

Productive Characterization of Dairy Farms in the Central-Western Province of Chaco - Argentina

Roberto Cheij^{1*}, S. Ortiz², G. Eyheralde², M. Y. Domínguez¹, P. R. Marini¹

¹Department of Zootechnical Engineering
Universidad Nacional del Chaco Austral, Argentina

²Department of Veterinary Medicine
Universidad Nacional del Chaco Austral, Argentina

*Corresponding author's email: roberto_cheij_2000 [AT] hotmail.com

ABSTRACT---- *It is possible to produce efficiently in areas that are considered inadequate, as long as all the technologies are not transferred from the temperate zones in which the most important dairy basins of the country are located. The objective of the work was to identify and productively characterize the dairy farms in the center-west of the province of Chaco - Argentina. 11 dairy farms were identified and visits were made between September 2021 and April 2022 located in the center-west of the province of Chaco. The results show that the median and age ranges of the owners surveyed was 47 (36-67) years old, the area used for milk production was 50 (20-275) hectares, of which 78% is natural forest and 22% are dedicated to the production of cultivated pastures. The median and ranges of the milking cows were 9 (2-20) cows and 12 (3-15) dry cows, total milk production per day: in warm months 30 (14-300) liters and in cold months 30 (6-300) liters, the duration of lactation 200 (150-270) days. Dairy farms in the center-west of the Chaco province were identified and characterized, showing that there is dairy production in the region and that this forces the need to generate attention policies for them.*

Keywords---- small producers, subtropics, local development, productive indicators, social indicators

1. INTRODUCTION

The economic activity of Argentina has always been concentrated around the nucleus of the Pampa's region and the provincial productive structures didn't integrate this dynamic nucleus of the national economy. The pattern of productive insertion was subordinated to the central guidelines of the unique national economic system (Gorenstein, 2012). This marks a strong asymmetry with respect to the rest of the regions, centralizing agriculture and livestock that inserted the country into the world economy and most of the services and industry (Cantamutto, 2018). In relative terms, the NEA and the NOA are the regions with the least weight within the national scheme and within the NEA, Chaco is in an intermediate place (Perez and Schorr, 2020).

Dairy production in the Argentine subtropics due to its agroecological conditions, mainly soils and temperatures, is considered marginal for the development of dairy activity. The subtropical climate – predominant in the region – markedly depresses the efficiency of the system in all its productive and reproductive indicators of dairy cattle (Patiño, 2005). SENASA (2021) presents in its report on the Characterization of the Bovine Dairy Farms in the different provinces, where it shows that in the Chaco there is only one dairy farm with 11 milking cows and 20 total cows (milking cows + dry cows).

However, it's possible to produce efficiently in areas that are considered inadequate, as long as the limitations and potentialities of the place where to produce are respected. In addition, the transfer of models from the temperate zones in which the most important dairy basins of the country are located should not be used as a resource. An example of this is Brazil, which not only grew productively to supply domestic consumption, but also has a remarkable rate of development (Chimicz and Pueyo, 2012).

Recent studies in the international order reposition the dairy of small producers as a transcendent alternative for regional, local and fundamentally family development (Chimicz, 2012). Agricultural activity in the Chaco has played an important role in the economic growth of the province, as a direct generator of greater economic activity, employment and investment; for its ability to generate food; and promote with its growth the demand for inputs and services, which drive industrial and commercial activity by improving local income. However, dairy activity hasn't been able to contribute and maintain itself to form part of this economic growth of the province.

The objective of the work was to identify and productively characterize dairy farms in the center-west of the province of Chaco - Argentina.

2. MATERIALS AND METHODS

11 dairy farms were identified and visited between September 2021 and April 2022. Within the methodological strategies, it was decided to opt for the case study, and as techniques, the in-depth interview and survey turned out to be the most suitable material to relieve the information of the farms in the center-west of the province of Chaco.

The climate in general responds to a humid subtropical, with a dry season. Average rainfall is between 800 and 1000 mm per year from west to east. Spring and summer are rainy and autumn and winter are dry, with well-defined seasons. An average annual temperature of 24 °C is observed, with maximum temperatures of 46 °C and minimum temperatures of -5 °C. Early frost calls are frequent, occurring in 80% of cases between May and June, late frosts are common until August. The soils are mollisol types with variable content of organic matter with capacity for use II, III and IV. Its current use is mainly intended for agriculture, forestry and livestock, with potential use for silvopastoral agriculture (Ministerio de Producción, 2016).

The following aspects were recorded: age of the owner, number of hectares, livestock area, total cows, milking cows, dry cows, daily milk production in liters, milk production per cow per day in liters, duration of lactation in days, number of milkings and type of labor. Medians and ranges were obtained for each of the categories analyzed.

The dairy farms were divided into two groups, those that were milked once a day (G1ord) or twice a day (G2ord). Means and standard error were obtained for each variable and for each group, univariate analysis was performed between both groups by applying analysis of variance (ANOVA) to a classification criterion and Student's t-test for comparison of two independent means ($p < 0.05$). Statistical analyzes were performed using the JMP program (JMP®, 2003) Version 5.0.

3. RESULTS AND DISCUSSION

Within the primary sector of the Chaco economy, cotton crops, soybeans, cattle production and wood extraction stand out (Pérez and Schorr, 2020), in no work is the dairy sector observed. The results show that the median and age ranges of the owners surveyed was 47 (36-67) years old, the area used for milk production was 50 (20-275) hectares, of which 78% natural forest and 22% dedicated to the production of cultivated pastures.

The median and ranges of the milking cows were 9 (2-20) cows and 12 (3-15) dry cows, total milk production per day: in warm months 30 (14-300) liters and in cold months 30 (6-300) liters, lactation duration of 200 (150-270) days, the liters of milk / kg of cheese had a yield of 10 liters for each kg of cheese produced 100% of the dairy farms surveyed. The results obtained are similar to those presented by SENASA (2020) where it shows that the average number of cows in milking was 10 and with a total of 18 cows in the herd.

In eight dairy farms, only one milking per day is carried out, which corresponds to 72.7% and only three dairy farms carry out to daily milkings representing 27.3%. Milking is done manually in five dairy farms (81.8%) and mechanically in two (18.2%) and the workforce is familiar in nine dairy farms the owner milks (71.4%) and in two they hire a personal (28.6%).

Table 1: Absolute values and percentage of the variables analyzed in the surveyed dairy farms		
Variables	Answers and percentages	
	Yes	No
Hand milking	7 (63.6%)	4 (36.4%)
Ceiling where it's milked	6 (54.5%)	5 (45.6%)
Milking chucks	8 (72.7%)	3 (27.3%)
Cold equipment	1 (9.1%)	10 (90.9)
Holding pen	10 (90.9%)	1 (9.1%)
Electrification	11 (100%)	-
Monofasic	11 (100%)	-
Trifasic	-	11 (100%)

Table 1 shows that manual milking exceeds that performed mechanically, half of the producer's milk indoors, most have a chuck where the animal is immobilized in order to be milked, almost all don't have cold equipment, all it has

a waiting pen before milking, the whole has single-phase electrification although none is three-phase. Since there are no studies on the subject, the results obtained cannot be compared with other regions of the Argentine subtropics.

When the information was analyzed by group according to the number of milkings per day, in most of the variables no differences were found, although there were important characteristics to show: the dairy farms belonging to the group of two milkings per day, have a lower age of the milkers (39 vs 54 years old), treat the cows during drying and have fewer hectares to produce (28 vs 50 has). In some way, it could be interpreted that the managers who are in charge of the farm incorporated some technology that differentiates them from the rest and is observed in the greater production with fewer hectares.

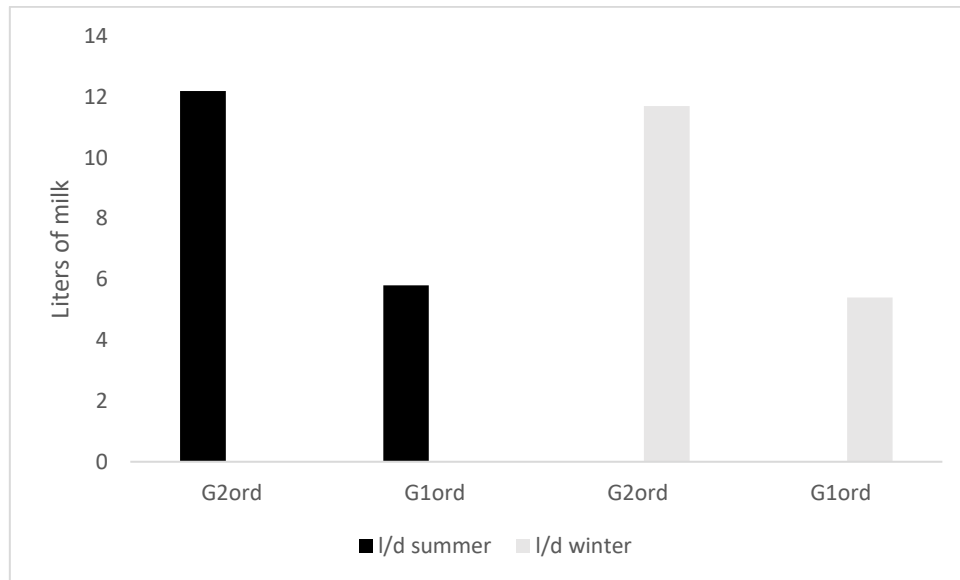


Figure 1: Average liters of milk per day by station and milking group

Figure 1 shows that logically the G2ord produces more liters of milk per day than the G1ord, showing significant differences ($p \leq 0.001$). The G2ord and the G1ord didn't present significant differences ($p \leq 0.05$) with respect to the number of milking cows.

4. CONCLUSION

Dairy farms in the center-west of the Chaco province were identified and characterized, showing that there is dairy production in the region and that this forces the need to generate attention policies for them.

5. REFERENCES

- Cantamutto F., Bonavida C., González L., Mauriño M., Monzón C.; Miranda G., Perez M. 2018. Efectos de la transformación macroeconómica en la economía local. Escuela de Gobierno de la Provincia del Chaco. <http://escueladegobierno.chaco.gov.ar/files/documentos-de-trabajo/efectos-de-la-transformacion-macroeconomica-en-la-econom%C3%ADa-local.pdf>
- Chimicz, J. 2012. Los chicos Crecen. En: Ideas, propuestas y soluciones para la lechería extrapampeana. Ediciones INTA Año 1 N 1 pp 40. <https://inta.gob.ar/documentos/ideas-propuestas-y-soluciones-para-la-lecheria-extrapampeana>
- Chimicz, J., Pueyo, H. 2012. La lechería en nuevas tierras. En: Ideas, propuestas y soluciones para la lechería extrapampeana. Ediciones INTA Año 1 N 1 pp 40. <https://inta.gob.ar/documentos/ideas-propuestas-y-soluciones-para-la-lecheria-extrapampeana>

Gorenstein, S., Castagna, A., Gorenstein, S., Schorr, M., Napal, M., Raposo, I., Woelflin, M.L., Báscolo, P., Ferreira, E. 2012. ¿Crecimiento o desarrollo? El ciclo reciente en el norte argentino. Miño y Dávila Ediciones, Buenos Aires. Documentos y Aportes en Administración Pública y Gestión Estatal, vol. 12, núm. 18, 2012, pp. 133- 135
<https://www.redalyc.org/pdf/3375/337530222007.pdf>

Ministerio de Producción. Provincia de Chaco. 2016. Plan de implementación provincial.
<file:///C:/Users/Pablo/Documents/Pablo/pablo/disco%20Respaldo/Backup/pablo/archivos%20pablo/mio/trabajos%20revistas%202022/UNCAUS/PIP%20Chaco.pdf>

Patiño, E. M. 2005. El desafío del desarrollo lechero en las provincias del NEA www.produccion-animal.com.ar

Perez, M., Schorr, M. 2020. Estructura productiva e ingresos de la provincia del Chaco. Tramas. Revista de Política, Sociedad y Economía. N12 33-52
<http://tramas.escueladegobierno.gob.ar/numero-anterior/?pu=3180>

SENASA 2021. Caracterización de tambos bovinos. Coordinación General de Sistemas de Gestión Sanitaria Dirección de Ejecución Sanitaria y Control de Gestión Dirección Nacional de Sanidad Animal pp21
https://www.argentina.gob.ar/sites/default/files/87-caracterizacion_tambos_bovinos_diciembre_2021.pdf