

Improving Animal Feed Resources and Technologies

Low per unit animal productivity in Pakistan can be mainly attributed to poor nutrition, which includes inadequate feed resources, nutritional imbalances, inappropriate feeding practices and seasonal variation in supply of fodder. Feeding contributes 65-70% of the total production cost for milk, meat and eggs. By adopting appropriate feeding practices, 20-30 % livestock productivity can be increased and production cost can be significantly reduced. PARC research is mainly focused on nutritive evaluation of feedstuffs, feeding systems, economical feed development (for ruminants and poultry) and on development of nutritional technologies for efficient livestock production, feedlot fattening for meat production and fodder production and its conservation for livestock.



Mineral Profile of Feed Stuffs and Supplementation of Minerals to Doing Animals

- Mineral contents were higher in *Rabi* fodders than in *Kharif* fodders.
- All minerals were higher in wheat straw as compared to sorghum stovers except calcium.
- Minerals were higher in oilseed meals than cereal grains, cereal by-products except phosphorus which was higher in wheat bran.
- Calcium and phosphorus supplementation as per NRC requirement and 20% above this level increased milk production by 10.5%, milk fat by 7% and total solids by 5% in lactating buffaloes and improved reproductive performance.
- Mineral supplementation to lactating buffaloes at private farms increased milk production by 0.5 - 1.0 liter per day (Figure 1).

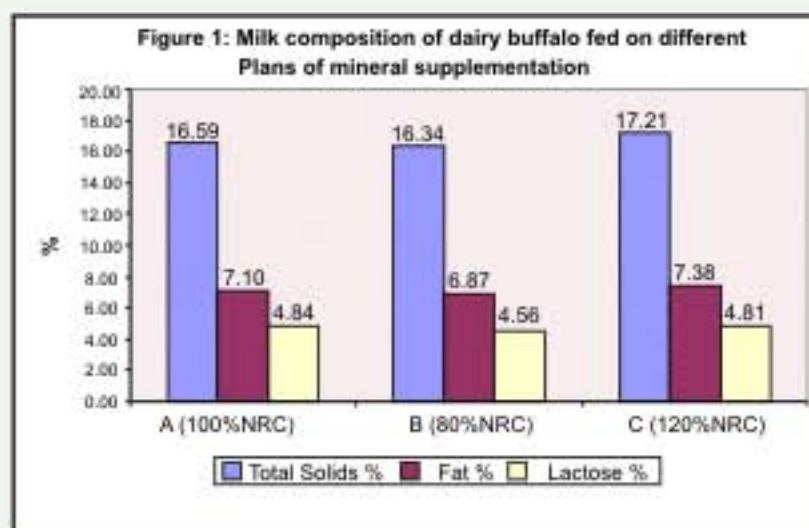
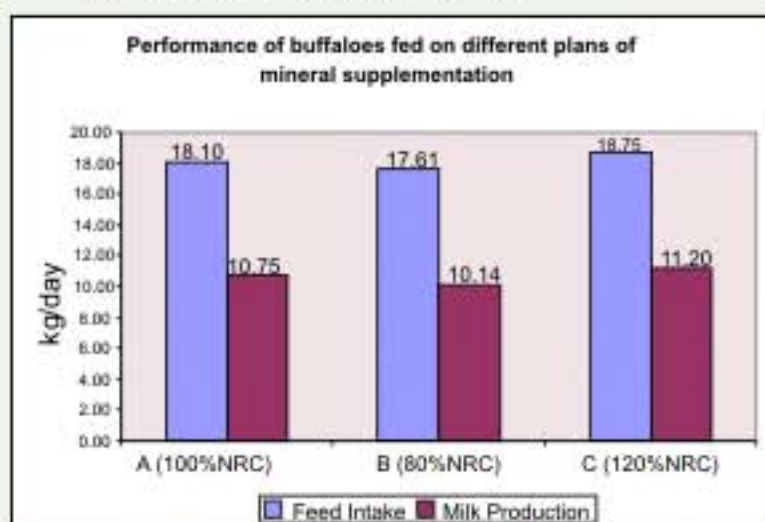


Figure 2. Newly born buffalo calf Being reared on milk replacer

- Buffalo calves performed equally good on milk replacer and early weaning diet and cost of feeding per kg body weight gain was 57% less than whole milk feeding.
- Maize grain contained more metabolizable energy (3405 kcal/kg) than rice tips (3345 kcal/kg) and wheat (3212 kcal/kg) for poultry.
- Microbial inoculants improved fermentation characteristics of oat silage.

Fattening studies on male-lambs of five native sheep-breeds and kids of two native goat-breeds at AZRC, Quetta

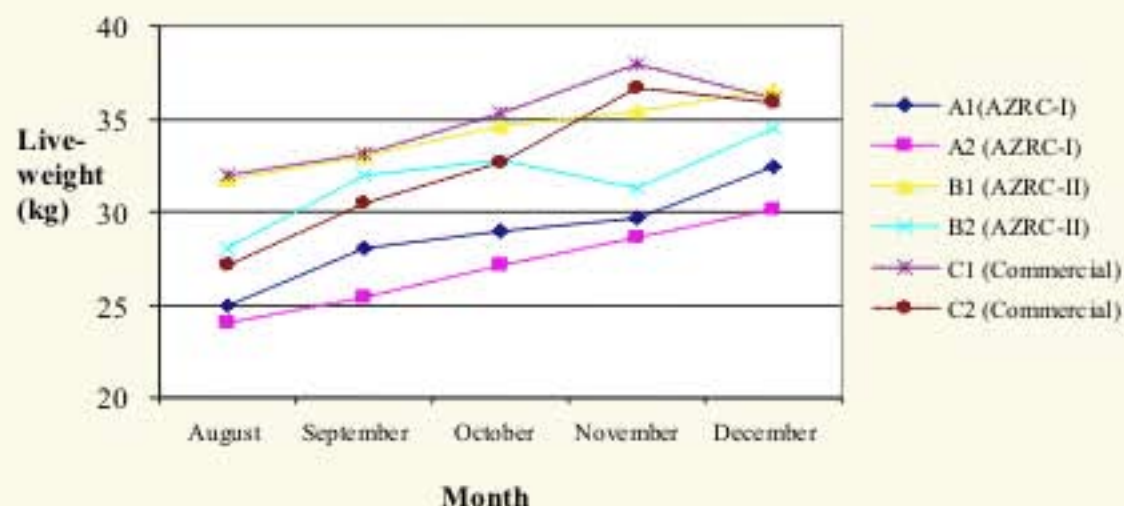
- Feeding trial on lambs and kids at AZRC, Quetta showed that the highest live-weight gain (14.00 kg) was in Shinwar breed lambs, followed by Bibrik (12.54 kg), Harnai (12.35 kg), Rakhshani (10.88 kg) and Balochi (6.59 kg) lambs. Kids of Khurasani breed gained higher live-weight (10.77 kg) than Lehri breed kids (7.49 kg). The average daily feed consumption was also higher by Shinwar breed lambs than others.

- Cost benefit analysis showed higher net profit per lamb of Bibrik breed (Rs. 612/-) followed by Shinwar (Rs. 606/-), Harnai (Rs. 560/-), Rakhshani (Rs. 511/-) and Balochi (Rs. 233/-). Khurasani breed kids showed higher net profit (Rs. 488/-) than Lehri breed kids (Rs. 287/-) during 127 days of feeding experiment.

Farmers' Lambs Fattening Experiment at Tomagh

- Three fattening rations i.e., two (AZRC I & II) formulated at AZRC and one commercial feed (III) procured from local manufacturer were offered to six lamb groups i.e., A & A1 (I), B & B1 (II) and C & C1 (III). Two rations prepared at AZRC contained same CP (15.25%) and TDN (65-68%) levels with different feed ingredient composition, while commercial feed contained 15.39% CP and 90.98% TDN. The rations were offered @ 0.5 kg per lamb per day during the study period (August 13- December 13, 2007).
- An overall average increase of 6.75 kg, 5.60 kg and 6.45 kg in live-weight was noted in lambs of group A & A1, B & B1 and C & C1, respectively. Lambs in all groups showed continuous increase in live-weight gain throughout the experimental period (Figure 3). Lambs in groups A & A1 and B & B1 fed rations I & II, respectively showed net profit between Rs. 334/- to 511/- per lamb, while lambs in group C & C1 fed ration III showed profit of Rs. 440/- per lamb.

Figure 3. Effects of different rations on live-weight gain of farmers lambs at Tomagh during 2007



Farmers' lambs Fattening Experiment at Pishin

- Four farmers' flocks were also selected and registered at Pishin for lamb fattening experiment as four groups A, B, C and D. Almost all the lambs were of the same age (5-6 months) and breed (Shinwar). The above three rations were used to fatten the lambs and offered @ 500 gram/day/head during the experimental period. Rations I & II were offered to lambs of group A & B and ration III to C & D group lamb.
- Overall average higher live-weight gains (11.44 kg) resulted in C group lambs, followed by lambs in group B (10.97 kg) and A (9.70 kg); and lower in lambs of group D (3.88 kg) during the experiment (Table 1). Lambs in group D suffered from pneumonia that resulted in low weight gain and high mortality (60%), even after the vaccination. The experimental lambs in all the four groups showed continuous increase in weight gain throughout the experimental period (Table 1).

Table 1. Lambs weight gain fed on three different rations farmers' flocks at Pishin

Farmer/ Lamb group	No. of lambs	Treatment/ Ration	Initial wt (kg) on 04.9.2007	Final weight (kg) on 30.11.2007	Net weight gain (kg) 87 days
A	20	I	30.77	40.47	9.70
B	19	II	35.97	46.94	10.97
C	8	III	31.81	43.25	11.44
D	10	III	51.62	55.50	3.88

- The indigenous feeds of maize fodder, oats fodder, sorghum fodder, wheat straw, oat straw, barley straw, cottonseed cake, rapeseed cake, sunflower meal, canola meal, corn, wheat broken, rice broken, barley, oats, peas, wheat bran, rice polishing, corn gluten feed, molasses and corn cobs. collected from different sources were analyzed for macro and micro mineral composition viz. calcium (Ca), phosphorus (P), magnesium (Mg), potassium (K), sodium (Na), iron (Fe), manganese (Mn), zinc (Zn), copper (Cu) and cobalt (Co)
- Calcium and P contents of cotton seed cake, rape seed cake, wheat, rice broken and molasses were 0.25% and 1.39 %, 0.65% and 1.50%, 0.06% and 0.39 %, 0.01% and 0.35 % and 1.20% and 0.18 %, respectively. Sodium and K contents of wheat straw, sunflower meal, corn, wheat bran and molasses were 0.33% and 1.54 %, 0.14% and 0.93 %, 0.07% and 0.36 %, 0.04% and 1.46 % and 0.27% and 2.97 %, respectively.

