follows: (1) + 3.2, (2) -4.0, (3) -7.9, (4) +9.4, (5) +5.1 and (6) -5.3 kg in the lactation period. No significant difference was noticed in the production performance of goats of both flocks. However there was a clear tendency of higher lactation persistency in the improved flock. There was not any statistics interaction between forage diets and type of goats. There was a significant relation ($P \leq .01$) between digestible energy intake and total milk yield.
KEY WORDS: Forage diets, milk diets, unimproved and improved goats, Mexico.

## 162 MALNUTRITION AS A CAUSE OF ABORTION IN GOATS IN SEMI-ARID NORTHEASTERN BRAZIL

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During two breeding periods (1981/82 and 1982/83) 426 goats in gestation, of the Anglo-Nubian, Bhuj, Caninde, Marota, Moxoto and Repartida breed, and without defined race, which were part of the herd of the National Goat Research Centre in Sobral, were observed. The objective of the investigation was to establish the causes of abortion related to nutrition which occur in the region, by biochemical analyses of blood samples, and examination for Brucellosis for differential diagnosis. The study revealed an incidence of 7.11% for the first and of 16.15% for the second breeding period. A difference in incidence of the first period ($P<0.05$) occurred due to the protein supplementation given to the animals. The biochemical analyses, made during the second third of the gestation period, revealed an average total protein content lower ($P<0.05$) than normal; the magnesium, copper and zinc levels were low during this period. Copper and zinc values were also low ($P<0.05$) during the first third of gestation. Abortions occurred during all gestation periods, when low total protein levels occurred together with low mineral contents in the blood, but only at the beginning when the copper and zinc levels were low. The serologic tests for Brucellosis were negative. It is concluded that during this study, the abortions in goats of the semi-arid region were of nutritional origin, a result of protein and mineral deficiency. A protein supplementation could lower the incidence of abortion.
KEY WORDS: Goat, reproduction, malnutriton, abortion.

Cabra, reprodução, desnutrição, aborto.