

Productive and reproductive performance of female *Tenyivo* pig under field condition

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Abstract

The study entitled, "Productive performance of female *Tenyivo* pigs under field condition" was undertaken to characterize swine production systems, breed features, productive performance, breeding practice, breed selection criteria and herd replacement in Nagaland, carried out at Phugwi village of Sekruzu Block of Phek district, Nagaland. A total of ten families rearing *Tenyivo* females kept for breeding were selected, with five breeders from each Mutsuba and Cepiba khel. Selection criteria were based on the skills, knowledge and experience in rearing more than two female *Tenyivo* for last six to eight years. The average age at first mating and first farrowing recorded from Mutsuba and Cepiba khel were 7.70 ± 0.13 and 7.89 ± 0.25 , 11.53 ± 0.13 and 11.74 ± 0.26 kg with standard error respectively. The Average body weight at birth, weaning and litter size at birth from Mutsuba and Cepiba khel were 0.38 ± 0.02 , 0.35 ± 0.01 kg,; 4.72 ± 0.08 kg, 4.35 ± 0.14 kg ; 4.53 ± 0.17 kg and 4.93 ± 0.22 kg with standard error respectively. The average litter size at weaning, litter weight at birth and litter weight at weaning recorded from Mutsuba and Cepiba khel were 4.40 ± 0.12 kg, 4.73 ± 0.19 kg; 1.80 ± 0.07 kg, 1.97 ± 0.08 kg; 22.57 ± 1.08 kg and 22.27 ± 1.01 kg with standard error respectively. The average mortality rate and livability of *Tenyivo* pig from Mutsuba khel recorded 2.94 and 97.06 per cent for Cepiba khel, it was recorded as 4.05 and 95.95 per cent, respectively. The farmer with good practices processed skills, experiences and sufficient knowledge for piggery rearing an Indicated the suitability of *Tenyivo* pig in the present Phugwi village of Phek District.

Key Words: Productive, reproductive, *Tenyivo* pig, weight at birth, weaning, litter size, Standard Error.

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I. Introduction

Pig rearing is considered one of the most important occupations among the tribal masses of India especially to the rural poor and weaker sections of the society. It plays a major role in uplifting the socio-economic status as it acts as an insurance coverage for the down trodden and landless farmers. Pig as compared to other livestock species has a better potential and contribute towards enhancement of the economic returns of the farmers, because of the inherent traits like high fecundity, better-feed conversion efficiency, early maturity and short generation interval. World pig population as of January 2020 was 677.6 million with the highest pig population in China 310.41 million (Shahbandeh, 2020). According to 20th Livestock Census (2019), the current pig population of India is 9.06 million, declined by 12.03% over the previous census. The contribution of livestock sector to the national economy in terms of GDP is 4.11% and 25.6% of total agriculture GDP. The majority of the people of the North Eastern Region are non-vegetarian and a majority of the people prefers pork over meat of other domesticated livestock.

Swine Production is mainly concentrated in the North eastern part of the country primarily of backyard rearing which is an integral part and parcel of the tribal population. It has a potential scope for piggery development because of the traditional involvement of local people in pig rearing, their food habits and also the absence of taboo against consumption of pork and pork products. Due to urbanization changes in lifestyle and food habits of the people, there is a growing demand of pork. Much of this demand is met from imports from other states of India and from Myanmar. North East India has much higher pork consumption than that the rest of the country, especially Nagaland has higher per capita consumption. The tribal population in Nagaland on an average appears to consume more pork than other states of the Northeast.

The population of indigenous pig is decreasing gradually as there is no organized planned breeding program. But still the decreasing native populations still represent a valuable component of local genetic resources. In spite of good and ample scope for swine development in the state, no proper and thorough investigation has made on the productive and reproductive performances of this animals though the native types still represent a valuable component of local genetic resources (Subalini *et al.*, 2010).

The indigenous pigs are usually well adapted and tolerable to a wide range of environmental temperature and relative humidity. They are natural scavengers ranging from medium to large size and somewhat semi-wild in their behaviour. They possess good mothering ability and usually become aggressive towards strangers during farrowing period. They are poor in reproductive as well as productive performance as compared to other exotic breeds of pig. *Tenyivo* pig is an indigenous breed from Nagaland found in the districts of Dimapur, Kohima, Peren and Phek, also found in the Senapati district of Manipur. It has a strong and long tapering snout, small erect ears and bright alert eyes. It is pre-dominantly black in colour with white markings on the forehead, flanks and legs. The tail is long almost reaching the hock joint and ends with a white switch. The adult female *Tenyivo* pigs of 180 days old weigh 18.16 ± 0.19 (Rutsa & Rutsa 2016). This native breed is at risk because of random cross breeding with other non-descript and exotic pigs.

II. Material And Methods

A pilot survey was carried out during the month of November 2020 in collaboration with the Department of Animal Husbandry and Veterinary Services, Nagaland. The farmer's knowledge, skills and experiences on *Tenyivo* pig rearing for the last 6-8 years and keeping three *Tenyivo* female sows were some of the basic criteria for selection of the breeder's family for the present study.

Sampling techniques and data collection

The Mutsuba and Cepiba Khel of Phugwi village were found to be suitable for the research work. Therefore, five *Tenyivo* breeder's families from each khel were selected for the present study. The experimental field data collection work commenced in the month of February 2021 to July 2021. Two time's monthly visit and recording of first-hand information on the various required data were carried out at the doorstep of the farmers.

The primary data was collected from the selected breeder's family through semi-structured questionnaire specially designed for the study. As per the schedule arrangements made with the farmers between 6-8 am in the morning and 5-6 pm in the evening, when the farmers are spending time for family meals and pig feeds, interaction with the selected families was conducted. Primary information using the questionnaires, participation in the backyard activities with the farmers and field visitation was conducted.

Statistical analysis

The data collected were statistically analyzed to interpret the results and to derive for a conclusion. The data so obtained were statistically analyzed by using paired T-test as described by Snedecor and Cochran (1994). All statistical analysis were performed using Microsoft excel. The level of statistical analysis was defined at 5 % level of significance.

III. Result And Discussion

Age at first mating

The average age at first mating of *Tenyivo* pig recorded from Mutsuba and Capiba Khel were 7.70 ± 0.13 kg and 7.89 ± 0.25 kg with standard error respectively. The findings were in agreement with Hossain *et al.* (2011); Sahoo *et al.* (2012); Borkotoky *et al.* (2014); Rahman *et al.* (2020) who had reported average age at first mating of local pigs as 6 to 8 months under field condition. However, Kumaresan *et al.* (2008) reported average age at first mating as 3 months which could be because of genetic factors and type of breed used during the study.

Age at first farrowing

The average age at first mating of *Tenyivo* pig recorded from Mutsuba and Capiba Khel were 11.53 ± 0.13 village 11.74 ± 0.26 kg with standard error respectively. The present result findings agreed with the reports made by Kumaresan *et al.* (2007); Borkotoky *et al.* (2014); Chusi *et al.* (2016); Rahman *et al.* (2020) who had recorded that the age at first farrowing ranged between 10 to 12 months under field condition.

Weight at birth

The individual pig average weight at birth recorded from Mutsuba and Capiba Khel 0.38 ± 0.02 kg and 0.35 ± 0.01 kg with standard error respectively in *Tenyivo* pigs. Nath *et al.*, (2013) Kumaresan *et al.*, (2007), Bujarbaruah *et al.*, (2006) and Sahoo *et al.*, (2012) reported that Individual pig weight at birth to be

0.49±0.31(kg) in Sikkim local pig, 0.86 ± 0.08 kg (Mizoram non-descript local pig), 0.485 ± 0.23 (Khasi Local) and 0.96±0.02 kg in Ghungroo pig and 0.64 ± 0.02 kg in Niang megha, respectively.

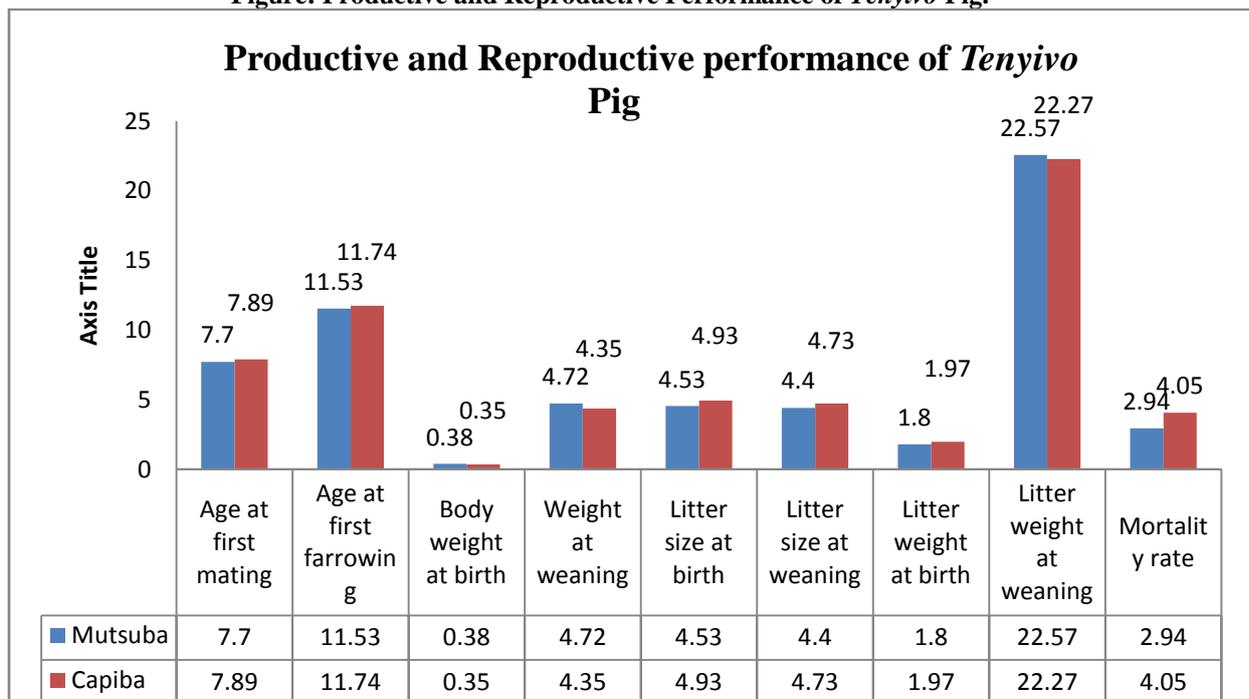
Weight at weaning

The individual pig average weight at weaning recorded from Mutsuba and Capiba Khel 4.72±0.08 kg and 4.35±0.14 kg with standard error respectively in *Tenyivo* pigs. Kumaresan et al., (2007), Bujarbaruah, (2006), Nath et al., (2013) and Sahoo et al., (2012) reported individual pig weight at weaning to be 4.87±0.28 (Mizoram local), 4.97 ± 0.21 (Khasi Local), 4.90±0.33 (Sikkim local), and 7.08±0.25 kg in Ghungroo pig and 5.47±0.13 kg in Niang-Megha, respectively.

Table 1. Means + SE of sows’ *Tenyivo* pig performance for productive and reproductive traits.

Traits	Productive and reproductive Performance(kg)		Reference
	Mutsuba	Capiba	
Age at first mating	7.70±0.13	7.89±0.25	Nath et al.,2013
Age at first farrowing	11.53±0.13	11.74±0.26	Kumaresan et al., 2007 Burjarbaruah et al., 2006
Body weight at birth	0.38±0.02	0.35±0.01	Sahoo et al., 2012
Weight at weaning	4.72±0.08	4.35±0.14	Chusa et al.,2016
Litter size at birth	4.53±0.17	4.93±0.22	Rahman et al.,2020
Litter size at weaning	4.40±0.12	4.73±0.19	Gokuldas et al., 2015
Litter weight at birth	1.80±0.07	1.97±0.08	Boro et al., 2016
Litter weight at weaning	22.57±1.08	22.27±1.01	Hossain et al.,2011
Mortality Rate	2.94±1.70	4.05±2.63	Khargharia et al.,2014 Borkotoky et al., 2014 Larriestra et al.,2006 Leliveld et al.,2013 Rutsa et al.,2016 Singh et al., 2020 Snedecoret et al.,1994 Zosangpuui et al., 2020

Figure: Productive and Reproductive Performance of *Tenyivo* Pig.



Litter size at Birth

The average litter size at birth recorded from Mutsuba and Capiba Khel 4.53±0.17 kg and 4.93±0.22 kg with standard error in *Tenyivo* pigs respectively. The findings were in line with the reports made by Singh et al. (2020) who had reported average litter size at birth of *Tenyivo* pig as 4.54 under field condition. In contradiction, Kumaresan et al. (2007); Khargharia et al. (2014); Gokuldas et al. (2015); Chusi et al. (2016);

Rahman *et al.* (2020); Zosangpuii *et al.* (2020) had reported number of litter sizes ranging from 5 to 10 in local pigs under field condition. Difference in number of litter size could be because of the type of breed and location of the survey conducted.

Litter size at weaning

The average litter size at weaning of recorded average number of litter size at weaning were Mutsuba and Capiba Khel 4.40 ± 0.12 kg and 4.73 ± 0.19 kg with standard error in *Tenyivo* pigs respectively .which was in line with Rahman *et al.* (2020) and Singh *et al.* (2020) who had recorded average number of litter size at weaning as 4.56 and 3.09, respectively under field condition. No significant difference ($P\geq 0.05$) was observed between the two khel. Lower litter size of 2.79 reported by Nath *et al.* (2013) and higher litter sizes of 6 to 10 reported by Sahoo *et al.* (2012); Singh *et al.* (2020); Zosangpuii *et al.* (2020) could be because of the type of breed used during the survey period.

Litter weight at Birth

The average litter weight at birth recorded from Mutsuba and Capiba Khel 1.80 ± 0.07 kg 1.97 ± 0.08 kg with standard error in *Tenyivo* pigs respectively. The findings were in agreement with Chusi *et al.* (2016) who had reported litter weight at birth of local pig as 2.02 kg, 1.97 kg and 1.75 kg in Kohima, Peren and Phek district, respectively. Higher litter weight at birth ranging from 3.00 kg to 9.50 kg as reported by Kumaresan *et al.* (2007); Sahoo *et al.* (2012); Nath *et al.* (2013); Rahman *et al.* (2020); Zosangpuii *et al.* (2020) could be because of the type of local breed and location of the study area.

Litter weight at weaning

The average litter weight at weaning recorded were Mutsuba and Capiba Khel 22.57 ± 1.08 kg and 22.27 ± 1.01 kg with standard error in *Tenyivo* pig respectively. The findings agreed with the reports made by Chusi *et al.* (2016) and Zosangpuii *et al.* (2020) who had reported litter weight at weaning of 24.82 kg to 26.02 kg in local pigs under field condition. Higher litter weight at weaning of 38.75 kg to 43.20 kg recorded by Kumaresan *et al.* (2007); Sahoo *et al.* (2012); Rahman *et al.* (2020) in local pigs could be because of the type of breed used under traditional tribal low input production system.

Mortality rate

Mortality Rate and livability of *Tenyivo* pig from Mutsuba Khel recorded 2.94 and 97.06 percent and for Capiba Khel, it was recorded as 4.05 and 95.94 percent respectively. Locality indicated no significant difference ($P\geq 0.05$) on mortality rate in indigenous pigs of Nagaland. . Mishra *et al.* (1985), Mishra (1987) and Deka (1988) observed higher mortality percent than the present study. Kumaresan *et al.* (2009) also reported higher mortality in pig in NEH region where as Gokuldas *et al.* (2015) reported 3 to 16% pre weaning mortality in different breed in institutional farm and reported higher mortality during winter season.

IV. Conclusion

Tenyivo pigs have immense potential to be developed in order to contribute livelihood and sustainable pig farming in North East India. Indigenous local pigs serve as a valuable source of protein, vitamins, minerals and secondary income source to the rural masses. The important productive traits like early sexual maturity, weight at birth, weight at weaning, litter size, disease resistant, hardiness, and adaptability to harsh climatic and management conditions are the requirements of low input that makes this Indigenous local pig farming a better enterprise for the weaker sections of the society and to the progressive farmers as well. Proper nutritional management of pigs can optimize growth to fulfill demand specific and the region is found suitable to fulfill this demand and requirements. The key information generated from this study could support for developing research and development intervention strategies aiming to improve the swine production and reproductive sector of farmer and its economic benefit in the country.

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