



Productive evaluation of tropical livestock agribusinesses based on most probable producing ability



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INTRODUCTION

Records are the basis of the information structure of any livestock production system. Through different types of analysis, these allow for consequent technical and administrative decisions and are the basis for determining the genetic progress of the economic interest characters for an animal production system.

OBJETIVE

To evaluate the productive behavior of dual-purpose agribusinesses based on their Most Probable Producing Ability (MPPA) of a region of southern Mexico.

MATERIALS AND METHODS

The study was carried out during 2018 with dual-purpose agribusinesses located in Huimanguillo, Tabasco, with an average of 51 adult cows, which were served by artificial insemination and natural mating; and did not present sanitary problems. The information was obtained from the report: MPPA for milk production, generated by the DOBLE AGROPEC Star® software. Five agribusinesses, with MPPAs of 256 lactations, 19 genotypes, and cows with calvings, were considered. The data were analyzed with a covariance analysis using a completely randomized design and as covariates the genotype and parturition number using the SAS statistical package.



RESULTS

In the first analysis of the information, without considering the effects of the covariates, differences ($p < 0.01$) were obtained in the MPPA values of the different agribusinesses evaluated, observing the maximum value (2017.53) in agribusinesses 3. Differences ($p < 0.01$) were observed for the effect of the covariate: genotype, not so for the parturition number. The genotypes Swiss American x Sardinian Black and Brahman x Sardinian Black were significantly different (Table 1) from the others, with the highest estimated value in the first one (3,664.29). Once adjusted for the effect of the covariate: genotype, the analysis showed differences ($p < 0.01$) in the MPPA values for the five agribusinesses evaluated, in ranches 2 and 3 the highest values were obtained (1773.89 and 1995.82, respectively) being different from other agribusinesses (Table 2).

Table 1. Significant differences observed in the MPPA analysis using the genotype as covariate.

| Genotype | Estimated average | t Value | Pr > t/ |
|------------|-------------------|---------|----------|
| SA*SN | 3,664.29 | 4.8 | *** |
| BN*SN | 3,240.34 | 3.94 | *** |
| SA*SE | 2,394.09 | 0.7 | ns |
| NE | 2,360.00 | 0.63 | ns |
| (SA*SE)*CD | 2,066.26 | 0.05 | ns |
| SA | 1,992.59 | 0.65 | ns |
| HN*CI | 1,941.51 | -0.44 | ns |
| HN*CD | 1,931.74 | -0.42 | ns |
| SA*CI | 1,770.27 | 0.96 | ns |
| SH | 1,514.87 | 0.03 | ns |
| HU | 1,492.18 | 2.01 | ns |
| CD | 1,341.65 | 0.22 | ns |
| SN | 1,315.27 | --- | --- |
| HN*GR | 1,282.08 | -0.05 | ns |
| CI | 1,067.55 | -0.76 | ns |
| SA*CD | 1,067.11 | 1.94 | ns |
| GR | 1,062.32 | 0.7 | ns |
| BN | 1,036.61 | 0.1 | ns |
| SE*CD | 868.91 | --- | --- |

*** Significant ns: Not significant

Genotypes: SA: American Swiss, SE: European Swiss, CD: Unknown Cebu, BN: Brahman, SN: Sardinian Black, CI: Indefinited Cross, GR: Gyr, HN: Holstein, HU: Holandcebu, NE: Nelore, SH: Simbrah

Table 2. Minimum ajusted square means obtained for the variance analysis considering the effect of genotype covariance.

| Agrobus siness | Minimum square means | Standard error | Differences * |
|-------------------|-------------------------|-------------------|---------------|
| 1 | 1,582.39764 | 75.15830 | B |
| 2 | 1,773.89564 | 86.91967 | A |
| 3 | 1,995.81685 | 87.16748 | A |
| 4 | 872.42294 | 59.64285 | C |
| 5 | 772.92482 | 78.99297 | C |

CONCLUSIONS

- The most probable producing ability depends on the genotype of the animals.
- By considering the probable-producing ability, the productive evaluation allows to determine which ranch has the best cows based on their production and genotype.
- The MPPA value should be considered for the selection of mothers of future replacements in each agribusiness.