions, a more frequent occurrence of this syndrome is observed during the winter months as a result of inadequate environmental conditions (temperature less than 21 °C and inappropriate ventilation level) in pig barns. The syndrome may also occur during or after

recovery period from some infective diseases, such as influenza (Lipej, 2015). Some authors suggested that some parasitic infections may also play role in pathogenesis of the thin sow syndrome (Šamanc, 2009; Lipej, 2015). From the group of endoparasites, the most frequent causes are gastric parasites *Hyostrogylus rubidus*, and from the group of ectoparasites - causative agents may be itch mites (Šamanc, 2009). However, the parasitism is less important when adequate prophylactic measures and therapy are routinely carried out in the commercial swine production. The thin sow syndrome is most often clinically observed after first and second farrowing or lactation period. This phenomenon is one of the main reasons for the exclusion of a large number of sows from reproduction, after first and second farrowing. Clinical signs of suboptimal condition include increased weaning to service intervals, small litters and low weaning weights. Piglets of sows in suboptimal condition may be restless and demand milk more frequently (Petrujkić et al., 2011). During lactation, the nutritional needs are high, and inappropriate diet is one of the most frequent reasons of significant decrease of sow body condition. If this phenomenon lasts longer, and if the deficit of nutrients is more pronounced, a "thin sow syndrome" occurs. Thin sows may be identified by observation and systematic condition scoring of the herd. Pressure sores in sows at weaning also indicate poor body condition. Some production parameters can also be used to detect thin sows. The particular susceptibility of young gilts is due, among other things, their unequivocal use of large quantities of food during first lactation and small body reserves, which should be considered that they body is still developing. In extreme cases, the weight loss can involve 30- 90% of sows in one herd (Šamanc, 2009; Lipej, 2015; Bojkovski et al., 2015, 2016a,b.). The "thin sow syndrome" is a significant welfare problem and some data can be found in paper by Relić et al. (2016). In this paper, situation concerning body and health condition of lactating sows at one commercial Serbian farm is discussed.

Material and Methods

In our research we estimated body condition score of sows at one commercial type farm. Assessment of body condition score is performed visually in 47 sows at 90th day of gestation. Statistical data are processed using IBM SPSS Statistics 20 and Microsoft Excel 2003 program and as method we used ANOVA to determine statistical differences between parities.

The material for this research included animals from one commercial swine farm (capacity 500 sows), where health disorders i.e. clinical and gross pathology signs resembling to the problem of thin sow syndrome and/or sudden body loss in large number farrowed females were detected. Research methods included

epidemiological (farm production data analysis) and clinical evaluation, and gross pathological examination (i.e. post mortem lesions detection in case of sow death). In the pig units, the following details were ascertained by the interview and from the farm records: number and category of pigs in the unit, production details (breeding, finishing unit, nucleus or commercial), disease status, current veterinary health plan (vaccination programs, routine medication), biosecurity protocols and feeding system used. Furthermore, data on air temperature and ventilation, stocking density, type of bedding and hygiene level in the unit were collected. The animals were observed and inspected for clinical signs of disease and abnormal behavior.

Results and Discussion

It is not easy to evaluate the body condition in an objective way under practical circumstances. In many herds, body condition is evaluated by the pig producer by visual scoring, on a scale ranging from 1 to 5. Although visual scoring systems may work well in some herds, e.g. in outdoor systems, they have several disadvantages. First, a sow that appears to be thin can still have a fairly high amount of back fat (*Muirhead and Alexander, 1977*). Second, it is a subjective and inaccurate method that largely depends upon the scoring skills of the person. Finally, when visual scoring is performed by the pig producer in the same herd over time, it is likely that less attention will be paid to deviations from the optimal condition due to herd blindness. Determining the optimal body condition by visual scoring is particularly difficult in herds with sows of less than one type of breed because of the inherent variation in conformation existing between breeds (*Whittemore and Schofield, 2000*). In the experiment we had total of 47 sows in which parity ranged between 2 and 6. Applying ANOVA method there were no significant differences between parities. The number of live born piglets ranged from 9 to 22 piglets and the number of dead born piglets ranged from 0 to 6. It was found that the highest percentage of piglets born alive existed in sows of parity 5 as shown in figure 1. Body condition score at the 90th day of gestation was 5 in 7 sows, estimated body condition 4 had 16 sows and 24 sows had body condition score 3. In our experiment, we found that 7 sows had a body score condition 5. Sows farrowing to go with body score condition 5 have health- reproduction disorders. For this reason, we have to try to not go to the farrowing sows with the assessment of body score condition 5. With a score of body condition 3 were 24 sows. Body score condition 3 is optimal. In our survey 16 sows were a body score condition 4. Body score condition 4 gives a chance for the correction of the meal to farrowing, sows that suffer of health-reproduction problems.

Data from the farm records and current situation on the farm indicated that zoohygenic, prophylactic and biosecurity measures were not carried out in an

adequate regime. Also, the regime of preparing the sows for farrowing and the feeding is not adequately regulated. Decreases of feed intake and weight loss in the lactation period were noticed in animals after the 1st, 3rd, 4th and 5th farrowing. In the cases when gilt condition and nutrition in the lactation period was inadequate, the second litter was smaller than the first. Certainly, that low number of newborn may reflect overall sow condition at service. The extended weaning to service intervals and low weaning weights were connected to the poor body condition. The litters of the lean sows were smaller, and in the case of the pig's rejection, it attained less body weight. In some cases, problems with conception or early abortion in pregnant sows were also noticed. On the sows' body, some skin changes (wrinkles and different types of lesions) and swellings were noticed, as well as clogged and dirty hair. The lesions were formed dominantly at the point of bone compression. Most often, thin sows were found in a position lying on the sternum. In some cases, it was very difficult for these animals to take a standing position in the box i.e. The detected gross pathology post mortal lesions were grossly classified as poor body condition, low fat thickness and as an increased incidence and extent of skin lesions, especially over shoulders and hips where pressure sores can develop. Anorexia (loss of appetite) in sows develops after farrowing as part of a "thin sow syndrome", and as a result there is an intense loss of body weight. The clinical signs of this syndrome, observed in the examined cases, show an unusual similarity to the clinical signs of anorexic nerve (Anorexia Nervosa). In addition to losing appetite and body weight, sows limit the intake of normal foods and consume large quantities of straw. Animals spend more time on non-intrusive hyperactive behavior, constantly moving inside the box. The sows affected by anorexic nervousness are easily recognized by the prominent backbone of the spine and their rough and long hair (*Treasure and Owen, 1995*), which is also in line with the observed changes in our survey experiment.

Many factors may affect the appetite of sows in lactation, and the most important are: consumption of the food during pregnancy, air temperature and ventilation in the pig barn, energy level in the meal and the number of feeding per day (*Kovčín, 1993; Bojkovski et al., 2018*). The most powerful effect on the level of consumption has the level of energy in the meal, so if lactating sows are not allowed to eat *ad libitum* or close to it, than production of milk, body weight and level of body reserves decreases. On the other hand, the needs in nutrients during lactation vary and depend on the concentration of energy in the meal and the previous feeding of the sow. In practical nutrition, the highest efficiency of energy consumption from meals is achieved by controlled diet during gravidity in order to minimize the mobilization of body depots of fat during lactation (*Jovanović et al., 2001*). Cases of severe constipation can be avoided by increasing the amount of dietary fiber during the last phase of suppression (*Treasure and Owen, 1997*;

Young et al., 2001; Tabeling et al., 2003; Kokkonen et al., 2009). Ensuring optimum levels of dietary fiber improves the functioning of the bowel and may significantly reduce the degree of constipation. It seems that the use of high-fiber meals in the form of coarse humpy 128 nutrients is a useful strategy for improving the health of pigs (*Peltoniemi et al., 2016*).

Conclusion

According to our results sows with parity 5 gave the best results. Our recommendation for commercial farms is to introduce body condition score in daily routine.

“Thin sow syndrome” on commercial farms can be prevented by correction in the feeding technology and feeding sows during the lactation period. It is recommended to carry out energy and protein balanced diet during gravidity and lactation, and restrictive diet, the first few days after partitition. In the critical period, at the beginning of lactation, the health control of sows should be performed regularly on a daily basis in order to spot and detect the earliest symptoms of the disease (long sleeping periods, reduced appetite and constipation).

Certainly that improved sow nutrition at key stages in the breeding cycle will help improve the number, birth weights and piglet vitality. This breakthrough in sow nutrition can help the sow in supporting larger litters, from birth to weaning.

Ocena telesne kondicije krmača i sindrom mršavih krmača kao zdravstveni problemi na komercijalnim farmama

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Rezime

U ovom članku predstavili smo ocenu telesne kondicije kod krmača i sindroma mršavih krmača. U savremenom svinjarstvu sve se više pažnje posvećuje oceni telesne kondicije krmača. Na većini komercijalnih farmi hranjenje nazimica i krmača zasniva se na oceni telesne kondicije. Cilj je da krmača ne dobije ili izgubi previše telesne mase između osemenjivanja i prašenja. Održavanje telesne mase krmača unutar optimalne vrednosti (3 boda tokom pranja i 2.5 tokom

osemenjavanja) tokom njihovog životnog veka mogu da posluže optimalnim reproduktivnim rezultatima. Suprotno tome, neadekvatna kontrola stanja krmače može dovesti do pojave zdravstvenih problema. Sindrom mršavih krmača je bolest složene etiologije. U 75% slučajeva glavni uzroci su kvalitativna i kvantitativna pothranjenost, takođe nepovoljni uslovi za krmače. Sindrom ređe može biti uzrokovan prisustvom endoparazita *Hiostrongilus rubidus*. U toku jedne kalendarske godine praćena je pojava gubitka telesne mase kod krmača tokom dojenja na jednoj komercijalnoj farmi. Takođe je registrovano i zdravstveno stanje krmača u laktaciji i prasadi na sasi. Gubitak telesne mase uglavnom je otkriven kod krmača u drugoj laktaciji. Korekcija u tehnologiji ishrane i bolji smeštajni uslovi za krmače tokom perioda dojenja ključni su u rešavanju problema sindroma mršavih krmača.

Ključne reči: ocena telesne kondicije, sindrom mršavih krmača, krmače

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