

## RESEARCHES CONCERNING BREEDING PERFORMANCES RECORDED TO PIC 1050 AND CAMBOROUGH SOWS EXPLOITED IN SC SUINPROD SA ROMAN

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### **Abstract**

*Through this paper, we proposed to establish the reproduction performances of sows PIC lines exploited within a top unit in Moldova in swine husbandry - S.C.SUINPROD S.A. ROMAN. There have been studied individuals resulted from GP 1050 and Camborough sows, following the standard working protocol in the unit. Comparing the fecundity values, they passed over 81 % in both groups (PIC 1050 – 81.72 %; Camborough – 81.90 %), suggesting thus that both groups present special maternal features. Average prolificacy of the sows, expressed as the amount of farrowed pigs, was higher in Camborough sows (12.11 piglets / parturition) as compared to PIC 1050 sows (11.33 piglets / parturition), meaning + 6.8%. Both achieved values were in accordance with the data specified by the scientific references. Piglets casualties, in both groups, were less than 10%, compared to the references, which indicate 15 % casualties till weaning. The reduced casualty percentage could be explained by both better sows quality and provided technological conditions during gestation, parturition and weaning. From the analysis of the achieved performances at GP 1050 and Camborough sows, it revealed that these females present remarkable maternal qualities: very good fecundity, high prolificacy, docile temperament and long lasting exploitation period.*

**Key words:** sows, PIC, performance, reproduction

### **INTRODUCTION**

Swine husbandry the main meat producing industry in the world and in Romania, meaning 50% of the total meat yield (live weight). Almost the same proportion could be observed in human consumption for this product.

Quality and efficiency of this production branch depends to the greatest extent of the genetic value of the pigs used for reproduction, of feeding and accommodation technologies, being also able to highlight the existing genetic potential.

### **MATERIAL AND METHODS**

Through this work, we proposed to establish the reproduction performances (fecundity, prolificacy, amount of piglets brought forth alive, amount of weaned piglets etc.) achieved by the PIC sows used under intensive system at S.C. SUINPROD S.A. ROMAN.

The biological material comprised PIC 1050 and Camborough sows, usually used within the previously mentioned company.

PIC 1050 females are used in the hybridization farm, to produce Camborough sows. These are used within the complex to cross with terminal boars, in order to produce industrial hybrids for slaughter. The sows have been studied since the beginning of their reproductive life, till their culling.

The working method included the groups of animals, meaning 50 individuals from each bloodline. The experimental conditions were those commonly applied by the production technology in the unit, the technological flow being undisturbed.

The animals received identical conditions of accommodation and feeding throughout the experimental period.

## RESULTS AND DISCUSSIONS

### 1. PIC sows fecundity

Speaking about fecundity, specifically for females, it is analyzed the real situation of the females that become pregnant after mating or artificial insemination.

Concerning the optimal insemination moment of sows, it was found that the best fertility was achieved when females were inseminated with 10, respectively with 6

hours prior to ovulation. This period mainly comprises the time required by spermatozooids ascension and capacitating through the uterine horns (between 15-20 minute) and through the oviduct (2-4 hours) [1, 6].

The data concerning the PIC 1050 and Camborough sows fecundity are given in tab.1 and fig. 1.

Table 1  
 Fecundity of the PIC sows, depending on the parturitions chronology

Parturition n°	Fecundity (%)	
	PIC 1050 sows	Camborough sows
I	82.2	80.6
II	83.8	83.1
III	82.9	83.4
IV	81.7	82.1
V	80.0	80.3
Average ( $\bar{X}$ )	81.75	81.90
Fisher test	n.s.	n.s.

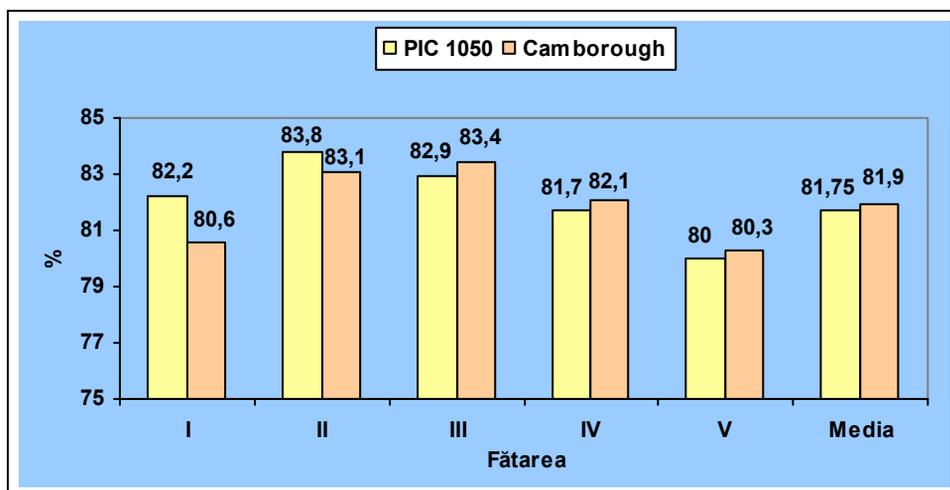


Fig. 1 Fecundity of the PIC sows, depending on parturitions chronology

Comparing the values recorded in the 2 analyzed sows lines, it could be observed that the average fecundity is very good, over 81% in both groups (PIC 1050 - 81.72%; Camborough - 81.90%), which indicates that the two groups of sows have very well maternal features. There were also found differences between parturitions. Therefore, it was found an ascendant fecundity curve till the 2<sup>nd</sup> parturition (PIC line 1050) or until the

3<sup>rd</sup> one (Camborough), which decreased towards the end of the reliable exploitation period, registering a fecundity of about 80.0%, during the 5<sup>th</sup> parturition, in both liner. Consequently, sows aged, while the fecundity decreased. There were not found statistical differences between the two groups of sows. The achieved results were comprised within the limits set by the literature on fertility (between 80 - 92.5%) [4, 5, 7, 8].

The descending slope of the fecundity curve, observed during ageing, is normal, knowing that the parturition succession lead to lower resistance of the organism and increase the occurrence possibility of some common gynecological disorders.

## 2. Prolificacy of the PIC sows, depending on season

Reproductive capacity of swine is evaluated through prolificacy, which supposes the appliance and compliance with a complex of activities and measures, some dependent of animal, others related to the environmental conditions, finalizing with the amount and quality of weaned piglets, during a year of production. Higher the weaned

piglets amount and better their quality, better is considered the fertility. Therefore, it is not sufficient to have sows with high fecundity and prolificacy, because these qualities need to be accompanied by high milking capacity, by sows care for piglets and by the human removal of any events causing descendants mortality during pre-and postnatal periods, until weaning.

Prolificacy is conditioned by ovulation rate, fecundity, nidation of zygotes, as well as by embryonic and fetal mortality.

Prolificacy is a very important reproductive index, assessed by the amount of farrowed piglets. Data on the PIC sows prolificacy, related to season, are presented in tab. 2.

Table 2  
 Prolificacy of the PIC sows, depending on season

Season		Piglets farrowed alive ( <i>capitis</i> )	Piglets farrowed dead ( <i>capitis</i> )	Total farrowed piglets ( <i>capitis</i> )	Weaned piglets ( <i>capitis</i> )	Weaned piglets from farrowed ones (%)
Winter	PIC 1050	10.63	0.68	11.31	10.20	90.26
	Camborough	11.52	0.62	12.14	11.12	91.60
Spring	PIC 1050	10.75	0.78	11.53	10.30	89.41
	Camborough	11.64	0.66	12.30	11.25	90.72
Summer	PIC 1050	10.61	0.66	11.27	10.18	90.48
	Camborough	11.14	0.81	12.05	10.62	90.54
Autumn	PIC 1050	10.49	0.70	11.19	9.92	89.12
	Camborough	11.14	0.81	11.95	10.62	90.54
Annual average	PIC 1050	10.62	0.71	11.33	10.15	89.92
	Camborough	11.43	0.68	12.11	11.06	91.07

Comparing the results achieved by both sow groups, we observe that the reproduction performances were similar during the four seasons.

From the data presented in tab. 2, it was found that the amounts of piglets farrowed alive were close during the 4 seasons, resulting that in intensive growing conditions, when the appropriate rearing technology is fulfilled, the season has low influence on sows prolificacy.

The highest amount of farrowed piglets was achieved from both PIC lines, during spring, while the lowest one was recorded during autumn. The possible causes which led to these results, could be the

reminiscences inherited from the ancestral wild pig, when parturitions passed during spring, while for the autumn season, the excessive heat during summer overlaps with pregnancy, leading thus to modest results.

It was also noticed that the greatest amount of piglets have been achieved by the Camborough sows. The difference against the 1050 PIC sows was 8.96% (0.91 *capitis*). It should also be noticed the very high percentage of weaned piglets, from the farrowed ones, meaning approximately 90% in both groups, which demonstrate the excellent potential as good mothers of the PIC sows and the very well technology practiced in the unit.

Literature [2, 4, 5, 6, 8] indicates a survival rate of 85-94% for the weaned piglets, basing on the amount of the farrowed ones. This proves that the productions achieved within the S.C. SUINPROD ROMAN S.A. are very good.

### 3. Prolificacy of the PIC sows, according to the parturition chronology

Age sows may affect prolificacy in that sows passing over 3.5 years, which have decreasing reproduction indexes, while those

too young are not fully physiologically prepared.

Concerning the sows prolificacy, as influenced by age, data in literature indicate that best reproduction results are obtained during the 3<sup>rd</sup>, 4<sup>th</sup> and 5<sup>th</sup> parturition, regardless the breed, so between the ages of 2 and 3 years. However, the sow live weight should not exceed 160 kg.

Regarding the prolificacy of the sows, as influenced by age, the data from both sows groups are presented in tab.3 and fig. 2.

Table 3  
 Prolificacy of the PIC sows, depending on the parturitions chronology

Season		Piglets farrowed alive (capitis)	Piglets farrowed dead (capitis)	Total farrowed piglets (capitis)	Weaned piglets (capitis)	Weaned piglets from farrowed ones (%)
I	PIC 1050	10,50	0,78	11,28	9,92	87,94
	Camborough	11,20	0,73	11,93	10,68	89,50
II	PIC 1050	10,59	0,70	11,33	10,20	90,34
	Camborough	11,34	0,66	12,00	10,95	91,10
III	PIC 1050	10,80	0,62	11,42	10,44	91,42
	Camborough	11,65	0,61	12,26	11,33	92,41
IV	PIC 1050	10,72	0,66	11,38	10,18	89,46
	Camborough	11,58	0,64	12,22	11,24	91,59
V	PIC 1050	10,50	0,77	11,27	10,02	88,91
	Camborough	11,38	0,74	12,12	11,00	90,75
Annual average	PIC 1050	10,62	0,71	11,33	10,15	89,92
	Camborough	11,43	0,68	12,11	11,06	91,07

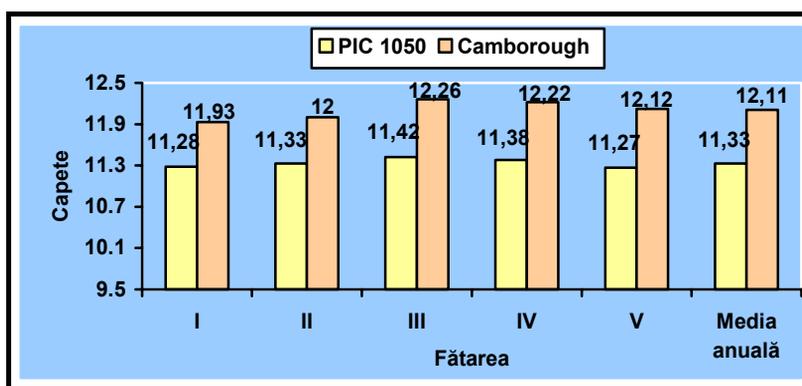


Fig. 2 Amount of piglets farrowed by the PIC sows

From the data presented in tab. 3, it could be noticed that prolificacy, expressed by the amount of farrowed piglets calved, was higher in Camborough sows than in the PIC 1050 ones, during the 5 parturitions.

Expressed in relative terms, these differences were comprised between 5.91% and 7.54%.

The percentage of piglets farrowed alive was in both groups of sows (93.73% at PIC 1050 and 94.38% at Camborough), which

demonstrates the very well genetic potential of the PIC sows.

Concerning the amount of dead farrowed piglets, the average values were close in both groups (0.71 capitis in PIC 1050 and 0.68 capitis in Camborough).

Prolificacy of the high productivity hybrids is situated between 12.05 and 13.2 piglets/farrowing [1, 5, 6, 7, 8], meaning that the performances achieved within the S.C. ROMAN SUINPROD S.A. company were situated at the lower limit.

## CONCLUSIONS

1. Fecundity was poorly influenced by parturition chronology at all studied sows, the differences recorded in the 5 observed parturitions being very low.

2. Comparing the fecundity values recorded at the 2 analyzed sows lines, it could be observed a very well average value, passing over 81% in both groups (PIC 1050 - 81.72%; Camborough - 81.90%), indicating that the sows in both groups have special maternal features.

3. The average prolificacy, expressed by the farrowed piglets amount, was higher in Camborough sows (12.11 piglets/farrowing) than in PIC 1050 sows (11.33 piglets/farrowing), meaning a difference of 6.8%. Both values were comprised within the literature recommendations for this parameter.

4. Piglets casualties, recorded in both groups, were below 10%, compared with the literature statement (around 15%) until

weaning moment. They could be due both to the very good sows quality and technological conditions provided during gestation and from farrowing to weaning, as well.

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