BUFFALO BEEF PRODUCTION

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ABSTRACT: The growing rate of 240 male buffaloes fed *ad libitum* a diet characterized by 0.9 MFU/Kg dry matter (DM), 14% CP and 38:62 forage:concentrate ratio (Diet A) was evaluated starting from a mean age of 148 (Group 1), 218 (Group 2), 302 (Group 3), 320 (Group 4), 374 (Group 5) and 596 (Group 6) days. Data were compared at the weight of 400 kg and at the age of 550 days, values that were reached by all the subjects. The earlier administration of Diet A increased daily weight gain and reduced DM intake/die and feed conversion index compared to late administration. This trial further confirms the importance of satisfying nutritional requirements during the first months of life in buffalo species, due to the fact that these animals are not able to show a compensative weight gain like bovines.

Key words: Buffalo, Beef production.

INTRODUCTION - In previous studies (Zicarelli et al., 2005; Zicarelli, 2006) it was demonstrated that buffalo calves 300 days old showed a mean daily weight gain of 800 g/die, although a diet characterized by 0.89 MFU/kg of dry matter (DM) was administered. Furthermore, these animals were not able to perform a compensatory growth. The aim of this study was to verify the most suitable age for the administration of a high energy diet to improve growth rate of buffalo calves. In order to do so, 6 groups of buffalo calves were fed a 0.90 MFU/kg DM diet, starting at different ages (148 to 596 days).

MATERIAL AND METHODS - The trial was carried out on 240 male buffaloes, 90-100 days old which were weaned at 80 kg. After weaning, the animals received a diet characterized by 0.80-0.85 MFU kg/DM and a 50:50 forage:concentrate ratio *ad libitum*. Starting from a mean age of 148 (Group 1), 218 (Group 2), 302 (Group 3), 320 (Group 4), 374 (Group 5) and 596 (Group 6) days, a diet characterized by 0.9 MFU/Kg dry matter (DM), 14% CP and 38:62 forage:concentrate ratio (Diet A) was administered *ad libitum*. Weight gain was monthly recorded until slaughtering that was performed at approximately 400 kg. Unfortunately, due to market requirements, buffaloes were slaughtered at different weights and ages. For this reason, the performances obtained at 400 kg and 550 days were recorded and analyzed. The weight at 400 days was obtained by interpolating the weight at different ages. It is worth pointing out that weights and growing rate of buffaloes slaughtered after 400 kg and 550 days, weight and age reached from all subjects, were also recorded. The results were analyzed by ANOVA and regression coefficient analysis.
RESULTS AND CONCLUSIONS - Buffaloes which received diet A starting from a mean age of 148 days, weighed 486 kg at 550 days (Figure 1). The age at which diet A was administered was inversely correlated ($R = -0.689^{***}$) to the weight of 400 kg (Table 1) and, consequently, directly correlated to the body weight gain (Figure 2). Dry matter intake/die resulted lower in the animals which received Diet A within 302 days (Groups 1, 2 and 3) compared to those (Groups 4, 5 and 6), which received Diet A later (Figure 3). These differences were present either if live weight (400 kg) or age (550 days) were considered. The body weight gain tended to increase between 350 and 400 days and at 550 days in Group 1 (Table 2). In the other groups it always increased after Diet A administration, with the exception of Group 3. Interestingly, in Groups 3, 4 and 5 the daily weight gain (DWG) decreased after a period during which it was higher than 1 kg. Although the diet was administered *ad libitum*, a mean body weight gain of 1.2-1.3 kg was recorded only in Group 3 between 400 and 500 days. DM intake increased until 345 kg (Figure 5), while it progressively decreased in relation to body weight (from 2.8% to 1.6% of live weight).

Figure 1. Live weight (kg) in relation to the age (days) at which administration of the diet with 0.9 UFL/Kg begun.

![Graph](image1)

Figure 2. Daily weight gain (kg) from birth to 400 kg, in relation to the start (age in days) of diet A (0.9 MFU kg DM) administration.

![Graph](image2)

Table 1. Age (days) at which the subjects reached 400 kg of live weight and daily weight gain from the birth, in relation to the start of diet A (0.9 MFU kg DM) administration (age).

| group | 1  | 2  | 3  | 4  | 5  | 6  |
|-------|----|----|----|----|----|----|
| Age days | 458 | 540 | 568 | 618 | 619 | 636 |
| IPG (kg) | 0.797 A | 0.676 B | 0.643 C | 0.590 D | 0.590 D | 0.574 D |

Similarly to what observed in a previous trial (Zicarelli *et al.*, 2005), the late administration of diet A did not allow a compensatory offsetting DWG, as usually demonstrated in cattle. This phenomenon may be due to the fact that DM intake is stable until the animals reach a critical body weight, after which DWG lowers. The results of this trial demonstrated that, in order to correctly evaluate the growth parameters in buffalo species, it is necessary to take into account its growing since the birth.
Table 2. Daily weight gain in different range of age.

| Days of age | 1    | 2    | 3    | 4    | 5    | 6    |
|------------|------|------|------|------|------|------|
| 150        | 0.615| 0.463| 0.436| 0.488| 0.558| 0.522|
| 250        | 0.775| 0.575| 0.436| 0.488| 0.558| 0.522|
| 300        | 0.850| 0.698| 0.436| 0.488| 0.695| 0.691|
| 350        | 1.121| 0.800| 0.456| 0.863| 0.596| 0.200|
| 400        | 1.045| 0.876| 0.912| 0.741| 0.748| 0.400|
| 450        | 0.769| 0.876| 1.316| 1.240| 0.841| 0.600|
| 500        | 0.754| 0.840| 1.285| 0.537| 1.166| 0.800|
| 550        | 1.078| 0.840| 0.615| 0.257| 0.194| 0.300|
| 600        | 0.840| 0.440| 0.333| 0.268| 0.700|
| 650        | 1.010| 0.660| 0.300| 0.640| 1.212|
| 700        | 0.996| 0.800| 0.160|
| 750        |      | 0.862| 0.200|
| 800        |      |      | 0.410|

Figure 3. Dry matter intake (kg dm/d) and feed conversion index (quantity of DM utilized for increasing 1 kg of live weight), in relation to the start of diet A (0.9 MFU kg DM) administration (age) between weaning and the weight of 400 kg (W) or the age of 550 days (A).
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