

Andrzej SZANIAWSKI

COMPARISON OF DIGESTIBILITY OF FEEDINGSTUFFS WITH
DIFFERENT PROTEIN RATIOS FOR CALVES OF DOMESTIC CATTLE
AND OF BISON, *BISON BONASUS* (L.)

PORÓWNANIE STRAWNOŚCI PASZ O RÓŻNYM STOSUNKU
BIAŁKOWYM U CIELĄT ŻUBRA, *BISON BONASUS* (L.) I KROWY

In May and June 1958, an attempt was made in the Experimental Breeding Station of the Polish Academy of Sciences at Popielno at comparing the ability to digest feedingstuffs of calves of domestic cattle and of bison, *Bison bonasus* (L.). The comparison was undertaken in order to check the correctness of the assumptions of certain authors that the bison requires a smaller amount of protein in its food, and has a greater ability to digest fibre than domestic cattle.

Animals selected for the experiment were of the same sex (♂♂), aged 6 months, i.e. at the moment of transition to vegetable feedingstuffs without the addition of milk. The following foods were used for the experiments: 1. processed potatoes, 2. green succulent feed (papilionaceous-grain mixture), 3. concentrate mixture I (barley meal, crushed oats, bran), 4. concentrate mixture II (soya meal, barley meal, bran).

Table 1

Chemical composition of feedingstuffs used (in %).

Components Feedingstuffs	Dry matter	Raw ash	Total protein	Raw fat	Raw fibre	Extracted nonnitro- genous bodies	True protein
Concentrate mixture I	75.4	2.19	9.8	6.0	5.2	52.2	7.9
Concentrate mixture II	86.6	3.6	23.5	5.0	4.0	50.4	23.1
Green succu- lent feed	20.0	1.9	3.6	1.0	5.5	8.0	3.1
Processed potatoes	18.6	1.4	1.5	0.7	1.0	14.0	1.1

The experiments were made using the classic method with two repeat tests: I. with loose protein ratio (approx 1:14), II. with firm protein ratio (approx. 1:3). Each repeat consisted of 3 stages:

- a) preparatory — during which dosage was worked out,
- b) initial — aimed at determining the digestive processes of the experimental dosage of food,
- c) true period — during which dung was sampled, using a rubber harness with attached dung collector.

Table 2.

Coefficients of digestibility of doses of feedingstuffs with different protein ratio for domestic and bison calves.

	Calf	Total protein	True protein	Raw fat	Extracted nonnitrogenous bodies	Raw fibre
Coefficient of digestibility with loose protein ratio	bison	58.9	52.1	73.1	80.8	22.2
	domestic	57.3	62.7	75.6	82.4	23.9
Difference		+1.6	-10.6	-2.5	-1.6	-1.7
Coefficient of digestibility with firm protein ratio	bison	85.8	87.7	77.2	87.7	64.8
	domestic	87.1	89.1	80.3	89.9	77.2
Difference		-1.3	-1.4	-3.1	-2.2	-12.4

Table 3.

Increase in body weight in relation to initial weight.

Protein ratio	Bison calf	Domestic calf
Loose	3.5 %	4.0 %
Firm	4.0 %	3.4 %

The feedingstuffs and dung were analysed, and the results are given in Table 1. On the basis of the data obtained the coefficients of digestibility for each of the components of the feeds were calculated for both animals (Table 2). Comparison of the coefficient of digestibility and of the weight increases of the animals (Table 3) in both repeats of the experiment would appear to indicate that the requirements of the bison calf are not smaller than those of the domestic calf as regards quality of food and protein in the feed dosage.

Inst. of. Exp. Animal Breeding in Warsaw, Polish Academy of Sciences.