

Commercial farming of collared peccary

Commercial farming of collared peccary

A Large-scale commercial farming of collared peccary (*Tayassu tajacu*) in North-Eastern Brazil

This paper presents a technical description of a commercial collared peccary production system in large enclosures, which illustrates, to our knowledge, the largest scale initiative to produce this species reported to date, giving some indications of its financial profitability.

Introduction

The collared peccary, *Tayassu tajacu*, is a pig-like animal ranging throughout most of the whole American continent (SOWLS, 1997). It is a social animal that lives in tropical forests in herds with up to 50 individuals, comprised by individuals of both sexes and different ages (CASTELLANOS, 1983; FRAGOSO, 1999). The peccaries can breed year-round and females can become pregnant a few days after parturition (SOWLS, 1997). The collared peccary is a favored hunted species in most of its distribution range and represents an important source of income and protein for rural and periurban inhabitants from Brazil and other neotropical countries. While commercial hunting is forbidden in Brazil, wildlife farming is legal and even encouraged by Governmental agencies due to the growing demand for native meat in the country's biggest cities. Several attempts are being developed in different Latin-American countries to produce this animal in order to provide meat and pelts to the national and international markets. As a result, substantial technical progress is being achieved in breeding the species in captivity (MAYOR, 2004). However, only 5% of the 452 registered commercial breeding farms in Brazil produce collared peccaries. Indeed, many attempts to produce this species have failed to date because of low economic return, the use of inadequate husbandry practices, and lack of knowledge of the social behavior of the species (NOGUEIRA et al., 1999; NOGUEIRA-FILHO et al., 1999). Indeed, despite the ability of peccaries to digest low quality roughage (GALLAGHER et al., 1984; COMIZZOLI et al., 1997), many collared peccary farms use pig, *Sus scrofa*, commercial diets (NOGUEIRA-FILHO and LAVORENTI, 1997), which substantially increase production costs. References on ranching or exploiting suiforms in the international literature are almost unexistent. To our knowledge, those refer basically on white lipped peccary, *Tayassu pecari*, production (MARGARIDO and MANGINI, 2001; ANDRADE et al., 2003) which naturally lives in large herds and has a highly gregarious behavior. In the case of collared peccary, most of the existing literature refers to captive breeding in small enclosures (BODMER et al., 1997; NOGUEIRAFILHO and NOGUEIRA, 1999; MAYOR, 2004). This paper presents a technical description of a commercial collared peccary production system in large enclosures, which illustrates, to our knowledge, the largest scale initiative to produce this species reported to date, giving some indications of its financial profitability.

Material and methods

Localization

The ranch presented here is located in Irecê, Bahia State, in a semi-arid area of the Brazilian's

northeastern region (Sertão), composed mainly of xerophytic type plants and annual rainfall lower than 800 mm. It is called Fazenda Gordon, and the main activity of this 40-ha ranch is the production of maize and bean. The owner, João BARRETO, started breeding peccaries 26 years ago with only four animals. He spent 18 years developing his semi-intensive production system. Nowadays, the total herd encompasses 450 peccaries of all physiological states, that are collectively managed as a single production unit. The animal land ratio is around 100 animals per hectare, in an originally 5-ha unproductive farm area, comprised by inter-linked paddocks.

All paddocks maintain the natural red earth floors. Trees and shrubs provide shade and visual barriers to the animals. Large trees are protected by the use of 1.5-m high barrels or plastics. The fences have 1.5 m of height, and are made of natural materials such as wooden poles, bamboos and living stakes. Inside the paddocks, there is an electrical fencing at 0.3-0.6 m high from the ground, 0.5 m away from the wooden fence. A 200-m² wooden corral (MC+RC, Figure 1), with a manual guillotine gate, ends on one side in the main feeding yard (FY) and tapers towards the other end at a restraining area (RC). This handling facilities encompass a chute which ends in a crush box and, if necessary, a transport cage can be adapted to the end of the chute. This system allows the easy handling of up to 450 collared peccaries by only one person.

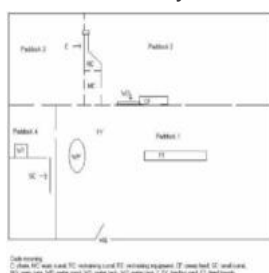


Figure 1:

The paddock system used in the Fazenda Gordon ranch (Irecê, Bahia State, Brazil) to produce collared peccaries, *Tayassu tajacu*. C: chute, CF: creep feed, FT: feed trough, FY: feeding yard, MC: main corral, MG: main gate, RC: restraining corral, SC: small corral, W1/W2: water tanks, WP: water pond.

Production system

The animal production was based on the use of the locally available low-cost feed sources. It is furnished around 100 kg of maize grain and ground cob per day. Animals are fed in the evenings, the grains being spread in trails all through the feeding yard (FY, Figure 1) to avoid competing for food. Animals are also given ad libitum mineralized salt, prickly pears, *Opuntia* spp., papaya leaves and native fruits. Water is freely available through a modified float and trough, which is 10 cm wide and 30 cm high, and a large pond (WP, 100 m² large and 0,5 m deep). A creep feeding (CF) enclosure is used to feed corn grain to the youngest peccaries, avoiding competition with older animals which cannot cross the 12-cm wide spaces.

Animals are individually tagged but individual monitoring does not exist. Females or offspring are not submitted to special management practices except for the creep feeding structure for the young and there is no reproductive management or selection in the herd. Veterinary prevention is virtually inexistent. No medical treatment is given to the animals despite the regular offer of papaya leaves and fruits.

Economic analysis

A slight economic analysis of the ranch is attempted through partial analysis of the prices of inputs and outputs, and the productivity of the system, based on data on animal production, food consumption and other expenses furnished by the owner. Time of construction of facilities was evaluated at R\$ 15.00/day (US\$ 5/day). Feeding costs were evaluated on the basis of a daily consumption of 100 kg of corn grain and corn cobs. Daily, prickly pears, desert melon, papaya leaves, non-commercial beans and mineral salt mix (only purchased feed) were offered ad

libitum. We considered commercialization weight at 20 kg of live weight being achieved at 12 months of age. Based on other breeding systems, we considered a reproductive performance of 1.84 young/female/year (NOGUEIRA-FILHO and NOGUEIRA, 1999). To estimate the farming expenses we used a spreadsheet for computing expenses designed by researchers of the Economics Department at Escola Superior de Agricultura ?Luiz de Queiroz? .

Results

Current knowledge of the number of producing females is unknown at this stage, due to the lack of individual monitoring of the animals. According to the information furnished by the owner, the production cost estimate is around R\$ 110.00 (ca US\$ 35.00) per individual of 20 kg of live weight. Nowadays, the farmer sells only live animals as breeding stock at R\$ 200,00 (ca US\$ 63.70) per animal. An average of 40 individuals are sold every year. The operational costs (Table I) for the production of every animal are distributed as follows: 77% for the food costs, 18% for the man labor and 5% for other costs (electricity, water, etc.). The animals are not sold for meat because local market is distant and the owner is not interested in going down the market meat path.

TABLE I

Distribution (%) of the expenses (US\$ per kg of live animal weight) in a large-scale commercial farming of collared peccary, *Tayassu tajacu*, in Irecê, Bahia State, Brazil (450 individuals in a 5-ha enclosure). Food expenses include US\$ 0.15/kg of supplementary maize grain and cob, US\$ 4.00/t of *Opuntia* sp., papaya leaves, etc. Other expenses include expenses for fuel, electricity and fence repair.

	USD \$	%
Feeding / Nourriture	1.35	77
Man labor / Travail humain	0.31	18
Other expenses / Autres dépenses	0.09	5
Total	1.75	100

Discussion

This is the most important collared peccary production system reported to date. In any case, it illustrates the use of handling and holding facilities for collared peccary management in large enclosures, that allows an efficient management of a large herd with limited man power and improves the species welfare and stress control. In economic terms, this system allows an important step forward, since it increases productivity of the herd and simultaneously reduces production costs in terms of feeding and man power. In this initiative, the farmer has obtained economical success by reducing farming costs through the use of low-cost diets, and by the improvement of the species welfare and stress control through the use of innovative holding facilities for the management of that animal. In spite of the limited animal monitoring, the use of

materials and feed and the application of cattle production principles for housing facilities (the holding corral and creep feeding systems) are very innovative and efficient to reduce production costs. This case study confirms the possibilities of success of a more extensive collared peccary production system, as an alternative to the small scale family production schemes, where several reproductive units of 1-2 males with several females are kept in separate reproduction paddocks (BODMER et al., 1997; NOGUEIRA-FILHO and NOGUEIRA, 1999; MAYOR, 2004). Indeed, free-ranging collared peccaries are socially organized as a herd composed of a dominant male, several females and the offspring, living on a limited territory marked by the male (DUBOST, 1997). Despite the fact that the social unit or herd varies considerably in size and spatial cohesiveness (SOWLS, 1997), aggregations larger than 30 individuals are exceptionally reported in the literature. Larger herd sizes reported average 14.4 individuals in the south of the USA and 6.5 in the tropical rainforests of Latin America (ROBINSON and EISENBERG, 1985; SOWLS, 1997). In this particular case, the whole herd composed of 450 individuals comes out from the same original group of 4 animals. Such a herd size is hardly imaginable with free ranging collared peccaries and seems only reproducible with captive bred animals. Moreover, the management of free ranging collared peccary herds in capture corrals is difficult, since their habituation and efficiency to different attracting baits is variable across the year, according to availability of other food resources. As it is illustrated by this example, captive born collared peccaries seem to tolerate high densities and a family unit can grow exponentially if enough space and food is given, leading after several years to the composition of a large herd habituated to feed on corn and other alternative food sources. The fact of coming from the same family unit might also play a role, in terms of the social cohesion of such a large herd. Despite this, the situation probably results in a high level of inbreeding within individuals from this ranch. Methods of introducing new blood should be tested in order to increase genetic vigor into this collared peccary population. If fighting and aggression towards foreigners occur, as a result of the introduction of new individuals to the herd, females from the herd can be removed, bred separately with new males, and put back to the herd, once pregnant. Another issue that should be further investigated is the proportion of females from the herd that have sexual activity.

The fact that in this ranch, the animals are not individually monitored makes it difficult to control zootechnical performances or undertake any kind of genetic selection which could probably increase production performances. Economic viability seems possible but could certainly increase exponentially. If animals were sold for meat, the owner could earn 48 US\$/carcass (160 R\$/carcass) in the Brazilian market. In Peru, animals can be sold for meat but also for hides, which have a value in the national and international market (BODMER et al., 1997): the price of a wild collared peccary carcass is sold at 27 US\$ (90 soles) in the local markets of Amazonian cities, while a good quality hide is sold for 5 US\$. Therefore, the gross profit for every animal could be worth 32 US\$. The sale of 50 animals per year would earn to the ranch in Brazil 24,00 US\$ per year (only for meat). In the case of Peru, such a ranch would earn at least a total of 1,600 US\$ per year. Nevertheless, this figures could easily be doubled or tripled with improved herd management practices, such as individual monitoring, genetic selection and reproductive management of the herd. In that sense, individual monitoring of the animals is of paramount importance to start controlling and improving the zootechnical performances of this ranch. In any case, this example shows that managing large herds of collared peccary in captivity with limited production costs is technically feasible and can be economically profitable. This system should be used as a basis to try to improve the system and adapt it to other habitats in Latin America. In addition, it opens the possibility to experiment the ranching of large captive bred collared peccary herds in more extensive areas.

Acknowledgements

We would like to thank Mr João BARETTO, for allowing us access to his peccary ranch and for providing information on his production system, and the Conselho Nacional de Desenvolvimento

Científico e Tecnológico (CNPq) for the fellowship received by S. NOGUEIRA (Process Number 300843/1999-2). This work was concluded through the project INCO-Dev 5th Framework Programme funded by the European Commission.

References

1. ANDRADE-FIGUEIRA ML., ORLANDELLI-CARRER C. & BEZERRA P. (2003). - Ganho de peso e evolução do rebanho de queixadas selvagens (*Tayassu pecari*) em sistemas de criação semi-extensivo e extensivo em Reserva do Cerrado. *Revista Brasileira de Zootecnia*, 32(1): 191-199.
2. BODMER R. et al. (1997). - Manejo y uso sustentable de peccaries en la Amzonia Peruana. SSC IUCN, Quito, Occasional Paper N° 18, 102 p.
3. CASTELLANOS H.G. (1983). - Aspectos de la organización social del baquiro de collar *Tayassu tajacu* en el Estado Guarico, Venezuela. *Acta Biol. Venez.*, 11: 27-43.
4. COMIZZOLI P., PEINIAU J., DUTERTRE C., PLANQUETTE P. & AUMAITRE A. (1997). - Digestive utilization of concentrated and fibrous diest by two collared peccary species (*Tayassu pecari*, *T. tajacu*) raised in French Guyana. *Anim. Feed Sci. Technol.*, 64: 215-226.
5. DUBOST G. (1997). - Comparative behaviour of the white lipped peccary, *Tayassu pecari* and of the collared peccary *T. tajacu* (*Artiodactyla*, *Tayassuidae*). *Mammalia*, 61: 65-83.
6. FRAGOSO J.M.V. (1999). - Perception of scale and resource partitioning by peccaries: behavioral causes and ecological implications. *J. Mammal.*, 80(3): 993-1003.
7. GALLAGHER J.F., VARNER L.W. & GRANT W.E. (1984). - Nutrition of the collared peccary in South Texas. *J. Wildlife Manage.*, 48(3): 749-761.
8. MAYOR P. (2004). - Fisiologia reproductiva y desarrollo de métodos diagnosticos des estado reproductivo de la hembra del pécarí de collar (*Tayassu tajacu*, Linnaeus 1758) de la Amazonia. PhD Thesis, Faculty of Veterinary Medicine, Autonomous University of Barceleona, Spain, 147 p.
9. MARGARIDO T.C.C. & MANGINI P.R. (2001). - Order *Artiodactyla*, Family *Tayassuidae* (Peccaries). In: *Biology and Surgery of South American Wild Animals*, M.E. FOWLER & Z.S. CUBAS, eds. Iowa State University Press, Ames: 377-391.
10. NOGUEIRA S.S.C., NOGUEIRA-FILHO S.L.G., OTTA E. DIAS C.T.S. & CARVALHO A., (1999). - Determination of the causes of the infanticide in capybara (*Hydrochoerus hydrochaeris*) groups in captivity. *Appl. Anim. Behav. Sci.*, 62(4): 351-357.
11. NOGUEIRA-FILHO S.L.G. & LAVORENTI A. (1997). - O manejo do caititu (*Tayassu tajacu*) e do queixada (*Tayassu pecari*) em cativeiro. In: *Manejo e Conservação de Vida Silvestre no Brasil*, C. VALLADARES-PADUA, R.E. BODMER & L. CULLEN, eds. Belém, Brazil: 106-115.
12. NOGUEIRA-FILHO S.L.G. & NOGUEIRA S.S.C. (1999). - Analise economica da criação commercial de animais silvestres. Produção e comercialização da carne e de subprodutos na região sudeste do Brasil. In: *Manejo y conservacion de Fauna Silvestre en América Latina*, T. FANG, O.L. MONTENEGRO & R. BODMER, eds. Bolivia: 189-194.
13. NOGUEIRA-FILHO S.L.G., NOGUEIRA S.S.C. & SATO T. (1999). - A estrutura social de pecaris (*Mammalia*, *Tayassuidae*) em cativeiro. *Revista de Etologia*, 1(2): 89-98.
14. ROBINSON J.G. & EISENBERG J.F. (1985). - Group size and foraging habits of the collared peccary *Tayassu tajacu*. *J. Mammal.*, 66(1): 153-155.
15. SOWLS L.K. (1997). - *Javelinas and other peccaries, their biology and management*, 2nd ed. Texas A&M University Press.



Game and Wildlife Science, Vol. 21 (3) 2004, p. 413-420

Yes