SEASON AND PARITY INFLUENCE UPON SOWS PROLIFICACY AND STILLBORN

INFLUENTA SEZONULUI SI A PARITATII ASUPRA PROLIFICITATII SI PIERDERILOR DE PURCEI LA FATARE

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Abstract. *Environmental is one of the factors that can highly influence swine production parameters. We notice that depending on the season, gilts and sows can have variances regarding the number of pigs born alive and stillborns. First parity sows farrow a very small number of pigs during autumn comparing to the other parity sows (0.26 pigs less than second parity sows). Prolificacy was similar during spring and autumn seasons (11.24±0.74 pigs/sow). The season when the prolificacy have the lowest value was winter (11.14±1.85 pigs/sow). There is a positive correlation between the prolificacy and the number of stillborn pigs; in winter, both prolificacy and stillborn decrease – have the same trend line as prolificacy.*

Key words: *sows, prolificacy, stillborn, season, parity*

INTRODUCTION

Prolificacy is a parameter defined as litter size at birth. Currently, considered to be the most important component of sow productivity. In spite of a spectacular increase in productivity due to management advances, litter size at birth has remained constant for the past 20 years **(5)**. This situation seems to question the long-term efficiency of the classical methods of genetic improvement such as within-herd selection and crossbreeding between European or American breeds. Some recent developments and research results suggest that one can be optimistic about the possibilities of

increasing litter size in the near future. A survey of available breeds world-wide illustrates the important differences in average litter size (5-15 piglets), embryo mortality (15-40%) and heterosis (ranging from 5 to over 30%) on litter size **(2, 6)**.

Many factors affect the number of piglets born alive and the resulting litter size. One of the factors that we will correlate with prolificacy and stillborns, for different parity sows is season. Seasonal and daily temperature and light variation has negative impact on swine reproduction indicators **(1)**. Depending on the degree of heat stress, moisture stress and acclimation stress, sows inseminated in periods with high environmental temperatures have low productivity. Also, to all this will add the *autumn fall out syndrome* – low fecundity and low number of embryos that will lead to small prolificacy.

MATERIAL AND METHODS

Biological material was represented by 13016 sows that were studied during one year. Parity distribution was: 21.91% of the sows were first parity; 23.44% of the animals were second parity; 17.42% of the sows were third parity; 16.77% of the animals were fourth parity; 13.28% of the animals were fifth parity and 7.18% of the animals were sixth parity.

The sows were artificially inseminated twice after heat detection: first artificial insemination was made at 2 hours after heat detection and the second one 12 hours later. The animals were feed similar, but the feed intake was different during year, respectively, lower during summer.

RESULTS AND DISCUSSIONS

Prolificacy has been defined as the number of viable piglets produced per year or per breeding lifetime. Prolificacy is influenced by age at first successful mating, ovulation rate and embryo survival at each mating, number of live born, viable pigs and the sow's ability to be successfully remated at regular intervals **(3)**.

In table 1 is presented the prolificacy of sows, in different seasons, according to parity.

Table 1

Sows prolificacy in different seasons

Prolificacy	Spring	Summer	Autumn	Winter	Average
parity 1	10.41±1.22	10.75±0.81	10.75±1.72	10.29±1.13	10.55±1.21
parity 2	10.90±0.35	10.72±1.04	11.01±1.11	10.51±0.83	10.79±0.82
parity 3	11.61±0.19	11.88±0.82	11.74±0.90	11.92±0.41	11.79±0.59
parity 4	12.18±1.14	11.39±1.02	11.15±0.48	11.31±0.72	11.51±0.47
parity 5	11.74±1.26	11.60±1.27	12.15±0.69	10.98±1.59	11.62±1.12
parity 6	10.58±0.96	10.99±1.31	10.61±1.03	11.80±1.09	11.00±0.95
Average	11.24±0.74	11.22±0.80	11.24±0.84	11.14±1.85	11.21±1.11

As we notice from table above, first parity sows prolificacy was 10.55±1.21 pigs, second parity sows prolificacy was 10.79±0.81 pigs, third parity sows prolificacy was 11.79±0.59 pigs, forth parity sows prolificacy was 11.51±0.47 pigs, fifth sows prolificacy was 11.62±1.12 pigs, sixth parity sows prolificacy was 11.00±0.95 pigs. So, we can see that prolificacy increased in the same time with parity until parity sixth, when it start to decrease, being 11.00±0.95 pigs/sow.

We can also observe that first parity sows farrow a very small number of pigs during autumn (0.26 pigs less than second parity sows). Tacking in consideration that those were the gilts mated during summer we can say that farmers should give attention to achieve the replacement rate in spring or winter, so in summer to have a smaller number of gilts to farrow.

Heat stress produces seasonal infertility in sows and decreases reproductive efficiency, especially the fecundity and prolificacy **(1, 4)**.

Parity distribution is very important to achieve economical efficiency; for that the farmers need to analyze the herd performance during the entire year and take the best decision, thinking ahead **(3)**.

In table 2 is presented the prolificacy and the stillborn for the sows, in different seasons.

Table 2

Sows prolificacy and stillborn pigs, according to season

Specification	Spring	Summer	Autumn	Winter
Prolificacy	11.24±0.74	11.22±0.80	11.24±0.84	11.14±1.85
Stillborn	0.69±0.04	0.76±0.50	0.64±0.39	0.52±1.09

From table 2 we can observe that prolificacy was similar during spring in autumn seasons (11.24±0.74 pigs/sow). The season when the prolificacy have the lowest value was winter (11.14±1.85 pigs/sow); this could be because of the sows were mated during autumn season, when the sows have low fecundity and the number of produced eggs is small. Also, we can see that there is a positive correlation between the prolificacy and the number of stillborn pigs; in winter, both prolificacy and stillborn decrease.

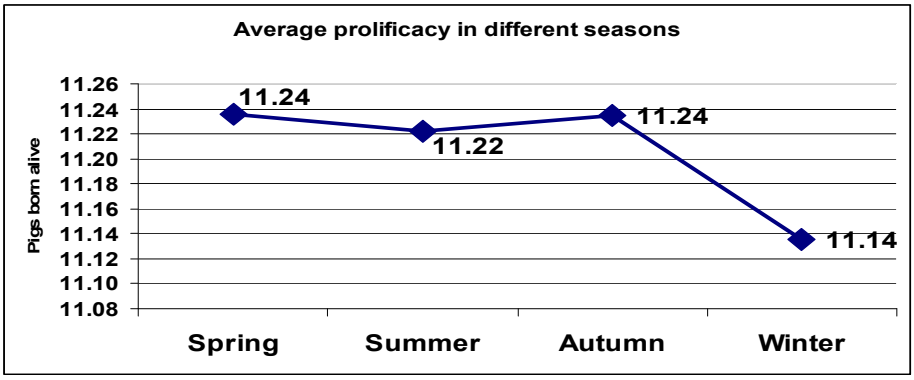


Chart 1. Sows prolificacy, according to seasons

In charts number 2 and 3 is presented the prolificacy and the stillborn of all the sows monitories in this trial, during 12 months.

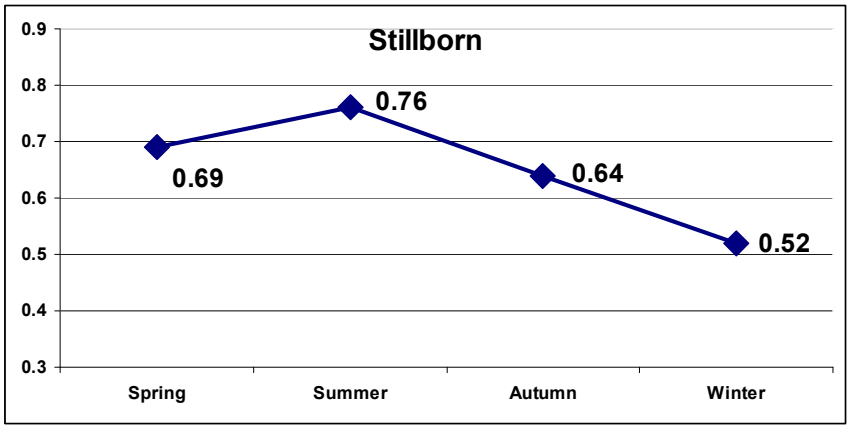


Chart 2. Sows stillborn, according to seasons

Sow efficient production it is influenced by genetically factors and environment. Establishment of pregnancy and litter size (prolificacy) are both related, first of all to the insemination time and ovulation.

CONCLUSIONS

1. First parity sows farrow a very small number of pigs during autumn comparing to the other parity sows (0.26 pigs less than second parity sows).

2. Prolificacy was similar during spring in autumn seasons (11.24±0.74 pigs/sow). The season when the prolificacy have the lowest value is winter (11.14±1.85 pigs/sow).

3. There is a positive correlation between the prolificacy and the number of stillborn pigs; in winter, both prolificacy and stillborn decrease – have the same trend line as prolificacy.

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