MCA

BOLETÍN INFORMATIVO

Segunda edición

ARTÍCULOS PUBLICADOS POR DOCENTES 2022

UNIVERSIDAD DE PAMPLONA · COLOMBIA · 61 AÑOS

ACREDITADA INSTITUCIONALMENTE EN ALTA CALIDAD · ¡Seguimos avanzando! · UNIVERSIDAD DE PAMPLONA

UNIVERSIDAD DE PAMPLONA · FACULTAD DE CIENCIAS AGRARIAS

## MAESTRÍA EN CIENCIAS AGRARIAS

Provision of a protein-rich supplement for grazing suckling female beef calves to improve productive performance and metabolic response

This study was conducted to evaluate the effects of the provision of a protein-rich supplement on productive performance, and metabolic profile on grazing suckling female beef calves in tropical conditions during 150 d of experimentation.

Fifty-six Nellore suckling female calves, and their respective dams were distributed in a completely randomised design and made to undergo two treatments as follows: UNS (without supplementation), and SUP (supplementation with 5 g/kg body weight (BW) of a protein supplement). Throughout the experiment, animal performance and metabolic profile were evaluated. Also, ureagenesis and gluconeogenesis were assessed for gene expression.

SUP female calves showed a higher voluntary intake (p≤0.03) of the diet components evaluated, digestibility of organic matter (OM; p≤0.02) and microbial nitrogen production (MICN; p≤0.02) compared to UNS female calves. In its turn, serum urea nitrogen (SUN; p≤0.01) and insulin-like growth factor-1 (IGF-1; p≤0.03) levels and ureagenesis (p≤0.04) increased in SUP female calves compared to UNS female calves. Blood glucose and triglyceride levels were not affected by supplementation. The average daily gain (ADG) from SUP female calves was higher (p≤0.02) compared with UNS female calves. However, supplementation did not affect the body measures of the animals.

In summary, provision of a protein-rich supplement improves the intake and nutrients digestibility, ADG and final BW and increases metabolic indicators of the protein status in grazing suckling female beef calves in tropical conditions.
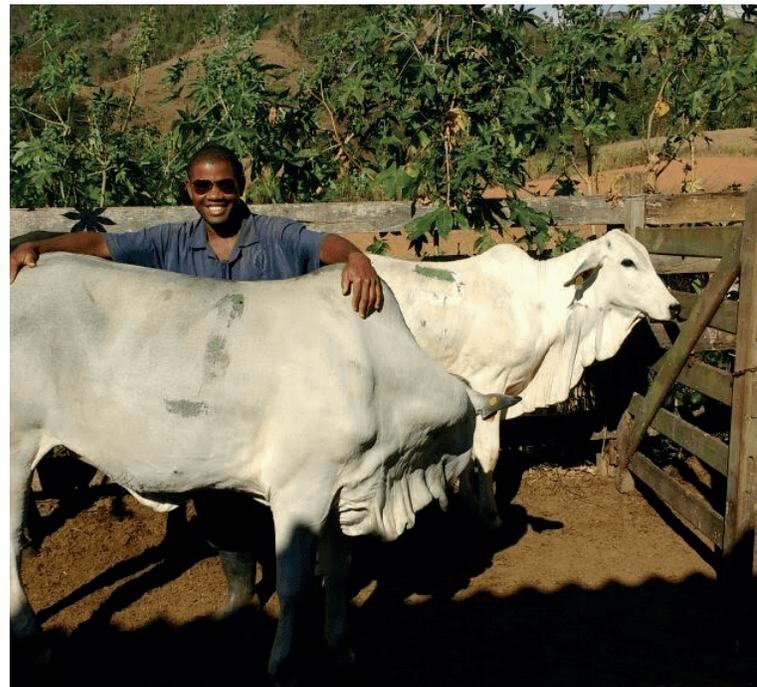
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Ph.D Zootecnía**

Forecasting of yields in Jarillo peach crops at the Province of Pamplona using random variables

It consisted of forecasting the yield of a peach crop, by simulating variables that follow a probability distribution associated with it, obtaining a statistical behavior similar to a real production scenario.

A bibliographic review was made of studies on production forecasting in other plant species. Production samples were also taken from farms in various zones and a linear regression analysis at a fixed interval (stepwise) was made, taking yield as a dependent variable and the physical dimensions of the branch as an independent variable. In addition, data was collected for determine the production probability distribution and based on it a simulator software was designed and implemented, with which various simulations of production scenarios were made.

Models were obtained with a lower number of variables resulting from applying the stepwise procedure in order to forecasting the number of fruits and performance. When characterizing input variables, the mathematical model was built with random inputs to predict yield, such as crop area, planting system, planting density, crop age and branch length, leaf area, fruit diameters, among others variables.

Is feasible the forecasting of peach crops yield under several assumptions, from samples observed in real production scenarios. It was posible to implement a forecast model based on random variables, whose variability with respect to real data is significantly small.

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