

Factors for Standardizing Lactation Yields to 305 - ME basis in Chile

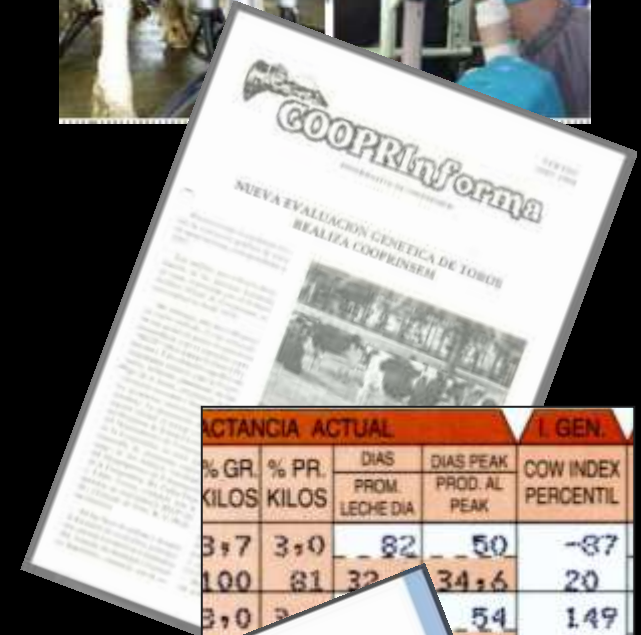
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COOPRINSEM – 2016

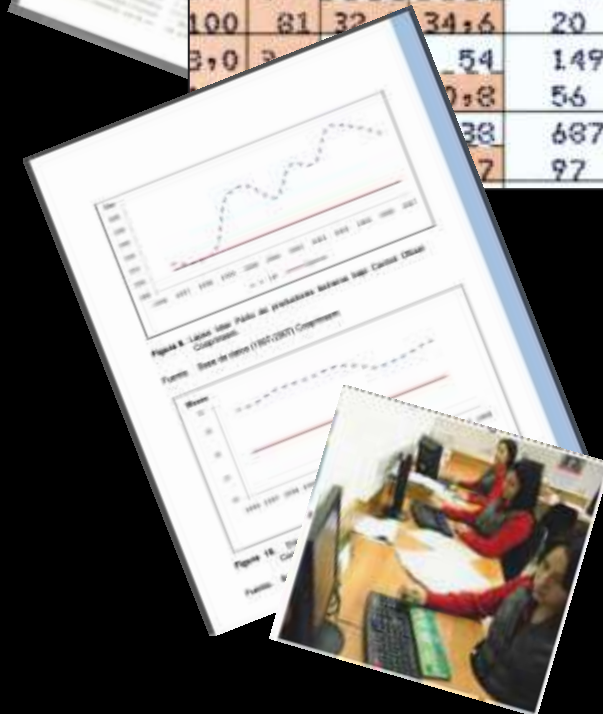


CONTROL LECHERO OFICIAL COOPRINSEM

- ❖ The most important Milk Recording Service (CLO) in Chile since 1974.
- ❖ The only institution that computes periodically genetic values of dairy bulls used in Chile, since 1979.
- ❖ In 1989 we started evaluations of dairy cows and included that information in our DHI.
- ❖ CLO data has become a source of information for public institutions, researchers and farmers organizations.
- ❖ Continuous effort to improve capture, validation and processing of data.



ACTANCIA ACTUAL				I GEN.
% GR.	% PR.	DÍAS	DÍAS PEAK	COW INDEX PERCENTIL
KILOS	KILOS	PROM. LECHE DÍA	PROD. AL PEAK	
3,7	3,0	82	50	-87
100	81	32	34,6	20
3,0	3,0		54	149
			0,8	56
			38	687
			7	97



Factors for Standarizing Lactations

Estimation of Factors for Standarizing Lactations were developed by Cooprinsem first in 1987 and again in 2007.

In 1987, factors were estimated to calculate 305 days milk and fat production from 240 to 304 partial lactations.

The 2007 study considered to extend lactations in the range of 175 to 304 days, to estimate 305-days milk, fat and protein production.

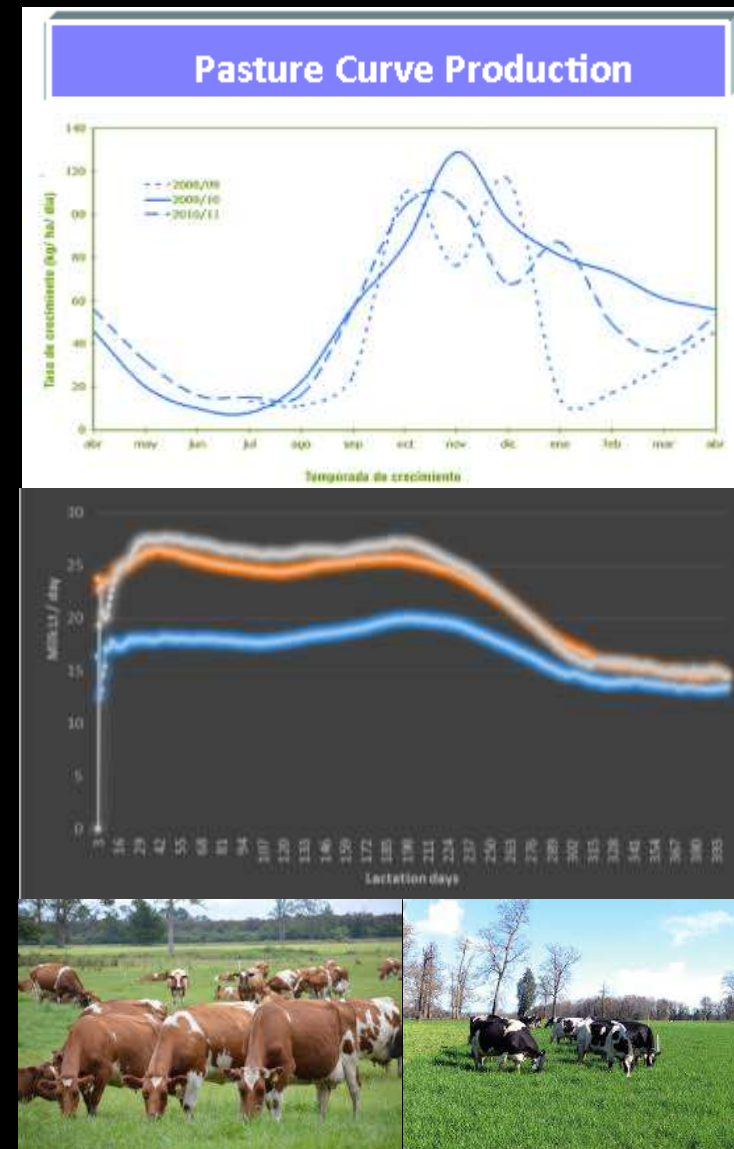


To estimate standardizing factors in our country, it was considered that:

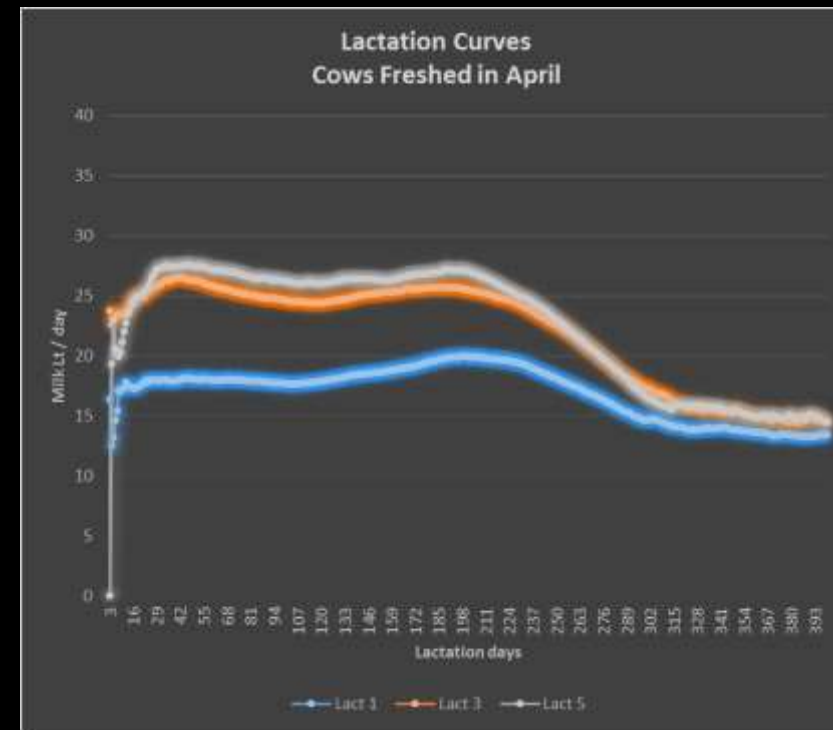
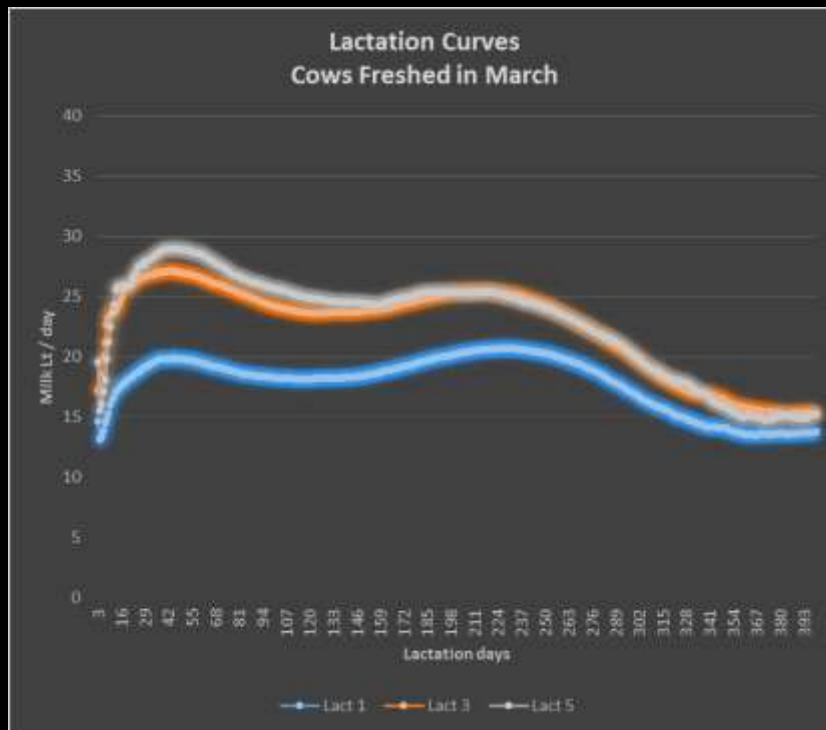
- ◊ There are different productive systems in central, central southern and southern Chile.
- ◊ In central Chile, Holstein cows are confined, grains are highly used and irrigated corn & alfalfa are the most common forages.
- ◊ In central southern Chile Holstein cows are confined or semi-confined and grains are important as well as corn & alfalfa and irrigated pasture.
- ◊ In southern Chile Holstein cows, overo colorados (rotbunte), montbeliarde, ayrshire and jersey and their crossbreeds produce milk based on pastures with very limited or without irrigation. Silage, hay, supplementary forage and grains are strategically used.



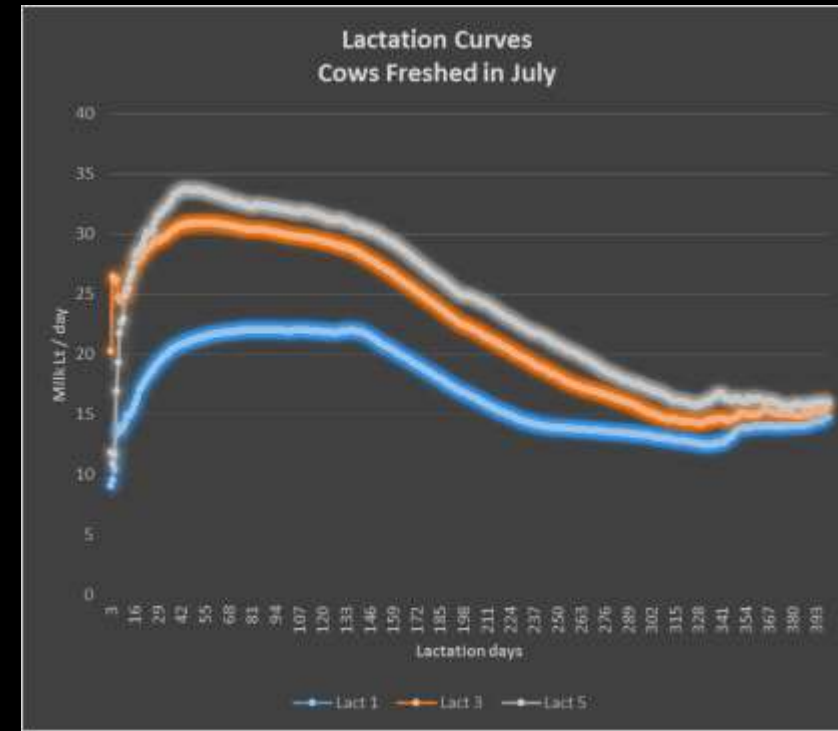
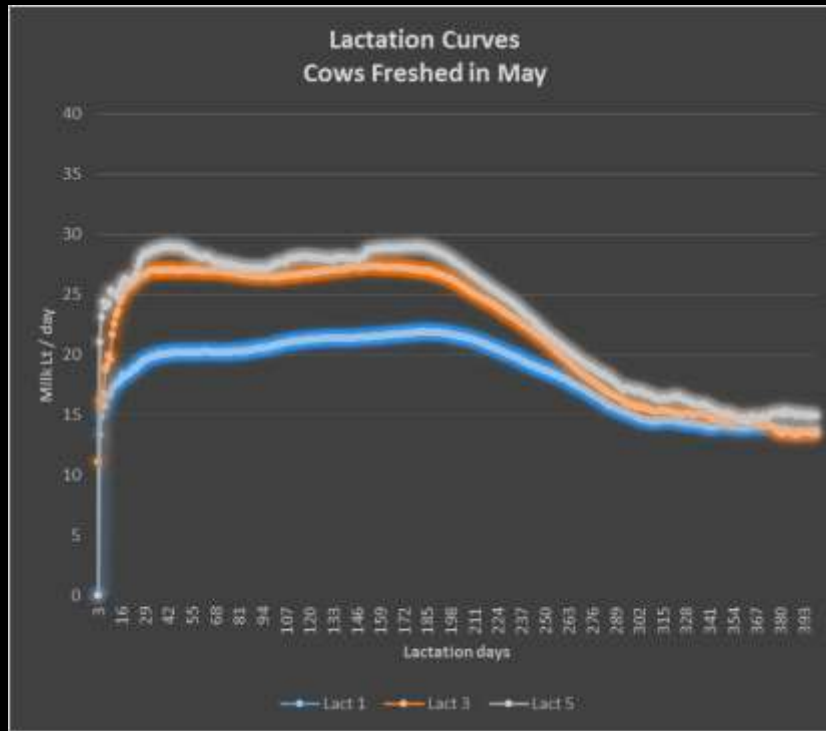
- ❖ Pastures growth rates in unirrigated areas differs widely between season as well as forage quality.
- ❖ Lactations curves reflects these effects in areas where pastures are the main forage.
- ❖ This is most important in Southern Chile, where more of 70% of milk is produced.



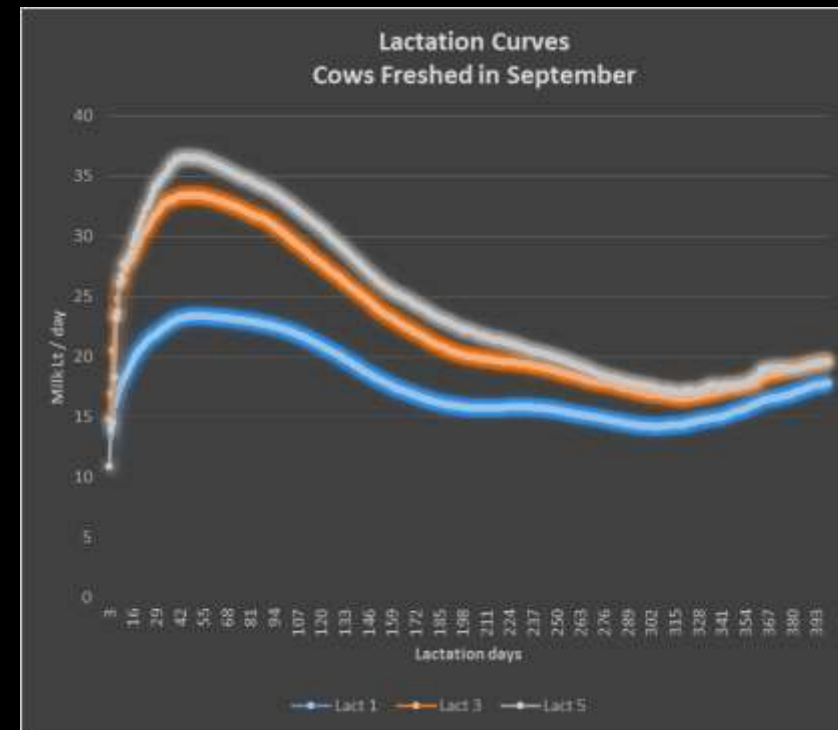
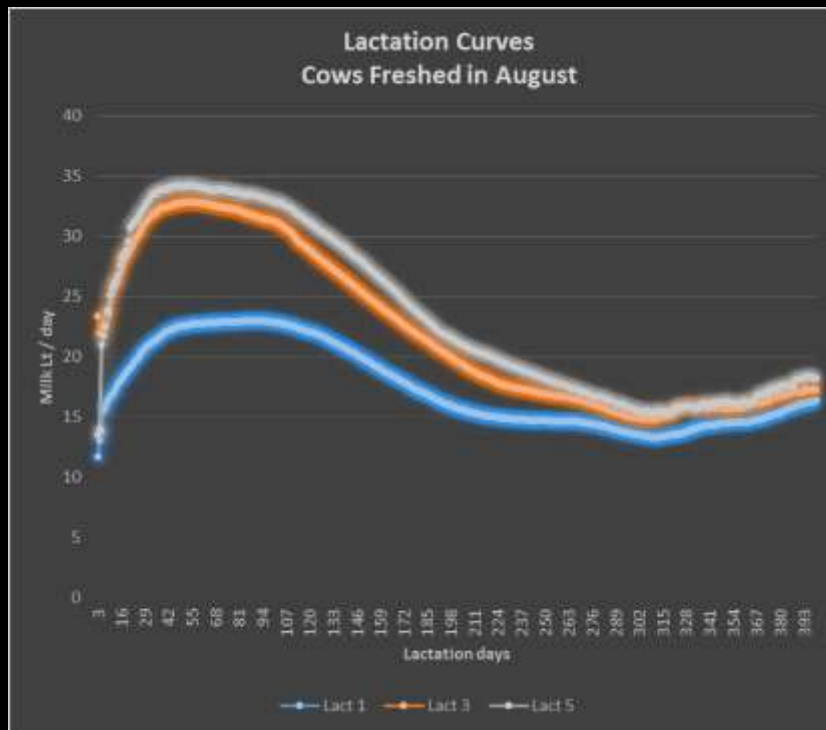
Lactation Curves by month of Calving (March and April)



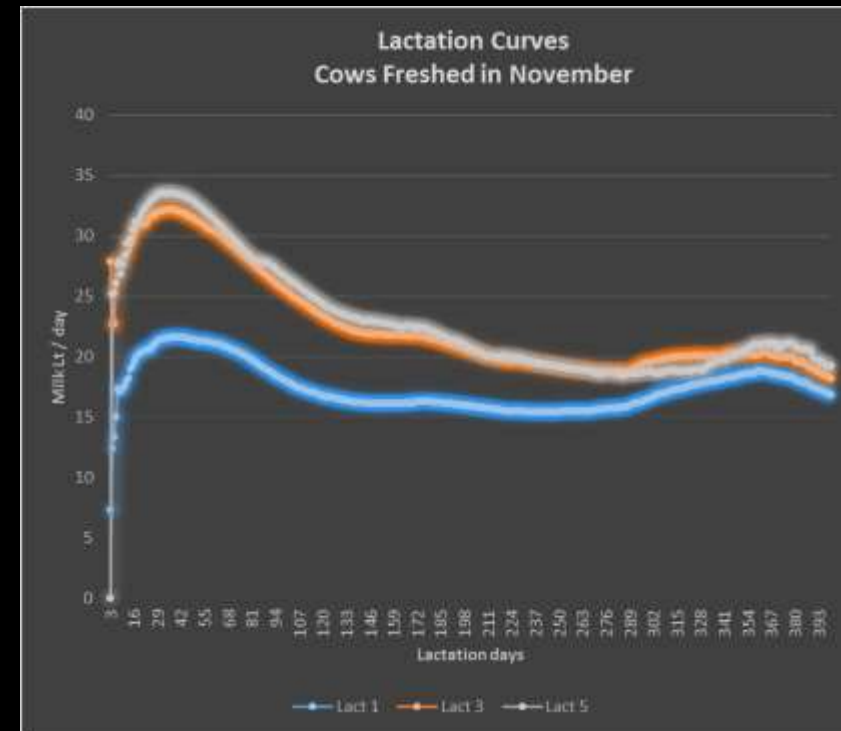
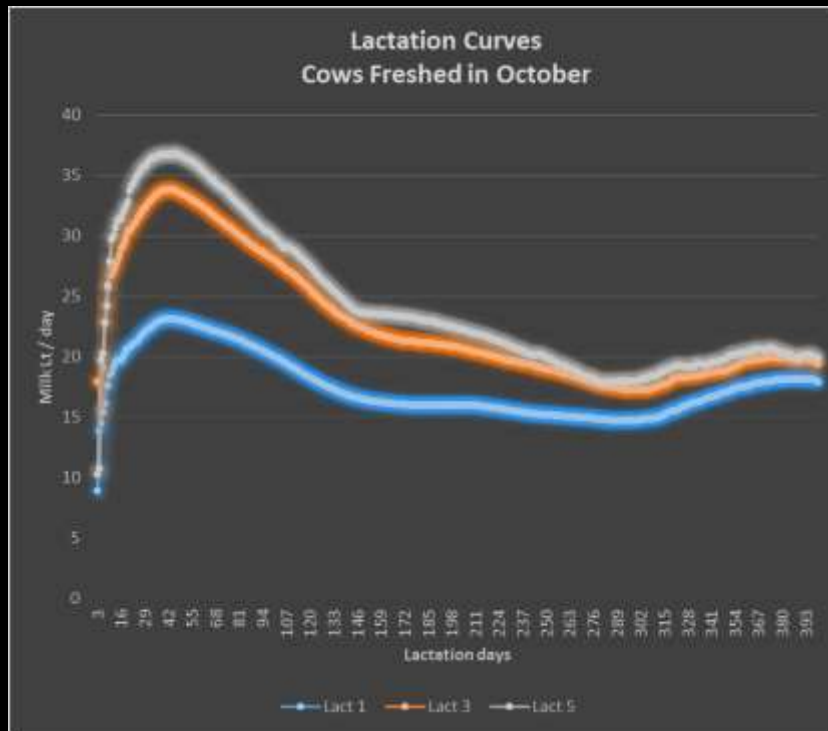
Lactation Curves by month of Calving (May and July)



Lactation Curves by month of Calving (August and September)

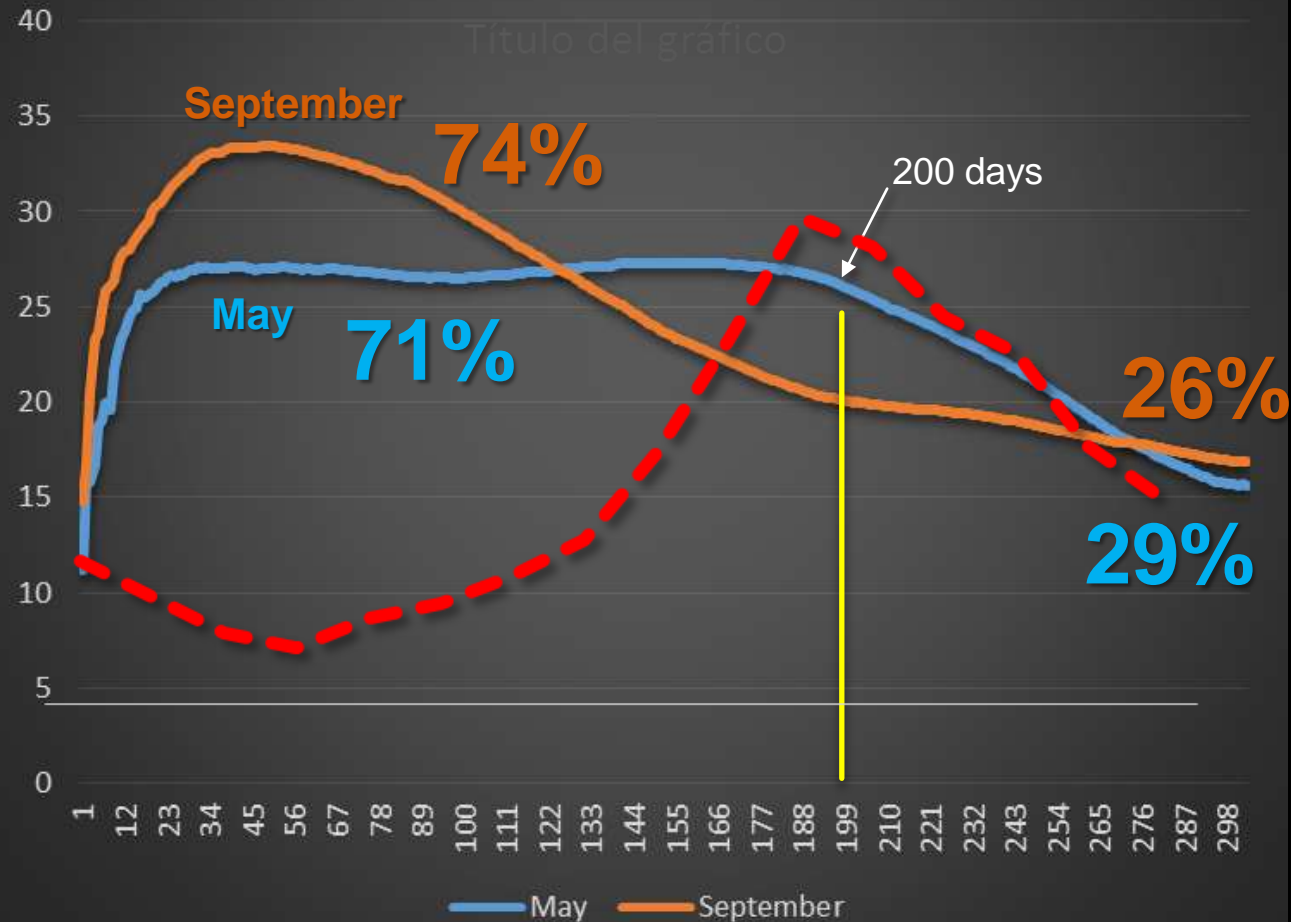


Lactation Curves by month of Calving (October and November)



Lactation Curves

Third Calving Cows freshen in May & September



Model

The study analyzed 185,599 lactations with 1.2 millions of milking test data, between 1997 and 2005.

The aim of the study was to estimate factors to standardize milk, fat and protein production to 305 days ME.

After detecting sources of heterogeneity associated a different factors affecting shapes of lactation curves, total productions, it was decided to use homogeneous groups.

So, the model considered multiple regression lineal model that included month and number of calving, last production, days in milk and average daily production for four breed-region (Southern-Holstein, Southern-Overo Colorado, Central Southern-Holstein and Central-Holstein).

Factors to adjust productions to mature equivalence were also analysed.

Model

$$Y = b_0 + b_1 \text{ Days} + b_2 \text{ LCP} + b_3 \text{ DPA} + b_4 \text{ Days}^2 + b_5 \text{ LCP}^2 + b_6 \text{ DPA}^2 + b_7 \text{ Days} * \text{LCP} + b_8 \text{ Days} * \text{DPA} + b_9 \text{ LCP} * \text{DPA} + e$$

Were:

LCP: Last Control Production

DPA: Daily Production Average

Days: Days in milk

Validation

Coefficient of determination adjusted

BREED-REGION	r ² _{adj}
CENTRAL – HOLSTEIN	82 – 91 %
CENTRAL SOUTHERN HOLSTEIN	81 – 93 %
SOUTHERN HOLSTEIN	82 – 87 %
SOUTHERN OVERO COLORADO (ROTBUNTE)	76 – 91 %

Comparing previous and new factors by reduction in prediction absolute error : with new factors, 175 days extended lactation was similar to previous 260 days extended lactation error.

Validation

Doble crossed validation: two random groups were used to estimate independent factors and then factors were used in the same group or in the other group. Correlations between productions obtained from same group factors and from other group factor was always greater than 0.995

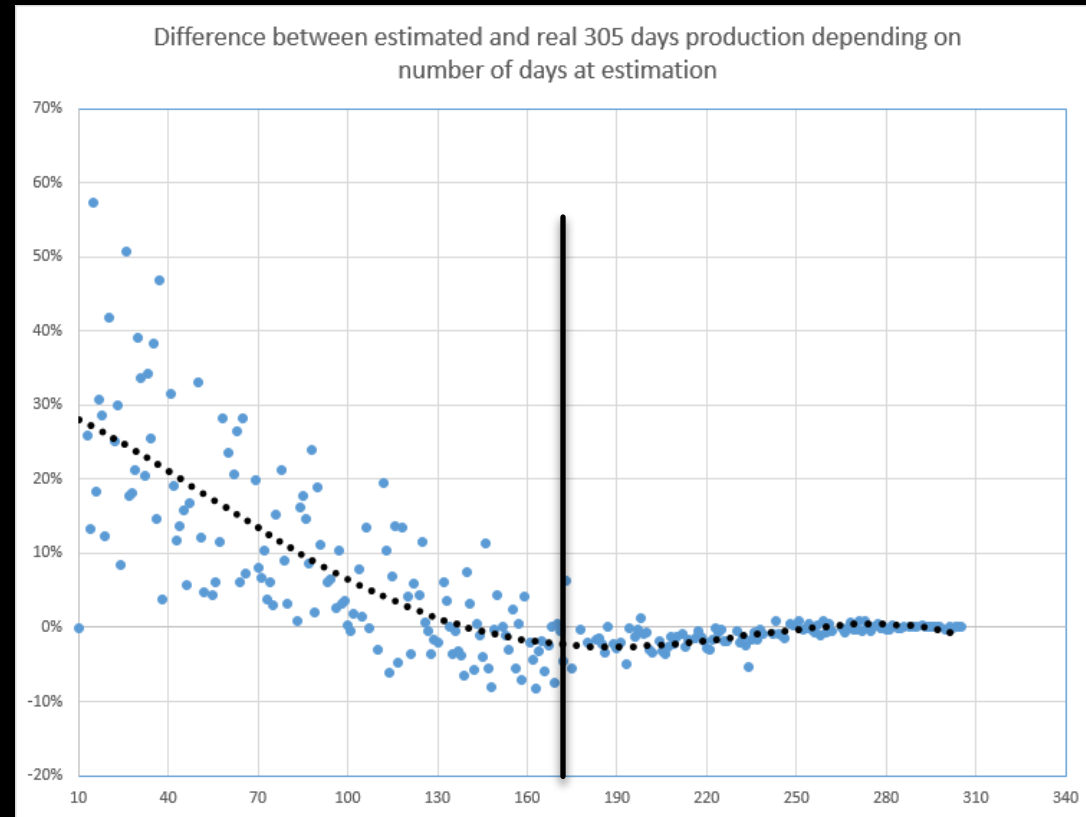
Results

New factors to extend lactations to 305 days were estimated for milk, fat and protein.

In addition factors to adjust for first interval estimation of production were also developed, considering combination of region-breed, number of lactation and season.

Results

Factors are intended to extend and standardize lactations with at least 175 days long.



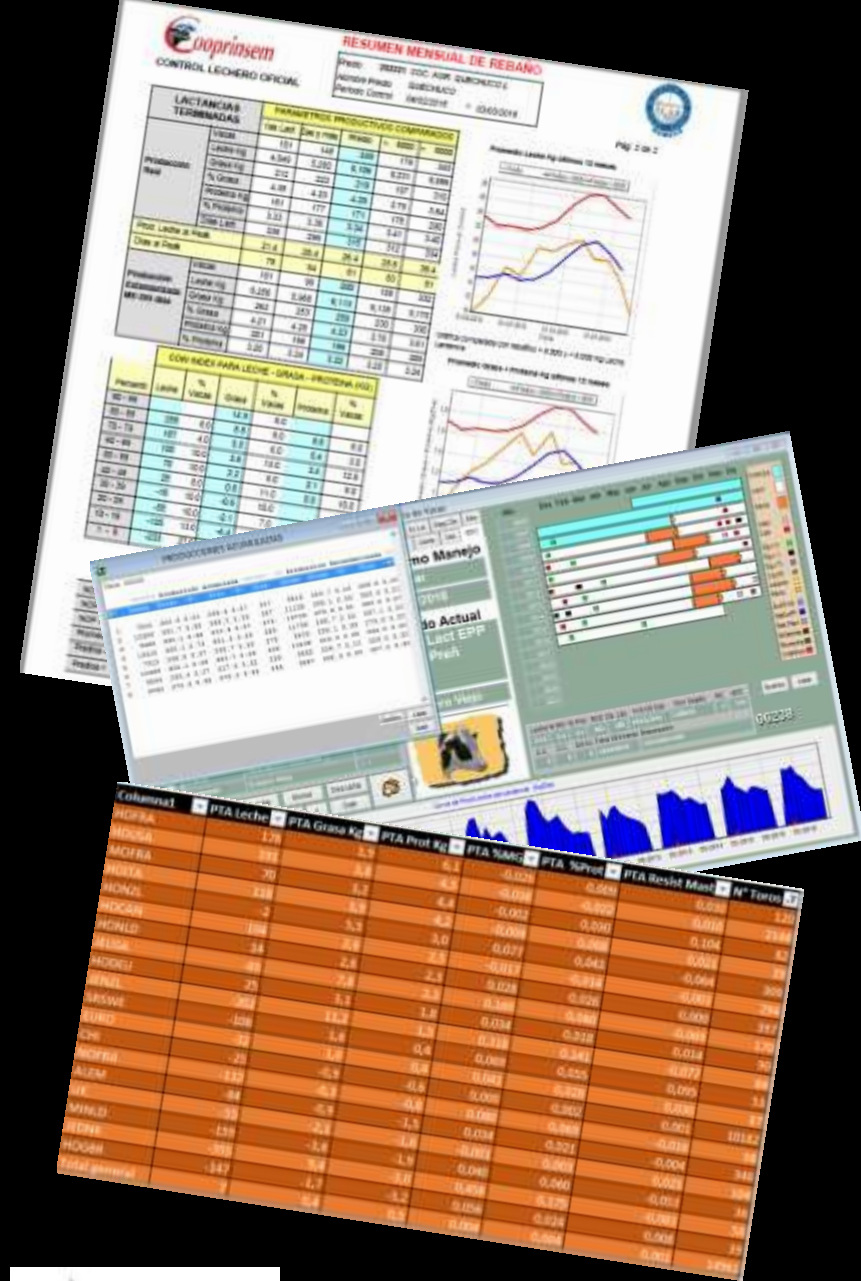
Summary

COOPRINSEM DHI

On-farm software *CliWin*

Genetic Evaluations of Dairy Bulls and Cows conducted quarterly by Cooprinsem.

Studies, statistics and cooperative work.



Thanks for your attention