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Reproductive Performance of Mexican Hairless Pigs Raised on Grazing Conditions

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Abstract: Traditionally, Mexican Hairless pigs had been discriminated and replaced by genetic improved breeds due to their poor performance; nevertheless, their importance is double since the meat improves the peasants´ diet while the income received by fattening and selling the pigs creates an economy base for the communities. Currently there are interdisciplinary efforts to study this biotype, some of them are guided to raise the pigs at different confinement systems. In this study two Mexican Hairless herds kept on grazing conditions in two climates were analyzed and compared. Results show that the two herds under study had similar performances. Also, there were similarities of our results with others in variables like litter size (6.16 ± 2.78), piglets born alive (5.66 ± 2.31), stillbirths (5.66 ± 2.31), litter weight (5.99 ± 2.45) and individual weight at birth (1.09 ± 0.27), therefore we conclude that there is no artificial selection in this biotype. The number of farrowings per sow per year varied from 1.06 to 2.75, showing that females´ reproductive performance could be improved if the sows become pregnant while still nursing, taking advantage of the lactational estrus.

Key words: Pigs, Mexican Hairless pig, reproductive performance, outdoor system

Introduction

The Mexican native pig, and within this, the biotype Mexican Hairless, that descend from the Iberian pig, represents an endemic swine population, which is located on the Pacific and Atlantic Mexican south east coasts. The name "hairless" derives from its main characteristic, which is the absence of hair on the skin surface. The morphological characteristics of the Mexican Hairless pig (MHP) are: small size, gray-black color, long-winded head with a sub-concave side view; long face, narrow snout, medium size ears that point down and to the front, slightly covering the eye zone and short neck (Fig. 1). They also show slightly straight back, not very arched ribs and strong and long feet; their hind legs are higher than the front ones (Flores and Agráz, 1983).

Traditionally the MHP has been raised in backyard conditions, without veterinary advice, keeping it basically as a family saving income. Today this breed is on verge of extinction due to the continuous introduction of improved breeds (FAO, 1994; Benitez, 2001 and Lemus *et al.*, 2001). Although its reproductive performance has been studied, these studies have been basically indoor observations (Castro, 1981; Rojas, 1994; Tello and Cisneros, 1990) and little is known about the reproductive behavior of this Creole pig in grazing conditions (Alonso-Spilsbury and Mayagoitia, 1998 and Alonso-Spilsbury *et al.*, 1998ab).

Due to the lack of sanitary and technique advice in the pig family farms in Mexico, reproductive indicators in this biotype are not flattering. Animals in this condition produce small litters, with low weight at birth, slow growth rates which in turn, affect their fattening performance; they have low carcass performance, and high zoonosis risk (Castro, 1981; Rojas, 1994 and Moles *et al.*, 2000) as compared to the genetically improved white breeds in commercial farms. In fact, the rustic, marginal, rural and suburban pig farming with the use of creole pigs is a way of production characterized by a low scale activity, basically of subsistence (Cuarón, 1987; Losada *et al.*, 1997; Ramirez *et al.*, 1998; Becerril *et al.*, 2000 and Mota *et al.*, 2002a). Rustic pig farming is handled by old men, women, and children, therefore it is known as familiar pig farming (Fickers, 1991). Producers that are dedicated to this kind of husbandry have from one fattening pig to several sows. The genetic quality of these animals is low, although the rusticity and adaptability to environment lets them produce meat with a minimum of nutrients; they are fed with kitchen wastes, grains as corn, wheat derivatives, alfalfa, or grazing (Castillo, 1988; Conejo and Mejorada, 1990 and Losada *et al.*, 1995). Pigs in this system show low productive performance (Flores, 1970) due to the lack of official extensionism and support (Ramírez, 1997), as well as adequate marketing routes (Fickers, 1991 and Conejo and Ortega, 1995).

Backyard husbandry must be considered a peculiar productive stratum within the context of national pig farming. It must not disappear, neither be ignored, therefore it has to be studied deeper to know better its productivity and limitations (Suárez, 1995 and Ramírez and Mota, 2000) before it is too late and creole pigs get extinguished (Lemus *et al.*, 2001).

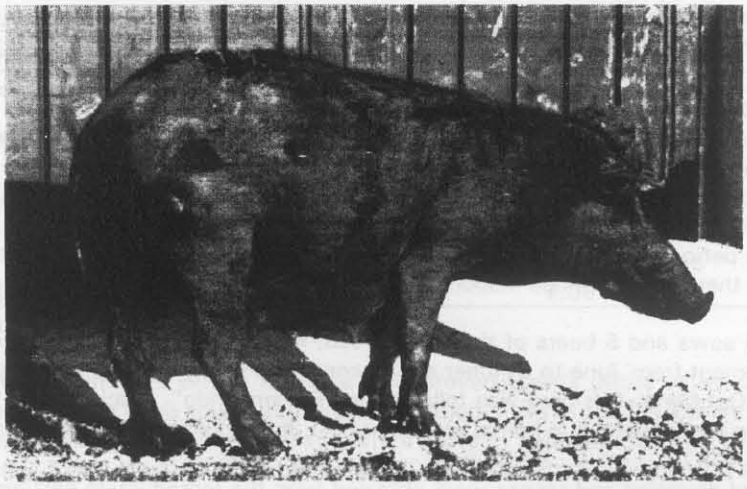

Fig. 1: A typical Mexican Hairless sow

Fig. 2: Mexican Hairless pigs raised on grazing conditions. Animals would graze for a period of 6 hours a day

Fig. 3: A breeding of a lactating sow taking place in the forest

The goal of this study was to evaluate and compare the reproductive performance of two Mexican Hairless pig herds on grazing conditions.

Materials and Methods

A herd of 20 Mexican Hairless sows (Herd A) was observed during a period of 10 months, at the facilities of the Faculty of Veterinary Medicine at the National Autonomous University of Mexico (UNAM) in a 130 hectares of oak forest located in "Chapa de Mota", State of Mexico. This region had a moderate sub humid climate C (w) (w), a pluvial precipitation of 600 to 800 annual mm and annual temperature from 12 to 16° C.

Animals would graze for a period of 6 hours a day (Fig. 2). Growing males were not castrated. Once the animals were retired from grazing, they were confined indoors. All the pigs received a daily supplement consisting of 1 kg of a balanced diet.

Herd B was formed by 35 sows and 5 boars of the same breed, Mexican Hairless, kept under grazing conditions with 1 kg/day feed supplement from June to October and at controlled feed pens and native grass during the rainy season and seeding time (Oct-May). This herd was followed at "El Tamarindo", Municipality of Rosamorada, in the State of Nayarit, the region had a warm sub-humid weather (AW), spring raining and annual mean temperature of 26°C (Flores and Pineda, 1997).

Arithmetic means, standard deviation and ranges were obtained from the reproductive performance for both herds under study. A statistical analysis was done using the Minimum Quadratic Means comparing both herds (SAS, 1987).

Results and Discussion

The reproductive performance of each herd is shown in Tables 1 and 2. The average for both herds was estimated (Table 3), and compared with other researchers results.

Results showed that both studies had similar performances, differences were found in pregnancy span being 1 day longer in herd B (113.68 ± 1.35 *Vs.* 112.13 ± 2.58, $p<0.02$). This result agrees with others (Rico *et al.*, 1999), who had find the same figure in creole sows in Cuba (113.4 ± 1.7).

Average born alive piglets per farrowing in the two herds of this study are identical. Both are similar to that reported for creole pigs in tropics. Diéguez *et al.* (1997) found 5.41 piglets per litter.

The number of farrowings per sow per year varied from 1.06 to 2.75. It is remarkable that one fourth of the population studied exhibited lactational estrus (Alonso-Spilsbury and Mayagoitia, 1998). Indicating that even though this native pig had low prolificity, their productivity can be improved if the sow becomes pregnant while nursing

Table 1: Mexican Hairless sow reproductive performance in temperate climate (herd A)

Reproductive Performance	Number	X ±s. d.	Range
Pregnancy duration (days)	8	112.13±2.58	108-116
Litter size	41	6.10±2.41	2-10
Litter weight at birth (kg)	21	6.06±2.01	2.3±10.5
Piglets born alive	41	5.61±2.28	1-10
Individual weight at birth (kg)	21	1.15±0.27	0.84-1.76
Stillbirths	41	0.49±0.93	0-3
Interval between farrowings (days)	24	181±42.82	132.6-344.1
Farrowings per sow per year	24	2.09±0.37	1.06-2.75

S.D = Standard deviation.

Table 2: Mexican Hairless sow reproductive performance in warm sub-humid climate (herd B)

Reproductive Performance	Number	X±s. d.	Range
Pregnancy duration (days)	31	113.68±1.35	110-117
Litter size	35	6.23±3.19	1-18
Litter weight at birth (kg)	32	5.95±2.73	1.17-12.3
Piglets born alive	35	5.71±2.38	1-12
Individual weight at birth (kg)	32	1.05±0.26	0.58-1.54
Stillbirths	35	0.51±1.92	0-11
Interval between farrowings (days)	14	177.07±26.3	153-249
Farrowings per sow per year	14	2.10±0.27	1.47-2.39

S.D. = Standard deviation.

Table 3: Mexican Hairless sow reproductive performance under grazing systems

Reproductive Performance	Number	X ± s. d.	Range
Pregnancy duration (days)	39	113.36 ± 1.75	108.23-117
Litter size	76	6.16 ± 2.78	1-18
Litter weight at birth (kg)	53	5.99 ± 2.45	1.17-12.3
Piglets born alive	76	5.66 ± 2.31	1-12
Individual weight at birth (kg)	59	1.09 ± 0.27	0.58-1.54
Stillbirths	76	0.50 ± 1.46	0-11
Interval between farrowings (days)	38	179.9 ± 37.25	132-344
Farrowings per sow per year	38	2.09 ± 0.33	1.06-2.75

S.D. = Standard deviation.

(Fig. 3) thus, obtaining parameters similar to those of improved breeds (Mota *et al.*, 2002b). Similar results in lactational estrus induction had been found in grouped lactating sows in the Pig Family Pen System by Stolba *et al.* (1990) and in forestry conditions with domestic white sows in Sweden (Jensen, 1986).
The following productive traits: litter size, live born piglets, stillbirths, litter weight, and individual weight at birth, were similar to other research studies of MHP in different raising conditions (*e. g.* Castro, 1981; Cenobio, 1993; Rojas, 1994). These allow us to conclude that no artificial selection has been used in this biotype. Also, weather did not affect the herds´ performance.

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