Journal of Veterinary Research Advances
ISSN: 2582-774X

Research Article
Open access

Breeding performance of large white pigs in central region of Cameroon

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Received on: 30/09/2023 Accepted on: 11/05/2024 Published on: 20/05/2024

ABSTRACT

Aim: The study was aimed to contribute better understanding of the reproductive performance to improve production of large white pigs in Cameroon.

Method and materials: Total 40 sows and 09 boars of Large White breeds have been studied from January to May 2022 at the PRO-AER (*Professionnels de l'Agriculture et de l'Elevage en milieu Rural)* farm. For this purpose, the primary and secondary data from the farm's breeding registers were used.

Results: The study indicated that the average age of breeding and gestation period of sows were 246.75 ± 10.15 and 113.85 ± 1.36 days respectively. The average litter size at farrowing was 10.45 ± 2.79 piglets, the average litter size at weaning was 9.63 ± 2.76 piglets for a farrowing mortality rate of low and at weaning of 8.77% and 7.96% respectively. The average weight of piglets at birth was 1.39 ± 0.20 kg and the heaviest piglets were obtained with sows having small litter sizes. Weaning took place at 28.65 ± 1.46 days for an average weaning weight of 7.22 ± 1.47 kg.The different reproductive characteristic values such as sow breeding age and weight, gestation length, litter sizes, mortality rates, weaning time are comparable to those reported by our predecessors in other farm in Cameroon. Breeding weight was positively correlated with breeding age (r = 0.61) and parturition number (r = 0.39). Litter size at farrowing was positively correlated with the number of piglets weaned (r = 0.95).Regarding the factors, only the farrowing rank influenced reproductive performance.

Conclusion: It was concluded that it sufficiently demonstrates compliance with the housing conditions, level of food and sanitary situation inside farm despite all the difficulties encountered on a daily basis for which the means are being put in place for their resolution.

Keywords: Large White breed, performance, pigs, PRO-AER, Reproduction.

Cite This Article as: Dorice AK, Herve T, Bertin VN, Momo CM, Lavoisier FT, Ngwasiri NN, Sorelle DN and Ngoula F (2024). Breeding performance of large white pigs in central region of Cameroon. J. Vet. Res. Adv., 06(01): 11-19.

Introduction

Cameroon's population is growing for about 2.6-2.8% per year and increase in population is leading to increasing urbanization, increasing animal protein deficit (Awono et al. 2005). In Cameroon, meat sector contributes only to 13.07 kg/inhabitant/year compared to 42 kg/inhabitant/year normally recommended by WHO and FAO (MINEPIA, 2005). Thus, pig population is estimated at about 33440 tons for 2015 against an application of 47000 tons, resulting in a deficit of 13160 tons. In terms of agricultural production, this sector accounts for 16% of Cameroon's GDP and generates more than CFAF 125 billion per year (MINEPIA, 2005). This deficit is accentuated by the growth of production units (2.7%) which remains below the growth of population (2.5%).

Given the constraints of underproduction, leading to problems related to self-sufficiency in meat, a large part of the (fast-growing) population does not have access to an adequate diet of animal protein. For this reason, it is preferable to keep short-cycle and fast-growing animals such as poultry, rabbits and pigs. Unlike other species, pork is a high carcass yield animal (75%). It has a relatively short gestation period (114 days on average), a large litter (6-18 piglets for improved breeds), satisfactory productivity and rapid growth. (Martel, 2008) As a result, pig farming contributes 15% to meat production for all products consumed locally by the Cameroonian population (MINEPIA, 2005).

Despite the advantages linked to pig farming,

production in Cameroon faces major constraints linked to the supply of broodstock, rearing techniques, feeding, sanitary protection (African swine fever), access to credit and the marketing of livestock products (MINEPIA, 2009).

The PRO-AER farm specializing in the breeding and fattening of pigs through the use of improved breeds and husbandry techniques could thus make a significant contribution. However, no studies have been carried out so far to assess the reproductive performance of pigs reared in this structure. However, data on the breeding performance of pigs in this structure are indispensable as they will be used to assess the production of the structure and to consider potential avenues for improving that performance. This work was initiated in order to contribute a better understanding of the reproductive performance of large white hybrids under the conditions of the forest zone with bimodal rainfall.

Materials and Methods

Period of study and Geo-climatic description and relief of the area

The study was conducted from January to May 2022 at the PRO-AER farm, located in the Ngali 1 group in the district of Soa, in the central region of Cameroon. The average geo-climatic coordinates are: altitude 750m, time zone UTC + 1: 00; 3°59 – 4°8 north latitude and 11°31 - 11°43 east longitude. Field has many valleys and very deep with PH between 4 and 6. The climate is equatorial to 4 seasons: a large and small rainy season and a large and small dry season.

Animal material

The PRO-AER farm operates the Large-White breed (Figures 4, 5 and 6). It has a herd of around 800 pigs of different physiological stages. As far as the breeders are concerned, they are mostly produced on the PRO-AER farm, but others come from other farms. This study was carried out on 49 Large white sows (having a uniform white coat, spotless with erect ears) including 40 sows and 9 boars.

Animal husbandry technique

Housing: The PRO-AER farm has several equipments; seven livestock buildings has been identified and distributed as follows:

- Building 1, growth building which is one of the largest buildings. It is subdivided into 16 boxes of 30m² each so 8 boxes on each side with a service corridor 1m wide and 50m long with 2 stores 18m² so the one on the right is used to store food and the one on the left is used to store veterinary products (Fig 1).
- Building 2, maternity ward which has 24 boxes of 18m² each so 12 boxes on each side and a service corridor 1m wide and 50m long.
- Building 3, post-weaning building which has 12 boxes of 9m² each so 6 boxes on each side with a service corridor 1m wide and 16m long (Fig 2).
- Building 4, new maternity ward, which is divided into 2 large rooms, so only the first one is fitted out. In this room there are14 boxes equipped with cages for suckling sow and corner for piglet.
- Buildings 5 and 6 are still under construction. Building 5 will be used as a veratery being already almost completed it is equipped with 32 loges with boar. While building 6 will be used as a second growth building.
- Building 7 is a quarantine building.

Fig 1: Growth building

Fig 2: Post-weaning building

All of these buildings (1, 2, 3, and 4) are equipped with a water supply system fed by a castle with a capacity of 11 thousand liters, which facilitates the cleaning of the pigsty and the watering of the animals.

Feeding: The feed used on the farm is manufactured at the promoter's feed mill located in the city of Yaoundé and packaged in 50 kg bags and is transported to the farm. Six types of feed are used on the farm:

- Feed for suckling piglets (pre-starter), fed to piglets from three days of age. This
- Feed was a supplement to mother's milk and thus allowed the piglets to have a good weight at weaning;
- Starter feed: this feed was fed to the piglets after weaning until they reached 2 months of age, i.e. 15-20 kg bodyweight (0.5 to 0.8 kg);
- Growth feedfor subjects weighing between 20 and 50 kg (1.7 to 2 kg dry matter);
- Finishing feed for pigs weighing more than 50 kg (2.5 dry matter to 3 kg).
- The gestation feed (breeding feed) this feed allowed to feed both pregnant sows (4kg at the beginning of gestation to be reduced progressively until 0.5kg at the end of gestation), empty sows and boars (1.5 dry matter to 2kg);
- Lactation feed for sows with mid-term calving (5kg dry matter for the mother plus 0.5kg for each piglet).

The feed was fed to the animals as a powdered meal and wet only to pregnant sows in the morning after cleaning the boxes. The composition and chemical characteristics are part of the confidential archives of the manufacturing company itself. Water was served ad libitum by means of pipettes connected to the castle.

Prophylaxie

Healthprophylaxis: The dressing rooms, drinking trough and service corridor were washed every morning, the feeders cleaned with a cloth of the rest of the food soiled. The disinfectant solution (pedal shower) or virunet containing solution located at the entrance of each building was constantly renewed and visitors were strictly prohibited from entering the building. Weekly spraying of a disinfectant (bleach) inside and outside buildings.

Medical prophylaxis: In sows this consisted of deworming them with metronidazole, immediately after weaning; antibiotic injection in case of infection problems and also after farrowing to avoid mastitis and metritis; oxytocin (2ml) injection in sows with difficulties during farrowing. After calving, they received a vitamin injection (stress vita) to maintain a good level of food consumption, in order to have a good milk production; in pregnant sows, iron injection (fercobsang), the amount of which depended on the weight of the animal and especially on the recommendations of the manufacturer and vaccination of sows against mumps every 6 months.

In piglets, they were summed up in a set of measures including the injection of iron and vitamins to the piglets from the 3rd day of age and the recall between the 14th and the 18th day to prevent diarrhoea and prevent the crisis of 3 weeks; the cutting of the teeth and the cutting of the tail on the 8th and 10th day and the injection of the vitamin to limit stress; the injection of an antibiotic (oxytetracycline) in case of respiratory problems (cough, sneezing); In cases of diarrhea inject sulfermedirazine for 3 to 5 days and vermifugation with metronidazole (oral) after weaning.

Conduct of reproduction

Period from breeding selection to calving

Some breeder could come from elsewhere especially when the promoter was trying to overcome a problem (inbreeding) or certain qualities that he did not have within his herd but the majority of the breeders came from previous bands and they were selected in 2 stages. The first stage occurred a few days after birth (10 days), especially in young males and all males thatwere not healthy, rigorous and sufficiently active were castrated. The second step was when the piglets were removed from the post-weaning building (at 4 months of age). They were marked with earrings in order to identify them and distinguish them from other subjects. The criteria for selecting breeders were: future breeders had to be healthy and without disabilities; the number of nipples had to be 12 or more; they had to be fast-growing and weight-appropriate for their age; they had to be less aggressive; Knowledge of their family tree was crucial, as was the performance of their parent; they had to be able to stand on all fours. For the male, the testicles had to be of good shape and acceptable size.

After the first heat, the gilts were dewormed. On the second day of the second heat, they were taken to the boar for two (02) days. After mating, the heat was systematically controlled. In the event of heat return, the sow was again returned to the boar and in the event of non-heat return, the females were quietly housed and then taken at least one week

after calving to calving cages which were previously cleaned and disinfected at least two days prior to the introduction of the pregnant female. As soon as signs of calving appeared, sows were monitored to intervene if necessary. As for the boars at the start they were housed in groups and then individually at the time of the start of breeding where they received the sows for mating.

From farrowing to weaning

During calving, sows were monitored to assist them in the event of difficulties. After calving, the foetal sheaths and stillbirths were immediately removed and the piglets were directed to the sow's nipples to receive colostrum. Piglets received an intramuscular injection of 2 ml of iron each on the third day. From 5 days on, piglets began to eat the 1st-age feed until weaning at 28 days of age, from which time they were transferred to the post-weaning building and the sows returned to their usual lodges. Weaning weights varied depending on the strength of the piglets at birth and their ability to consume the feed.

Reform

Breeders were not of better quality, such as: sows with poor maternal qualities, cannibal sows and sows that after several mating attempts always returned heat, boars or mated females had a litter of less than 5 piglets, those not giving birth to healthy piglets and those over 3 years old. Were reformed and well sold.

Techno-economic management

The identification of the animals was done with the help of earrings. Major events related to farrowing, births, weaning, pig weight, pig weight at sale, sex ratio, prophylaxis and feeding shall be recorded in the breeding register of the farm. The size of the herd was constantly updated after the sale of the pigs (adults, or piglets) and after a series of calving. The entrance to each building consisted of an information table with information on the animals such as the number of pregnant sows, the number of lactating sows, the number of piglets and the amount of feed served.

Data collection and parameter studied

The data collection was done on the basis of primary and secondary information available on the breeding records and that collected during our internship at the PRO-AER farm, which ran from January to May 2022. For a population of approximately 800 pigs, a sample of 49 breeding sows or 40 sows was selected based on the availability of information on their calving, while the 9 boars were selected based on the availability of data on their matings and the resulting parameters. These data were collected using a data collection form, and enabled the following reproduction characteristics to be determined:

- Reproductive age and weight: Reproductive age was assessed from birth to age at sexual maturity. The weight was determined by means of a scale
- The duration of gestation: It is defined by the number of days between the date of mating and the date of delivery.
- Litter size: this is shown on the breeding sheets for each sow and for each calving number.
- Weight of piglets at calving: data not included in the herd sheets but obtained by weighing piglets from sows that calved during our training course.
- Age and weight of piglets at weaning: the age at weaning shall be indicated in the flock records,
- The length of farrowing-weaning,
- The length of weaning-mating.

Statistical Analysis

Data on breeding weight, gestation duration, litter size, mortality rates, piglet weight at calving and weaning, weaning age, GMQ, and weight gain were subjected to descriptive statistics. One-factor ANOVA was used to test the effects of calving rank, age and breeding weight of sows on different breeding parameters, respectively. When differences existed between the means, they were separated by Duncan's test at the 5% threshold. For the analyses, SPSS 20.0 software was used. Pearson's correlation was used to establish relationships between different reproductive parameters. The results of this study were expressed as mean ± standard deviation.

Results and Discussion

Presentation of reproductive performance parameters of large white at the PRO-AER farm: The reproductive performance of the PRO-AER farm was indicated (Table 1). The results showed that the mean breeding age of the sows was 246.75 ± 10.15 days; the mean breeding weight of the sows was 156.12 ± 8.08 kg; the mean gestation time obtained was 114.29 ± 2.50 days. The mean litter size at birth was 10.45 ± 2.79, with a mean litter size of 4.85 ± 1.44 female piglets and 5.55 ± 1.69 male piglets. The mean calving weight of these piglets was 1.39 ± 0.20 kg. The piglet mortality rate at birth was 0.90 ± 0.87. At weaning, the mean number of piglets at

weaning was 9.63 ± 2.76, with 4.53 ± 1.41 females and 4.90 ± 1.66 males. The average weight of piglets at weaning was 7.22 ± 1.47 kg.

Effect of reproductive age on reproductive performance: It was showed the variation in reproductive performance with breeding age of Large White sows (Table 2). It was found that the breeding weight of sows, the number of female piglets at calving and the number of male piglets at calving were significantly ($p < 0.05$) higher in sows aged 250-260 and 260-270 days. Litter size, number of weaned piglets, and number of females weaned piglets were significantly ($p<0.05$) higher in 240-270-day-old compared to 249-250-day-old sows. Other reproductive characteristics were comparable ($p > 0.05$) between different groups of sows.

Effect of reproduction weight on reproduction performance: It was showed the variation in reproductive performance as a function of laying weight in Large White sows (Table 3). The results showed that the number of male piglets at calving was significantly ($p < 0.05$) higher in sows with weights in the ranges [160-170], this with reference to those of ages within the interval [130-140[. Other reproductive characteristics were comparable ($p > 0.05$) between the different weight range groups of the breeding females.

Effect of calving number on reproduction performance: It was showed the variation in reproductive performance according to breeding number in Large White sows (Table 4). The results indicated that, the gestation period of sows was significantly ($p < 0.05$) longer in sows in litters 1 and 2 compared to those in litters 3 ; Weaning piglet weights were significantly ($p < 0.05$) higher in the brood group 2 compared to the brood group 1 and 2. Other reproductive characteristics were comparable ($p > 0.05$) between different groups of sows.

Table 1: Reproductive Performance large white at the PRO-AER Farm

Reproduction performance (n=31)	(Mean ± standard deviation)
Breeding age (j)	246.75 ± 10.15
Breeding weight (kg)	156.12 ± 18.08
Gestation period (j)	113.85 ± 1.36
Litter size at birth	10.45 ± 2.79
Mortality at birth	0.90 ± 0.87
Number of female piglets at birth	4.85 ± 1.44
Number of male piglets at farrowing	5.55 ±1.69
Weight of piglets at farrowing (kg)	1.39 ± 0.20
Number of piglets at Weaning	9.63 ± 2.76
Weaning time (j)	28.65 ±1.46
Weight of piglets at Weaning (kg)	7.22 ± 1.47
Number of female piglets at Weaning	4.53 ± 1.41
Number of male piglets at Weaning	4.90 ± 1.66

Table 2: Breeding performance by breeding age

Reproduction Performance	(Mean ± standard deviation)			
	[240-250[(n=27)	[250-260[= 8)	(n[260-270[(n = 5)	*p*
Breeding weight of sows (kg)	148.54 ± 16.90^{b}	168.32 ± 5.64^{a}	177.50± 4.5^{a}	0.00
Gestation period (j)	114.15 ± 1.13	113.38 ± 1.92	113.00 ± 1.22	0.12
Litter size	9.59 ± 2.56^{b}	11.88 ± 2.69^{ab}	12.80 ± 2.61^{a}	0.03
Number of female piglets at farrowing	4.56 ± 1.45^{b}	5.00 ± 1.30^{a}	6.20 ± 0.83^{a}	0.01
Number of male piglets at farrowing	4.96 ± 1.40^{b}	6.88 ± 1.45^{a}	6.60± 1.67^{a}	0.04
Weight of piglets at farrowing	2.81 ± 2.24	1.41 ± 0.24	1.42 ± 0.17	0.82
Number of female piglets Weaned	8.78 ± 2.39^{b}	11.13 ± 3.13^{ab}	11.80 ± 2.16^{a}	0.04
Weaning time	28.30 ± 1.43	29.25 ± 1.28	29.60 ± 0.89	0.07
Weight of piglets at Weaning	7.27 ± 1.57	7.18 ± 1.42	6.98 ± 1.18	0.92
Number of female piglets at weaning	4.19 ± 1.38^{b}	5.00 ± 1.30^{ab}	5.60 ± 1.14^{a}	0.04
Number of male piglets at weaning	4.41 ± 1.33	6.00 ± 2.00	5.80 ± 1.78	0.06

n = number of the sow (a, b): on the same line the assigned values of the different letters are significantly different ($p < 0.05$); p = probability.

Table 3. Effect of reproduction weight on reproductive performance.

Reproduction performance	Mean ± standard deviation					P
	[130-140] (n = 9)	[140-150] (n= 8)	[150-160] (n = 3)	[160-170] (n=5)	[170+] (n = 15)	
Gestation duration (j)	144.00 ± 1.22	114.25 ± 1.03	114.33± 0.57	114.00 ± 2.00	113.40 ± 1.5	0.60
Litter size	8.56 ± 2.60	10.63 ± 3.29	9.27 ± 1.15	11.40 ± 2.70	11.33 ± 2.55	0.16
Still born	0.78 ± 0.66	0.88 ± 0.99	0.67 ± 0.57	0.80 ± 1.09	1.07 ± 0.96	0.91
Sex ratio at farrowing (Female)	4.33 ± 1.65	4.88 ± 1.95	5.00 ± 0.00	5.00 ± 1.22	5.07 ± 1.28	0.82
Sex ratio at farrowing (Male)	4.22 ± 1.56^{b}	5.75 ± 1.48^{ab}	4.67 ± 1.15^{ab}	6.40 ± 1.15^{a}	6.13 ± 1.64^{ab}	0.04
Weight of piglets at farrowing	2.72 ± 3.85	1.46 ± 0.23	1.53 ± 0.05	1.30 ± 0.20	1.34 ± 0.22	0.46
Number of piglets Weaned	7.78 ± 2.68	9.75 ± 2.65	9.00 ± 1.73	10.60 ± 2.51	10.47 ± 2.82	0.18
Weaning time	27.56 ± 1.33	28.75 ± 1.48	28.67 ± 1.15	29.20 ± 1.09	29.07 ± 1.48	0.12
Weight of piglets at Weaning (kg)	6.40 ± 1.09	7.40 ± 1.48	6.70 ± 0.60	8.02 ± 1.65	7.45 ± 1.62	0.28
Sex ratio at weaning (Female)	3.89 ± 1.36	5.13 ± 1.24	4.00 ± 1.73	5.60 ± 1.51	5.33 ± 1.87	0.59
Sex ratio at weaning time (Male)	3.89 ± 1 .36	5.13 ± 1.24	4.00 ± 1.73	5.60 ± 1.51	5.33 ± 1.87	0.17

n = number of sow (a, b): on same line assigned values of different letters were significantly different ($p < 0.05$); p= probability.

Table 4. Effect of calving number on reproduction performance

Reproduction Performance	Farrowing number (mean± standard deviation)			*P*
	1 (n= 12)	2 (n = 21)	3 (n = 7)	
Gestation duration	114.50 ± 0.67^{a}	113.66 ± 1.55^{a}	112.57± 0.53^{b}	0.00
Litter size	9.58 ± 2.31	11.27 ± 3.05	10.29 ± 3.35	0.27
Sex ratio at paturation (F)	4.75 ± 1.05	5.14 ± 1.69	4.71 ± 1.97	0.72
Sex ratio at paturation (M)	4.83 ± 1.69	6.05 ± 1.64	5.57 ± 1.71	0.14
Weight of piglets at farrowing	2.37 ± 3.34	1.35 ± 0.26	1.57 ± 0.12	0.30
Number of piglets weaned	8.58 ± 2.74	10.45 ± 2.80	9.57 ± 2.87	0.18
Weaning time	28.17 ± 1.58	28.91 ± 1.34	28.86 ± 1.57	0.35
Weight of piglets at Weaning	5.97 ± 0.73^{b}	8.00 ± 1.41^{a}	6.81 ± 0.78^{b}	0.00
Sex ratio at Weaning (F)	4.42 ± 1.31	4.82 ± 1.56	4.29 ± 1.70	0.63
Sex ratio at Weaning (M)	4.17 ± 1.74	5.36 ± 1.56	5.00 ± 1.63	0.13

n = number of sow (a, b): on same line assigned values of different letters were significantly different ($p < 0.05$); p= probability.

Table 5. Effect of litter size on reproductive performance

Reproductive performance	Litter size			P
	[4-9[(n = 6)	[5-14[(n = 28)	[14 + (n = 6)	
Mortality at birth	0.83 ± 0.98	0.89 ± 0.83	1 .00 ± 1.09	0.94
Number of female piglets at farrowing	2.83 ± 0.98^{c}	4.82± 0.81^{b}	7.00 ± 1.09^{a}	0.00
Number of male piglets at farrowing	3.33 ± 1.03^{c}	5.46± 1.13^{b}	8.17 ± 0.40^{a}	0.00
Weight of piglets at farrowing	3.31 ± 4.74^{a}	1.38 ± 0.19^{b}	1.43 ± 0.28^{b}	0.04
Numberof piglets weaned	5.33± 1.03	9.57 ± 1.42	14.17 ± 0.75	0.00
Leangth of weaning	26.00 ± 0.00^{c}	28.93 ± 1.01^{b}	30.00 ± 0.00^{a}	0.00
Weight of piglets at Weaning	7.60 ± 2.37	7.03 ± 1.34	7.71±0.97	0.47
Number of female piglets at Weaning	2.50 ± 0.83^{c}	4.50 ± 0.83^{b}	6.67 ± 0.81^{a}	0.00
Number of male piglets at Weaning	2.83 ± 0.40^{c}	4.79 ± 1.19^{b}	7.50 ± 0.54^{a}	0.00

n = number of sow (a, b): on same line assigned values of different letters were significantly different ($p < 0.05$); p = probability.

Effect of staff size on reproduction performance: it was demonstrated the variation in reproductive performance by litter size in Large White sows (Table 5). The results showed that the number of male and female piglets at farrowing, the length of weaning, the number of male and female piglets at weaning were significantly ($p < 0.05$) higher in sows with litters within the range of [14+] followed by that included in the ranges [5-14], this with reference to those of the litters included in the interval [4-9]. Weights of piglets at farrowing were significantly ($p < 0.05$) higher in females with litter sizes within the range of [4-9], compared to the range group within the range [14+]. Other reproductive characteristics were comparable ($p > 0.05$) between different groups of sows.

Correlation between different reproductive parameters: It was showed that there were various correlations between the different breeding parameters of pigs on the PRO-AER farm (Table 6). The correlation between litter size and number of piglets at weaning was strong, significant, and positive (r= 0.93). The same is true for the relationship between breeding age and litter size (r= 0.44). In contrast, there was a weak, non-significant, negative correlation between litter size and piglet weight at birth (r= -0.18)

Table 6: Correlation between different reproductive parameters

Charactéristics	AMR (days)	PMR (kg)	DG (days)	NMB	TP	MN	SRM(F)	SRM(M)	PPN (kg)	NS	DS	PPS (kg)	SRS(F)
AMR months	1												
PMRKg	0.61**	1											
DG(days)	-0.32	-0.19	1										
NMB	0.37*	0.39*	0.45**	1									
TP	0.44**	0.31*	-0.12	0.12	1								
MN	0.33	0.15	-0.05	-0.10	0.19	1							
SRN (F)	0.36*	0.15	-0.05	0.006	0.87**	0.23	1						
SRM (M)	0.44*	0.3*	-0.14	0.19	0.89**	0.09	0.59**	1					
PPN	-0.09	0.21	0.004	-0.18	-0.18	0.009	-0.17	-0.14	1				
NPS	0.43**	0.29	-0.08	0.16	0.93**	-0.09	0.79**	0.90**	-0.19	1			
DS	0.35*	0.3*	-0.15	0.18	0.85	0.09	0.70**	0.78**	-0.27	0.81	1		
PPS	-0,06	0,26	0,20	0,30	0,07	-0,21	-0,07	0,12	0,12	0,11	0,02	1	
SRSM	0,36*	0,16	-0,05	0,01	0,85**	0,01	0,90**	0,66**	-0,15	0,86**	0,67*	0,05	1

*Correlation is significant at 0.05. ** Correlation is significant at 0.01. AR = age of reproduction; BW = breeding weight; NR= nesting range; DG= duration of gestation; SS= staff size; DB: death at birth; SRNF= sex-ratio at birth of females; SRBM = sex-ratio at birth for males; WPB: weight of piglets at birth; NWP = number of weaned piglets; WP: Withdrawal period; WPW = weight of piglets at weaning; SRWF = sex-ratio at weaning of females; SRWM = sex-ratio at weaning of males.

Reproduction is the function by which living beings reproduce. In this study, the mean on-farm reproduction age of PRO-AER was 246.75 ± 10.15 days. This age was similar to the 246 ± 16.8 days obtained by Nguedia (2016) at the western integrated farm. It was well below the 330 days recorded by Nkoum (1990) for Fongo-tongo gilts. However, these breeding ages were within the range of 6 to 10 months recommended by Ognika et al. (2016). Djoukam et al. (1996) and Naveau (1970) reported that changes in age and weight would result from factors such as race, strain, physiological status, housing, temperature, diet.

Breeding weight (156.12 ± 8.08) was greater than the 109.29kg reported by Ognika et al. (2016) in large white. Similarly, much higher than the 74.24 ± 6.55 kg reported by Nguedia (2016) at the Livestock Farm in the West and the 82.75 ± 1.87 kg reported by Gweth (2016) at the SIMEL in Kounden. These variations could be attributed to the breed. Indeed, these authors used different breeds in their studies. However, it is well known that some breeds are early and others are late, which would explain the observed differences.

The mean gestation duration obtained in our study was 114.29 ± 2.50 days. These values were in agreement with those reported by DJoumessi (2020) at the GIC farm Bat Agribussines which were 114.20±2.46 days and were also very close to those obtained by Tchounkeu (2020) at the Gic farm Entente Club de Bafoussam 4 with an average gestation period of 114.65 days. On the other hand, it was higher than the average of 111.40 days recorded by Fozen (1999) in Ménoua. The mean duration of gestation observed in the PRO-AER farm remains close to the 114 days recommended by Bastianelli et al. (2002). These large deviations from the standards can be explained, on the one hand, by the poor taking of notes by the workers, the raising without fertilization and, on the other hand, by the poor diagnosis of pregnancy.

The mean litter sizes at calving and weaning were 10.45 ± 2.79 and 9.63 ± 2.76 piglets, respectively. These values were higher than those obtained by Kosi (1997) (9.50 ± 0.15 piglets) at the BENA-Development farm in TOGO and close to the 10.04 ± 2.55 piglets obtained by Tchounkeu (2020) at the Gic entente club farm in Bafoussam. However, they were less than the 12.40 ± 0.50 obtained by Foisnet et al. (2010) at INRA, Saint Gilles. The genetic type (breed) and breeding techniques used would be responsible for this variability in litter size observed.

The mean weight of piglets at calving in this study was 1.39 ± 0.20 kg. This weight is higher than the 1.33 ± 0.03 kg obtained by Foisnet et al. (2010) at INRA, Saint Gilles. It was close to the 1.6 kg recommended by Ikani and Defang (1996). According to Holnes (1991), the weight of piglets at calving varies with litter size, calving rank, age, and breeding weight of the sow. Weaning weight was 4.53 ± 1.41 kg. This weight was less than the 8.84 ± 0.34 kg reported by Quiniou et al. (2001).

Breeding age had a significant effect on

breeding weight, litter size, number of male and female piglets at calving, and number of female piglets at weaning. Litter sizes at calving recorded in animals aged between 250-260 and 260-270 days were comparable but significantly ($p<0.05$) higher than in animals aged between [240-250] days. According to Kirk (1986), ovulation rate was positively correlated with animal age. This ovulation rate could, in the absence of certain endogenous and/or exogenous factors, be associated with an increase in litter size. The increase in the total number of piglets at birth and the total number of female piglets weaned recorded in sows between the ages of [260-270] would result from the development of mammary glands and the large number of teats, which provide more milk and allow each youngster to consume as much as possible. The decrease in the number of stillborn piglets would be due to the development of the uterus, which offers more room for the nesting of embryos, thus ensuring easier embryo development.

Conclusion

In conclusion, the evaluation of the breeding performance of Large White pigs at the PRO-AER farm, the following conclusions have been drawn: the breeding age; the breeding weight, the gestation period, the litter size, the lactation period, the calving range and the number of weaned piglets were comparable to those reported by our predecessors on another farm in Cameroon; and the ACAP recommendations; The breeding age affected some reproductive performances, with the exception of the duration of gestation, the weight of the piglets at calving, which were not significantly affected. The calving rank resulted in a decrease in gestation duration and an increase in litter size. The size of the litter affected some breeding performances with the exception of weight of the piglets at calving and weaning. These results suggest a number of recommendations that could help to improve the reproductive performance thus its productivity such as the practice of flushing and better monitoring of heat, which could have a positive effect on the number of births per year and on fertility; sows should reformed after the 5th farrowing and not the 3rd, because it is at the 4th and 5th farrowing that the reproductive performance of sows is highest; constantly make use of a livestock engineer to analyse farm data in order to improve or maintain the level of production. On the economic front, define annual production targets; stabilize the list of suppliers of inputs and buyers of pork meat and fatten as much piglet as possible, in order to increase the profit per head of animal.

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