

## ORIGINAL ARTICLES

### Diagnosis production in dairy cattle grazing livestock group validation and technology transfer

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#### ABSTRACT

The regionalization of framing issues for producers Livestock Group of Validation and Technology Transfer (GGAVATT) from San Jose Miahuatlán Veracruz, Mexico, under the current production of native grass prairie with mainly during the months of higher temperature have a poor performance and thus milk production declines which promotes a great use of concentrated feeds which causes an increase in production cost and less use to them. For this purpose we made a diagnosis of current conditions GGAVATT production, yielding information that helps us source and compared to determine precisely what the effect of applying the proposed alternative. We propose an alternative implementation of pastures with improved pastures needed to produce a greater amount of forage per unit area especially in the colder months.

**Key words:** Livestock Group validation and technology transfer, dairy cattle, diagnosis, production.

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#### Introduction

The situation in which livestock is national priority does identify weaknesses in production systems and alternatives that increase productivity through new technologies, management systems, which allow production cut costs and increase revenue per unit surface, intensifying land use and integrated management with better diet (Aguilar, 1992). When you visit a livestock region in our country, the first and only teach us are the animals and facilities management, rarely show their parameters productive if they have much less not crossed the plains or areas grazing (Broster *et al.*, 1992; Corbellini, 1996). This contrasts starkly with the approach of livestock producers par excellence countries like New Zealand and Australia, who are the first to show its meadows, then the production parameters and animals. For them the production and quality of pasture is the basis of their productivity and competitiveness, consider the animal forage transformer course whenever seeking an efficient transformer resulted in more milk, meat and offspring (Capriles, 1989, Salgado, 1998).

Farmers in more developed agricultural, seek first the productivity per hectare and then productivity per animal. We need to change the landscape productive and not considering animals as the only major group responsible for the production, underestimating the productive environment, mainly grazing areas or meadows (Wildman *et al.*, 1982; Jahn, 1996).

The aim of this work was to most variables that make up the production system in order to create a static and dynamic diagnostics to more efficient production system and benefit the producer and the professional who provides technical assistance services .

#### Material and Methods

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Miahuatlán, is one of the smallest municipalities in the State of Veracruz, Mexico, occupying approximately 0.0003% of the state and is located in the central part of the state, on the mountains of Chiconquiaco, Veracruz. In the last 30 years has seen the largest Miahuatlán economic development, excelling livestock activity has shifted to second the agricultural (corn planting), which in ancient times, it was named the county (Arias, 1992; Cronos, 1991 ).

The climate is humid temperate extremes, with an annual temperature of 14 ° C, ranging from 4 to 24 degrees as minimum as maximum. With frost from November to June, July and August winds and rains from June to September and windy August to December. The average annual rainfall is 1639.7 mm with 44 mm. In the driest month is usually May. The floor is andosol, features have formed from volcanic ash and is susceptible to erosion, besides being very irregular in thickness, finding lots of sand immediately under it, a situation that impoverishes the quality between it thinner . It has sufficient water resources, as there is in the township lot of streams, which come from more than 40 births, however, quite the same decrease its volume in months of April and May (Arias, 1992; Synthesis Miahuatlán, 2006 ).

Just enter the municipal administration, organized a regional forum system diagnostic and milk products as a result thereof, producers restless and eager to progress, they organize as GGAVATT, for technical advice, enabling them to improve their production units and family income, for which request the support of the Municipality of Ministry of Agricultural Development, Rural, Forestry and Fisheries (SEDARPA) and Secretariat of Agriculture, Livestock, Rural Development, Fisheries and Food (SAGARPA) to join the Project Development Program Comprehensive Agricultural (DEPAI). It is the GGAVATT on February 2, 2006, however, the information and documentary producers, for diagnosis static group started from mid December 2005. The dynamic diagnosis was made in 2006, through surveys, censuses and determination of production variables (Osorio, 2006).

#### *Results:*

##### *Description physiographic area:*

Currently 60% is for livestock use, 35% is for agricultural use and 5% residential and gradually increases over livestock use, as it is more profitable than agriculture and requires a lot of manpower, and to give an income all year round. Among farmers, no custom to fertilize their soil, much less to make the same analysis.

##### *Socioculture:*

The average age of members is 45 years GGAVATT, being greater than 72 and less than 33 years, all literate, 27% finished primary school, 53% high school, 10% high school and 10% achieved a profession. 75% of producers affiliated with the local livestock Miahuatlán and the remaining 25% is free. 25% also belongs to a newly formed SPR dairy last year, where they are participating in a project intermunicipal, together with 7 other municipalities surrounding Miahuatlán and established this year, a milk processing plant in the municipality of Acatlán.

##### *Socioeconomic:*

On average each farmer has 4 dependents and at least two children in school (from primary to professional), 53% used for livestock as their only source of income and the remaining 43% combined with trade ( grocery, bakery, carpentry, dairy, masonry, veterinary). Prominent among the latter, two producers with regular size cheese (processed in 10 to 20 thousand liters of milk a day), engaged in the production of cheese and type of thread or Oaxaca. Distributing its product in Mexico City, Puebla, Veracruz and Jalapa among others. All self-employed on his ranch, ie permanent labor are the same and eventually employ others. Each producer has an average of  $12.6 \pm 5.7$  heads and has on average six milking cows and daily production per cow is 18 liters, giving a total of 108 liters per day, ranch or producer throughout the year, with a profit of \$ 1.0, as its average variable cost is \$ 2.0 and the sale is \$ 3.00.

##### *Tenure:*

The 29 producers have an average of  $4.3 \pm 2.3$  hectares. They grouped 124 hectares and 366 heads. Although the township has ejidos, the members of this GGAVATT only are smallholders and you have a total of 124 livestock-raising, with a total of 366 heads.

The topography of the terrain is uneven, with quite steep. According to soil analyzes made recently, are almost entirely acidic soil with a pH of 5. Their farming are manually very little use animal traction, much less mechanical, by the same slope.

#### *Animal feed:*

The 100% gives food producers concentrated milking cows supplemented with stubble and the time left grasses. The main food is grass, which is given directly to herd cattle. Only half his rearing supplies to feed, especially for calves and 10% fat calves born from their own cows. The use of mineral salts is not common and their use is inconsistent.

#### *Pastures:*

The grass is the predominant Kikuyu (*panisetum clandestinum*), along with native grass, abundant in spring and summer and is little development in the autumn, almost disappearing in winter, unaffected by frost and cold. A little less than 15% of farmers usually fertilize their pastures, using chemical fertilizers like urea and organic and pig manure. Do not have the habit of storing fodder, hay or silage their pastures.

#### *Management:*

The 25% identified their livestock producers with plastic earring, 50% calves dehorned with paste and the rest do not. No nursing care usually, removed the calf from the cow, on average, 3 days old, after the colostrum taken weaned between 3-4 months old, weighing approximately 80 kg. For the most from this date begins to feed, usually the same cow. Only two people have financial records, production and reproduction, the other not in the habit of keeping records of any kind or weigh milk. Over half used electric fence, however not efficient handling.

#### *Health:*

75% no vaccine, and that comment that is rare to see outbreaks of infectious diseases in the area and the other 25% of producers, only apply against *Pasteurella multocida* bacterin. Recently and enter the partnership program, 100% has made the diagnosis of *Brucella* and tuberculosis, the disease-free finding all cattle tested. The 100% all their livestock deworming internally and externally, without a timetable for implementation, using its discretion and at the discretion of the producers, applies equally garrapaticida bathroom. Because of this irregularity in their applications, often there are cases of anaplasmosis and piroplasmosis, all make use of veterinary disease extremely difficult cases and very little for advice. In almost 50% of herds were presented abortions and infertility and the most common diseases are piroplasmosis, mastitis and digestive problems. They do not practice any method to control mastitis and milking hygiene is unsatisfactory. Most do not get used to disinfect the navel of newborn calves with pasta or dehorning calves before weaning.

#### *Reproduction:*

They inseminating more than 20 years, however often use the bull for heifers as there the belief that their offspring will be girls and calving problems, a situation not very advisable to limit breeding. The first birth is on average three years and the weight is low, since the management is not controlled rearing, do not pay attention to this stage, for them, the time when the female is transcendent is producing milk. More births occur in the first half of the year and not common pregnancy diagnosis by palpation. There are issues concerning the presence of abortions, at least 40% of the members of GGAVATT, reported cases of abortions in cattle.

#### *And dairy cattle inventory:*

Milk production was  $18.9 \pm 0.84$ ,  $139 \pm 7.6$  liters / cow / day milking cows. 100% of the producers exploited Holstein, however when infertility problems using other breeds like Jersey and Swiss, which makes it not totally pure breed that are exploiting the area. In group together a total of 366 heads, grazing on 124 hectares., And are distributed as follows: 184 milking cows, 25 dry cows, heifers 2-3 years, 42 heifers 1-2 years 56, steers 5, 38 calves, 16 calves, all giving a total of 366 animals with an index of 2.15 rangeland head / ha.

*Dairy Production and Marketing:*

90% of the milk to make cheese is sold in the same population and the average sales price is \$ 4.20. The price drops in time of plenty (\$ 3.30) and up slightly (\$ 4.50) in times of scarcity. 25% of its production transforms into cheese. Recently some producers are beginning to make inroads in the processing and marketing of the product.

*Facilities and Equipment:*

There is little infrastructure, a little less than half of producers have galleys rustic galvanized tin roof and wooden poles, which measure on average 3 m wide by 5 m long, your feeders are made of wood or tires and the trough is plastic or metal drums.

Most producers have continuously hoses for spring water, but no tanks or water tanks to store it, so as to ensure their existence. Twelve knapsack, four fodder shredders or choppers, one of these with a hammer mill, fourteen buttons or electric fences and a milking are the tools available to the group.

*Discussion and conclusions:*

The intensification of livestock production in the municipality has increased and continues in ascending despite its limitations. The static and dynamic diagnostics performed does know the strengths and weaknesses of the production system (Beltramino *et al*, 1984, Gallardo *et al*, 1996). It is necessary to focus the program GGAVAT working in natural resource management and care and feed production (Osorio, 2006). Previous experiences elsewhere in Mexico alert in serious erosion problems that may arise in this area livestock if not performed a comprehensive and well planned (INIFAP, 2003). It is necessary to promote organized programs involving agrosystem care, implementing food resource management, pasture improvement and grazing areas (Ramirez, 2006 Gonzalez, 2007). You also need culture and accountability in the register of productive and reproductive parameters to streamline the production system (McDowell, 1993).

**References**

- Aguilar-Robledo, M., 1992. Alternativas para la agricultura en el campo mexicano: ¿Tradición versus modernidad? *Tec. Cienc. Agrop.*, 1(2): 105-113.
- Arias Hernández Rafael., 1992. Información básica municipal de Veracruz. Cambio XXI Fundación Veracruz. Artes Gráficas. Xalapa, Ver. México.
- Beltramino, F., H. Molinuevo, M.Y. Miquel, H. Fernández, 1984. Análisis de registros lecheros. I. Efecto del año, época y número de lactancia. Publicación técnica N° 28 – ISSN 0485 – 9057 – del Instituto Nacional de Tecnología Agropecuaria, Estación Experimental Regional Agropecuaria Rafaela., pp: 7-27.
- Broster, W., T. Swan, 1992. Estrategias de alimentación para vacas lecheras de alta producción. AGT Editor, S.A. México., pp: 380.
- Capriles, M., 1989. Metodología para el diagnóstico rápido de perfiles productivos y funcionalidad de patrones tecnológicos en sistemas de producción con vacunos. Seminario: La apropiación de tecnología en el contexto de la investigación desarrollo. Unidad interinstitucional de apoyo metodológico. DSA/CIRAD-FONAIAP-FUDECO-UCLA. Barquisimeto., pp: 28.
- Corbellini, C., 1996. Evaluación del estado nutricional en vacas lecheras de alta producción. Curso internacional de producción lechera 96, Tomo 1. Nutrición Animal, Estación Experimental Agropecuaria Rafaela. 1996.
- Cronos Revista de Difusión Cultural, 1991 año 10 Núm. 60 Jalapa de Enríquez, Ver, México, pp: 18-116.
- Gallardo, M., M.S. Guaita, A. Castillo, 1996. Estrategias y resultados de modelos de alta producción de leche en sistemas pastoriles. Publicación Miscelánea N° 81 – ISSN 0325 – 9137 – Octubre 1996. INTA – Estación Experimental Agropecuaria Rafaela, pp: 101-112.
- González, H., 2007. Bases técnicas para la producción de leche en praderas, en [www.agronomía.uchile.cl](http://www.agronomía.uchile.cl)
- HOLMES, C.W., 2007. Bajos costos de producción de leche a partir de forraje pastoreado. Una reseña de los sistemas de producción lechera en Nueva Zelanda (Versión Revisada en 2007), Instituto de Ciencias Veterinarias, Animales y Biomédicas, Universidad de Massey, Nueva Zelanda.
- INIFAP., 2003. Manejo de Praderas, Curso de Actualización, CD-OSC, México, D. F.
- Jahn, E., 1996. La pradera en los sistemas de leche bovina. In: Ruiz N., I. (Ed.) Praderas para Chile. 2ª ed. Santiago, Chile. Instituto de Investigaciones Agropecuarias., pp: 658-664.
- McDowell, R., 1993. Animal Genetic resources and sustainable production systems in Latin América. En: Simposio sobre los recursos genéticos animales en América Latina. ALPA/FAO/CATIE. Santiago, Chile.
- MULVILLE, C., 1998. Una vaca para cada sistema. Fuente: MAYNE, S. (Agricultura Research Institute of Northern Ireland). Revista Infortambo ISSN 0328 – 4808 – Año: XII – N° 116: 132-134.

- Osorio, M., A. GGAVATT., 2006. Grupo Ganadero de Validación y Transferencia de Tecnología, CD-OSC, México.
- Ramírez, H.F., 2006. Parámetros Productivos en el Establecimiento de Praderas Asociadas (Gramíneas-Leguminosas). Comparando dos Densidades de Siembra: Alta Densidad de Semilla Vs. Baja Densidad de Semilla. México.
- Salgado, D., 1988. Índice de selección y su eficiencia para producción láctea en hatos lecheros bajo condiciones tropicales. Tesis Magister Scientiae, CATIE, Turrialba Costa Rica.
- Síntesis Miahuatlán, 2006. H. Ayuntamiento del Municipio de Miahuatlán, CD-OSC, México.
- Wildman, E.E., G.M. Jones, R.L. Wagner, H.F. Bowman, Trout, Jr., y T.N. Leach, 1982. A dairy cows body condition scoring system and its relationship to selected production characteristics. *Journal Dairy Science*, 65: 495-501.