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The Alternative Livestock and Sustainability of Farmers in Mexico

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ABSTRACT: Farming in Mexico for more than 12 years ago suffers stagnation due to the high costs of inputs to production, this added to global climate change has led to high mortality of animals (more than 3 million animals), and disease, on the other hand, the establishment of livestock basins in areas not conducive proof of this we have livestock since 2004-13 has grown only 0.4%, dairy cattle population decreased from 2004-13 -6.8 % and meat production increased in the same period by 1.7%. In rural and peri-urban traditional farming focuses on raising cattle, pigs, sheep and goats, mainly; these activities have been developed since the Spaniards brought the first animals to America. For years in many areas are implementing a livestock system, known as alternative livestock and that it relates in part to the introduction of *Bubalus bubalis* or water buffalo, this animal has been very attractive for its adaptive profitability. These same areas are flooded during the rainy season, hampering the development of traditional farming, where the average annual rainfall is estimated between 2850-3200 mm / year, average high temperatures between 32-37°C, with moisture 89.2±3.2%; besides high prevalence parasitic (ecto- and endoparasites) and the inability of many species of ruminants and pseudorumiants in feeding diseases since the lowlands are flooded. The aim of this study was to determine the physiological adaptive features of *Bubalus bubalis*, in areas where other animals of economic importance cannot be reared; Today its population is estimated at over 65,000 animals in 9 states of the country, for this study a population of 5,000 animals *Bubalus bubalis* where fertility ranged from 86.4 to 92.5%, was used milk production is estimated at 6.24 ± 0.35 liters daily, with average weight gain of 24.7 ± 2.7 kilos per month, but there is a high prevalence of parasites such as: Coccidiosis (91.2%), Schistosomiasis (72.9%), Fascioliasis (52.1%). Metabolic profiles are mostly kept within normal parameters, making animals with high resistance to diseases and high productive and reproductive capacity in these tropical and subtropical regions of Mexico.

Keywords: adaptive capacity, parasites and physiological parameters.

INTRODUCTION

The areas used for agriculture, in Third World countries, not covered usually Zoogeographic environmental characteristics, much less soil type, rainfall etc. This has allowed many production systems have failed for lack of professional advice, in this study the adaptive capacity of water buffalo Vs Creole cattle was determined. Today in Mexico there are many agricultural areas where agriculture unable to develop because of the lack of technology and introduction of animals highly adapted to survive in waterlogged areas, where rainfall varies between 2800-3200 mm of rain annually; this on the one hand and on the other the lack of rain during the years 2012-14, where the north is more than 4 million dead animals produced by the lack of water and thus the high incidence of diseases such as the influence who declined poultry avian productivity with more than 35 million birds culled; in livestock a lot of food additives used also declining reproductivity, as many young animals cattle are exported live to the US, this stimulates the high cost of meat prices in many geographic areas, on the other hand, diseases that are increasingly more frequent and resistant to treatment, such as the high presence of parasites. In regions with tropical climate,

ruminant production in extensive systems is a good alternative; however, based grazing husbandry practices are responsible for some parasitic problems (Cordero *et al*. 1999; Aguirre *et al*. 2001). Gastrointestinal parasites threaten ruminants around the world, causing anorexia, reduced the amount ingested in food, loss of blood and plasma proteins in the gastrointestinal tract, alterations in protein metabolism, reduced minerals , depression in the activity of some intestinal enzymes and diarrhea. These conditions may be reflected in the decrease of production indicators such as: daily gain, milk production, feed conversion, among others (Rodriguez *et al*. 2001). Important parasitic diseases in cattle are identified as: cestodes, nematodes, trematodes, arthropods (Quiroz, 2002). Among the gastrointestinal nematodes we have that cause gastroenteritis and processes are generally chronic course, which are characterized by decreased production, susceptibility to other diseases and sometimes death (Cordero *et al*, 1999; Quiroz., 2002). In introduced species such as water buffalo *"Bubalus bubalis"* studies on adaptability, more common diseases, reproductive rates are unknown, which is why this study is confined to study this species as a new animal production, as adaptability in areas where *Bos indicus* X *Bos taurus* is not adaptable and where the parasites that adaptability prevent any species of economic importance in Mexico.

MATERIALS AND METHODS

Ecological Zone: Gulf of Mexico (south of the state of Veracruz, Puebla Upstate and "Mixteca Poblana"). ***Animals:*** are proposed to study a population of 5000 animals, however, only it took 10% of this population and those animals that were productive and reproductive problems. ***Sampling and analysis of field and laboratory test:*** tubes were used to empty the first tube without anticoagulant, for the blood serum to determine the metabolic profile and another tube with EDTA, to perform blood smears and determine complete blood count. ***Copro-parasitic test:*** To parasitic diagnosis three different methods were used in the search for gastrointestinal parasites. a) Direct smear b) sedimentation technique and c) flotation technique. ***Breeding parameters:*** to obtain this information the productive and reproductive parameters between buffalo and cattle in the region compared these parameters were: % calving,% mortality in calves, % of adult mortality, birth intervals, lactation, milk production, birth weight, weaning weight, first birth age, slaughter weight, among others. ***Statistical Analysis:*** The data obtained was performed an analysis of variance (ANOVA) with Stat-2 (Olivares, 1994) statistical program and to determine the significance between averages Duncan New multiple range test was used. They plotted the graph Cricket (Macintosh) program.

RESULTS AND DISCUSSION

Characterization of the system:

Herd structure: 4978 animals of the 32.47% are male and 67.53% are female, of which 41.45% are active reproductive females, 12.09% females reach puberty and 13.99% females under one year. On the other side are 24.78% and 2.47% adult males developing males and 5.22% males under one year.

Health management: farmers assumed wrongly that the *Bubalus bubalis* is an animal resistant, rustic and which not need any preventive disease management. There is a general lack of vaccination plan and very few animals are dewormed, but the buffalo suffer from the same diseases and parasitic infections in cattle, there is a difference in the symptoms and the susceptibility of animals (Annonimus, 1981). Pipaon and emphasize (2000), stated that the buffaloes are very susceptible to hemorrhagic septicemia (buffalo calves) and internal parasites, considered one of the leading causes of death of these animals.

Food "fodder" Operation: the grass used for animal handling 40% of the study animals are in area where grass prevails Echinocloa polistachya and Brachiaria spp., 36% in African Star grass

(*Cynodon nlenfuensis*) jaragua (*Hypharrenia rufa*) and grass cutting grass as the King (Pennnisetum spp.), 24% used Gamalope associations pastures (*Paspalum fasciculatum*), natural *Axonopus spp*., ratana: *Ischaemun ciliare* and *Paspalum virgatum*. It does not replace the surcharge to animals.

Reproductive Management: no farm has a well-established system registry, which made farmers is a collection dates childbirth: In case of holdings with a large number of cows, stallions are used in continuous mating systems, this form of management , brings male prolonged use without genealogical control linked to a very small population because inbreeding. The bubillos (young males) are castrated and sold for human consumption. The period of anoestrus and acyclicity in buffaloes are related to the stress of lactation (duration and level of production), inadequate nutrition, poor body condition, the time of year, and in less proportion abnormal offspring and uterine infections. (El-Wishy, 2007).

Metabolic profile: In determining the different metabolic parameters based antiparasitic treatment of animals detected that the first samples had values much lower than control animals, however the animals showed higher prevalence of parasitic parameters well below the controls, as the parasite load animals decreased metabolic reaching values very similar to those obtained values they increased controls. On the other hand, when comparing the metabolic profiles with cattle located in the same ecological zone was determined that *Bos indicus* X *Bos taurus* have metabolic parameters so low and that this will drastically affect reproductive behavior as ethyl productive. The incidence (parasite load) parasites in cattle is very high compared with the buffalo, as disease prevalence is higher in cattle as vesicular disease and vesicular stomatitis in certain seasons it affects livestock areas of the Gulf of Mexico and whose prevailing is estimated at 16.3% in cattle and 0% in bubalis buffalo, like cattle trypanosomiasis prevalence is estimated at 2.3% and 1.05% in buffaloes but this parasite causes deaths in cattle *Bubalus bubalis* not. We emphasize in this study is the first work of comparative research between *Bos indicus* X *Bos taurus* Vs *Bubalus bubalis* in this part of North America.

Parasitic diagnosis: in this study appears to be the first parasitological studies that undergo these animals thus determined perform three sampling the first to establish incidence once established it was decided to have a follow treatment with Triclabendazole, since the prevalence of fascioliasis was very high.

Zootechnical parameters: *Bos taurus* X *Bos indicus* and *Bubalus bubalis* data from very reliable jurisdiction cattle in relation to buffalos, recent data were not in all animals thus devote ourselves to present data that could be obtained 1) Average age to benefit (year): *Bb*: 2-2.5, in *Bt* X *Bi* 3.3.5; 2) Life of breeding females (year) 18-20 *Bb* in *Bt* X *Bi* 2-10; 3) average pregnancy (year) was *Bb* Age: 1.5-2, on *Bt* X *Bi* was 2.5-3; 4) average weight gain (kg) in *Bb* 0.75-1.5 in *Bt* X *Bi* daily is 0.5-1.2; 5) carcass yield (%) *Bb* is 48-54 in *Bt* X *Bi* was 50-55; 6) *Bb* workability is excellent in *Bt* X *Bi* is scarce; *Bb* disease resistance is higher in *Bt* X *Bi* is less; 7) Adjustment natural pastures in *Bb* is efficient in *Bt* X *Bi* is poor; 8) adapted to poor soils and poorly drained *Bb* is efficient and *Bt* X *Bi* is poor and 9) Adjustment lake ecosystems is the total *Bb* and *Bt* X *Bi* is any. (*Bb* = *Bubalus bubalis* and *Bt* X *Bi* = *Bos taurus* X *Bos indicus*).

CONCLUSIONS

Despite the lack of adequate information records and improper handling, it was determined that the *Bubalus bubalis* is the animal species with more adaptive relevance in tropical and sub-tropical areas of México (flooded areas), and that the cattle in these same areas connot adapt, and where scarcity of grass with a high nutritional value does not exist, buffalo if it fits and has greater productive and reproductive perfomance. Based on the information obtained can be the *Bubalus bubalis* is the species that have greater adaptive capacity than any other ruminat, and this is mainly because it is more resistant to parasitic diseases as the infestion with Fasciola hepatica, the tick (Bebesiosis and Anaplasmosis) and vesicular diseases. It is considered as the alternative in animal production in areas of difficult access and because of its location within the Mexican territory.

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