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OBSERVATIONS REGARDING THE MANAGEMENT OF SOWS WITH HIGH PROLIFICACY FROM COMMERCIAL FARMS IN ROMANIA

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Abstract

*The paper presents the performances of sows with high prolificacy from a commercial farm in Romania. We analyzed breeding system and reproductive parameters. The correlation between the number of piglets from breeding and the average weight of piglets was analyzed. The exploitation of sows with high prolificity requires the application of appropriate management***.**

***Key words*:** *sows, maternity sector, integrated management, high prolificacy*

INTRODUCTION

Worldwide in 2017 there were 1.266.077 thousand pigs. The top positions were China (435,040 thousand), E.U. (147,188 thousand), Brazil (39,215 thousand), Russia (21,888 thousand) and Canada (13,935 thousand). [6, 8]

In the U.E. the total number of pigs, in 2016, was 147.2 million. The top 10 emerging countries were: Spain (29.23 millions), Germany (27.3 millions), France 12.79 (millions), Denmark (12.28 millions), The Netherlands (11.88 millions), Poland (millions), Italy (8.48 millions), Belgium (6.18 millions), Romania (4.71 millions) and the United Kingdom (4.54 millions). [4]

A study on the evolution of pigs in Romania shows that the stock in this species reached 5,041 thousand in 2015. This study concluded that in Romania, pork production has declined due to the continuous decrease in pig livestock. [9]

The need to increase global meat production has made the world's leading swine-breeders to experiment and produce high-quality genetic material. They have developed selection and hybridization programs, providing healthy and performing breeding animals.

By applying research, these companies have been able to provide more and more performing breeds to meet the needs of the breeders. The final goal is the quality of the finished product that meets consumer's requirements.

The programs of the major genetic producers have been developed using different breeds: Landrace, Great White, Yorkshire, Duroc, Hampshire, Pietrain, etc., as a pure breed or in the form of certified, tested and verified lines. Thus, cross-breeding schemes have been applied to obtain individuals with high breeding performance. [1, 3]

The management of sows with high prolificacy was and will remain a research and reflection object, as well as a critical and controversial subject. There is a need for extensive analysis of the problems encountered by large pig breeders.

In order to analyse management strategies in highly productive pig farms it is necessary to analyse the term "management". In this case, this term is used to indicate the specific way of managing the animals. Since the factors that act and interact on a farm are numerous, the term management has a very wide meaning.

Some authors in 2017, show the number of pigs weaned per sow per year (PWSY) can be used to compare the productivity of breeding herds, either between herds in a country or between countries. [5]

One study shows that there are also concerns in the US for the rising number of piglets. It is known that if the number of piglets increases, the weight of the piglets decreases. This will result in more pigs with a small weight. These lighter pigs will have lighter weaning weights, higher rates of pre-weaning mortality and take more days to market. [10]

MATERIALS AND METHODS

In order to understand the management of sows with high prolificacy from an industrial farm, observations were made during the period 01.01.2016-26.05.2016. The data collected included: reproduction indicators, diet of pregnant sows and lactation.

Observations have also been made on the average number of piglets and the average weight of the piglets.

The data was statistically processed and interpreted.

RESULTS AND DISCUSSIONS

Breeding indicators

For well-managed farms that want high productivity, it is essential to use genetically engineered high-yielding genetic material.

Table 1. Reproductive performances in a commercial herds in Romania

The hybrid	No of sows	PB	PBA	PBD	MP
F1 DANBRED (local origin)	604	17.71	15.29	1.7	0.71
F1 DANBRED (origin Spain)	45	18.4	15.02	2.6	0.78
TRI (origin Germany)	561	13.34	11.64	1.34	0.36
GRASE	60	11.97	10.33	1.37	0.27
PIC	1899	14.53	12.74	1.37	0.42
SP (origin Spain)	153	13.64	11.23	1.94	0.47
Large White (origin Danmark)	119	17.72	14.96	2.28	0.49
LPIC	70	13.71	11.87	1.49	0.36
Landrace (origin Danmark)	35	16.03	13.34	2.09	0.6
F1 DANBRED X Large White	160	16.05	13.83	1.53	0.64

Source: own calculation and observations, based on the data from a commercial farm.

In Table 1, we used the following abbreviations:

PB - The total number of pigs born
PBA – The number of pigs born alive
PBD- The number of pigs born dead
MP – The number of mummified pigs

These sows must have a minimum of 15-16 live piglets, to obtain a number of weaned piglets / sows to cover production costs.

The largest number of piglets at birth (18.4) was recorded in the F1 DANBRED sows imported from Spain. The largest number of live-born piglets (15.29) was recorded in the F1 DANBRED sows produced in the analyzed farm.

Management of feeding of sows with high prolificacy

The diet of sows with high prolificacy should be adapted as well as other factors to the new advances in genetics.

Since today's hybrid sows are characterized by lower body reserves, higher feeding needs and less environmental resistance, the nutrition strategy goals are:

-careful control of weight gain during gestation and

-maintaining a good physical condition during lactation.

It is mandatory to measure the thickness of the dorsal fat layer – TDFL (at point P2 - at the last rib, 5-6 cm from the median line).

In the case of young sows, the feed must have a high content of enzymes and fibber. Administration of this feed is necessary because the dorsal fat layer before being fertilized should reach 16-18 mm.

Administration of rationalized feed in the first 72 hours after fertilization is necessary to avoid embryonic death.

Because weight loss occurs during lactation, it takes a lot of food to recover the lost weight. This is not the case of young sows.

For hybrid sows with high prolificacy, maintaining a good state of the body depends on the use of fodder during gestation.

During gestation, the volume of the stomach increases, which then allows the ingestion of a large amount of feed during lactation.

For lactating sows, it is advisable to have a tasty fodder to get a high intake and high milk production. That is why we use appetizing feed formulations with a significant percentage of barley (50%) and a moderate

energy level (3,150 kcal). 3 meals / day are provided in liquid form (with minimum 5 hours between them).

Measuring the dorsal fat layer (TDFL) at point P2 before fertilization, during gestation and lactation is very important. This is a benchmark indicating the need to correct possible food strategies.

Is recommended:

-in young gilts - TDFL - must be larger than 15mm. There will be no fetters with TDFL less than 15 mm. If needed, these gilts will be fed ad libitum until the corresponding fat layer is formed.

-in weaned sows - the TDFL must be greater than 14mm. If it is less, it is the same as in the case of gilts.

-Sows at birth must have a TDFL equal to at least 16mm. It would be best for the TDFL to be between 16-22 mm. TDFL greater than 22mm is not recommended. Lactation problems and slow births are avoided.

During lactation, a maximum TDFL loss of 2mm is normal. If the loss is greater, a review of the lactation feeding program is mandatory.

A paper published in 2017 shows that the TDFL determined on pig's carcasses classified in Romania fell from 14.2 mm in 2010 to 13.2 mm in 2015. The decrease in the TDFL shows the obtaining of carcasses of better quality. [2]

Comments on the average number of piglets in calving. The correlation between the number of piglets in calves and the average weight / piglet weight

A main feature to be considered in high prolificacy sows is the breastfeeding capacity, as the number of piglets exceeded the number of nipples.

In addition to the positive aspects, we have to consider the variability of piglet's weight at maturity and the management of cross-breeding.

Due to the number of piglets born in excess comparative with the number of nipples, breeders have been forced to find solutions for the survival of piglets in addition.

Generally, the higher the number of piglets at birth, the lower the birth weight / piglet. This has repercussions on pig weights at weaning and implicitly at slaughter.

It has been observed that weaned piglets at the age of 28 days, weighing 4-5 kg / animal, reach the cutting weight 28 days later than those weighed at 8-10 kg.

To see the correlation between the number of piglets at birth and their weight, 21 PIC sows were observed in calving.

At those the average of the total number of pigs born (PB) was 14.33; the number of pigs born alive (PBA) - 13.57; the number of pigs born dead (PBD) – 0.57; the number of mummified pigs (MP) – 0.19. The weight of the largest piglet in the breeding nest was 1.92 kg, the weight of the smallest piglet in the breeding nest was 0.98 kg. The average weight of a piglet was 1.53 kg.

For those the number of pigs weaned per sow per year (PWSY) will be 31.48, with a 2.32 litters/sow/year.

Genetics and sow management can increase PWSY up to that number of pigs in the future.

The management of sows with high prolificity exploited in commercial farms must be the object of future researches and reflections. [7]

CONCLUSIONS

From an economic point of view, the influence of genetic material on the cost of a piglet varies between 4% and 7%, justifying the use of "advanced" genetic materials.

These animals have guaranteed productivity. Purchasing this genetic material requires thorough training.

Not all farms are ready to use highly productive genetic material.

If shelters, quality of management and nutrition are not in balance with this type of genetic material, the proposed objectives will not be achieved.

The most suitable genetic material for a farm will be the one that will harmonize with all the other management factors. In order to optimize production, it is necessary to adapt the management factors to the type of genetic material.

Each genetic material corresponds to a particular management. It is essential that there is one type of genetic material on a farm. It is not possible to manage different types of genetic materials correctly in a single farm.

The genetic value of a swine used for breeding has a major impact on the quality of production as well as on the efficiency. That's why researchers in this field have developed selection and hybridization programs, delivering performing and healthy breeding animals.

In high yield pigs, it is necessary to use the term "management" to know the specific way of managing animals.

To achieve the desired results, it is essential to consider a cumulative strategy. These refer to: management of genetic material, nutrition, sanitation, shelter, animal management, animal age structure control, human resources.

The advantage offered by high prolificacy sows is that they offer a large number of piglets. Due to the fact that the number of nipples is insufficient for nursing piglets, and the lack of proper management to manage this situation, the piglets will be lost.

That's why different methods have been implemented to get these piglets to live.

In maternity the surplus of piglets can be redirected to other sows. Milk substitutes based on milk powder can also be used.

The value of the results is highlighted by the professionalism of the staff working in such farms.

A disadvantage of these sows is that genetic transformations in order to improve productive capacity have reduced their resistance. Their needs regarding diet, care and maintenance are high.

Regarding the evolution of breeds in time, it can be noticed that the number of products obtained at birth was tripled from 6-7 piglets of the Mangalita sows, to 17 piglets in the case of Danish sows.

Permanent breeders have to align to new developments in the field. Novelties can target hybrids with high prolificacy or their growth technologies.

Increasing the quality and quantity of production depends on how breeders can adapt to the new technologies. Science, through sustained research, aids those who put the new discoveries into practice.

Considering that not every race or hybrid fits anywhere, it would be ideal for domestic breeds to be improved with the imported hybrids. It is desirable to obtain robust, resistant and at the same time hyper-prolificacy and quality animals.

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