

### 143. Impact of puberty and lactation order of a dairy goat herd in the northeast of Brazil

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A dairy goat model was built to study the impacts of puberty and lactation order in a herd over time. A system dynamics approach was used to develop the feedback structure of the model, which was programmed into Vensim<sup>®</sup>. The model was developed to simulate a semi-intensive system where all parameters assumed average values reported in the production system at the *Brazilian Agricultural Research Corporations (Embrapa-Goats)*. The pregnancy rate and the number of kids born per doe were assumed to be respectively, 0.47% and 1.0 for nuliparous and 0.67% and 1.67 for multiparous does. The present model assumed the natural condition in the Northeast of Brazil where the animals are not affected by photoperiod. The gestation and lactation length was respectively, 5 and 6 months and the number of lactation allowed per doe, were manipulated to verify the impact in the herd. Also the time to reach the adult phase (puberty) was changed to simulate an ideal situation and small farmer's reality (food limitation). An equilibrium herd of 75 animals was modeled. In the first simulation where the time to reach the adult phase was 8 months, keeping does until the 6th lactation had 1.2% more milk production compared to systems keeping does until the 8th lactation. Results indicated that although the volume of milk was higher for the 6th lactation, when considering until the 8th lactation, the number of young does available in the system was 5.9% higher. In the second simulation the age of puberty was increased from 8 to 12 months. Keeping does only until the 6th lactation had 1.9% more milk production and 3.8% less young does available compared to systems until the 8th lactation. Comparing the whole system by age of puberty, the herd that had animals breeding at 8th months had 4.1% more animals available for selling or for genetic selection. Although being a preliminary study, it gives very important insights of better management policies to improve the efficiency of the system by changing the profile of animals in the herd and the age of puberty by changing nutritional conditions.