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Phenotypic characterization of local pigs (Zovawk) in Mizoram

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Abstract
The Mizo local pigs (Zovawk) are small variety of pigs in which adult body weight ranges from 40-50 kg. It is a newly recognised pig breed of Mizoram by the ICAR-National Bureau of Animal Genetic Resources, Karnal (NBAGR). Scientific studies are scanty. Present study aimed to report the phenotypic characterisation of Zovawk. The whole body is covered by black hairs with a star forehead. The four limbs below the knee region are covered by white hairs. Zovawk pig attained puberty at 143.20±1.44 days in males and 120±1.18 days in females. Average litter size at birth and weaning were 7.5±0.01 and 6.17±0.007 respectively. Average litter weight (kg) at birth and weaning were 4.61±0.007 and 25.31±0.63 respectively. Average individual weight (kg) at birth and weaning were 0.61±0.016 and 4.41±0.16. Body weight (kg) at birth, weaning, five months, eight months and during first farrowing were found 0.61±0.016, 4.41±0.16, 12.65± 3.4, 23.79± 5.2 and 30.15± 2.6 respectively. The average age at first farrowing was 314.9±5.8 days.

Keywords: Zovawk, mizoram, pig, phenotypic, characterisation

Introduction
Mizoram is a land of rolling hills, valleys, rivers and lakes. It is one of the seven states of the north eastern India located between 21°58' to 24°29'north latitude and 92°29' to 93°22' east longitude. Mizoram has a mild climate, comfortable in summer 20 to 29 °C (68 to 84 °F) and never freezing during winter, with temperatures from 7 to 21 °C (45 to 70 °F). The region is influenced by monsoons, raining heavily from May to September with little rain in the dry (cold) season. The average state rainfall is 254 centimetres per annum. Amongst the livestock, pig is most important and every family rears pig as backyard venture. The pig population of the state was 2.9 lakhs [4] and shows the highest percentage of growth in its population (19.26%). The cross bred and exotic population make up for 1,45,721 of the total population, the indigenous pig accounts for 1,71,883 of the total population.
The Mizo local pigs (Zovawk) were small variety of pigs in which adult body weight ranges from 40-50 kg. It is recognised as a breed of pig by the ICAR-National Bureau of Animal Genetic Resources, Karnal (NBAGR). Literally, 'Zo' means Mizo and 'Vawk' means pig. It is said that the wild pigs of the oriental countries (East and South East) were the ancestor of Zovawk. This scavenging pig was with the Mizo people wherever they moved and these animals have been reared since time immemorial. Scientific studies related to these animals are scanty. Local people believe that pork from these pigs have medicinal properties and is a remedy for anaemia in people. Their resistance to diseases is high and seldom has problems regarding piglet anaemia, piglet diarrhoea, pneumonia, worm infestation, skin diseases and several bacterial and viral infections. Thus, they can survive well in remote areas where no adequate disease prevention and therapeutic measures exists.

Materials and Methods
The present study was conducted at All India Coordinated Research Project on Pig, College of Veterinary Sciences and Animal Husbandry, Central Agricultural University, Selesih, Aizawl, Mizoram on data pertaining to 136 pigs (10 boars, 20 sows, 11 gilts and 956 piglets) maintained under intensive housing system during the year 2018-2019. The data related to body length, head length, chest girth, front height and rear height were recorded using standard methods from all the animals. The data were analysed using excel spread sheet and recorded.

Results

Predominant colour of Zovawk is black body with a distinct white spot on the forehead (star), white patches on belly occasionally and white boot. The body is compact with smooth skin, convex head, with erect ears oriented upwards and a short and cylindrical snout. Tusks developed only after 18 months of age. Zovawk sow possess 5 to 7 pairs of teats. The animal has pot belly shape of abdomen. Adult female sows are heavier than the males. But castrated male reaches almost same weight as that of female. Zovawk shows good adaptation ability in hilly areas.

Zovawk animals attain puberty at an age of 143 days in comparison with other breeds of pigs. Average litter size of Zovawk at birth and weaning was 7.5±0.01 and 6.17±0.007 respectively. Gestation period of Zovawk was 114.77±0.27 days and farrowing interval of were 202.6±5.61 days. Average individual weight at birth was 0.61±0.016 Kg and weaning were 4.41±0.16 Kg. Average litter weight at birth was 4.61±0.007 Kg and weaning was 25.31±0.63 Kg.

Discussion

Physical characteristics

There is a variation in patterns of body colour of Zovawk depending on different regions of Mizoram in which they inhabit. In general, the predominant colour is black body with a distinct white spot on the forehead (star), white patches on belly occasionally and white boot. Among exotic breeds, Berkshire is having black colour body with occasional splash of white hair [7]. They have a compact body with smooth skin, convex head profile among all age groups with erect ears oriented upwards and a short and cylindrical snout. One study in Liberian pigs recorded that 1% of pigs are having convex head, 52% pigs have prick ears and 23% of pigs are having cylindrical snout [6]. Tusks were present only in animals of above 18 months. In other pigs the tusks will develop between the ages of 6 to 13 months of age [5]. Zovawk sows possessed 5 to 7 pairs of teats. Teat number is an important fertility trait and a heritable trait in pigs and the teat number in White Duroc ranges between 6 to 8 pairs [3].

The adult animals possess a pot-belly shape with droopy back posture. Among different pig breeds, Vietnamese pot-bellied pigs (*Sus scrofa*) have pot-belly shape abdomen [2]. The male Zovawk animals are heavier till one year of age (30-35 Kg) and at around three years of age females (50-60 Kg) are usually heavier than the males (45-50 Kg) (Figure 1). In a research with Kadon pigs, it was observed that from birth, female pigs were heavier than male pigs till 12 months of age and after that male pigs were taller with large body length with a better body conformation [18]. The castrated male Zovawk also may reach a body weight of 50-60 Kg at three years of age. Many studies proved that low testosterone level result in male obesity in animals. Castration causes an increase in MARK4 protein levels due to decrease in level of ssc-miR-7134-3p. MARK4 causes accumulation of fat in castrated animals [20]. Zovawk have good adaptation ability to hilly areas and it can be fed with local plants, rice and kitchen wastes [8].

Table 1: Body Measurement of Zovawk in weeks (cm) (Mean± SE)

Age	Body Length	Head Length	Chest Girth	Front Height	Rear Height
Birth	15.4±0.29	10.07±0.80	18.44±0.27	11.65±0.23	12.01±0.23
1	19.21±0.34	10.73±0.11	22.21±0.61	15.23±0.43	15.36±0.43
2	24.92±0.61	11.31±0.12	25.84±0.71	17.47±0.53	17.58±0.53
3	28.44±0.56	12.71±0.13	29.39±0.83	20.91±0.75	20.32±0.57
4	30.55±0.59	13.39±0.16	29.84±0.75	20.92±0.46	21.04±0.46
5	32.65±0.46	13.86±0.10	31.60±0.68	21.78±0.59	21.91±0.59
6	34.23±0.59	14.4±0.15	32.21±0.70	24.05±0.55	24.05±0.54
7	37.10±0.59	14.68±0.17	32.15±0.76	23.94±0.48	24.33±0.48
8	38.13±0.80	15.81±0.21	34.42±1.07	24.68±0.58	25.01±0.59
10	39.73±0.94	15.97±0.23	36.47±1.03	25.36±0.40	25.78±0.49
12	44.81±0.16	16.28±0.19	40.68±1.34	26.94±0.59	27.34±0.59
14	48.70±1.35	17.79±0.42	43.41±1.42	31.00±1.10	31.49±1.10

Production performance

In comparison with other pigs, Zovawk attain puberty at an early age *viz*. 143.20±1.44 days in males and 120±1.18 days in females. The age of puberty is between 160 and 190 days of age in other pigs [9]. High reproductive potential of wild boar is due to attainment of puberty at an early age [11]. Previous workers [12] reported that hematological profile of Zovawk is indicative of its wild origin in the past. Gilts from smaller litters reached sexual maturity earlier than gilts from larger litters [10]. Average litter size of Zovawk at birth and weaning was 7.5±0.01 and 6.17±0.007 respectively (Figure 2). The litter size of indigenous pigs at Bhutan is 6.0 at birth and 5.0 during weaning [15]. Breeding of gilts was done on the second or third oestrus. The length of oestrous cycle was 21 days. Earlier workers reported that oestrus cycle in pigs spans a period of 18-24 days with an average of 21 days [16]. The average age of Zovawk at their first farrowing was 314.9±5.8 days. In Zovawk, the first farrowing occurs between 270 to 300 days of age when they reach about 30 kg body weight [13]. Gestation period and farrowing interval of Zovawk were 114.77±0.27 days and 202.6±5.61days respectively. Earlier workers recorded that gestation length in sows is 114–116 days and 10% of sows farrow before 114 days [1]. Genetic background, parity, litter size and season can influence the duration of gestation in sows [14]. Average individual weight (kg) at birth and weaning were 0.61±0.016 and 4.41±0.16. Average litter weight (Kg) at birth and weaning was 4.61±0.007 and 25.31±0.63 respectively. Researchers recorded that weight of piglet was 1.36 Kg for Landrace and 1.3 Kg for Yorkshire [17]. The size of piglets in Zovawk is small and this is a breed character. Breed characteristics can affect uterine space and this is explained by workers [19].

Fig 1: Zovawk sow

Fig 2: Zovawk sow with piglets

Conclusion

The population of Zovawk is declining sharply year by year. Moreover, its meat is said to be fattier than the other types of pigs which is more preferred by the local Mizo people. Therefore, conserving these types of pigs and bringing out their good characteristics through upgradation is a great challenge to people of coming generation.

Conflict of Interest

Authors would hereby like to declare that there is no conflict of interests that could possibly arise.

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