7. BUFFALOES

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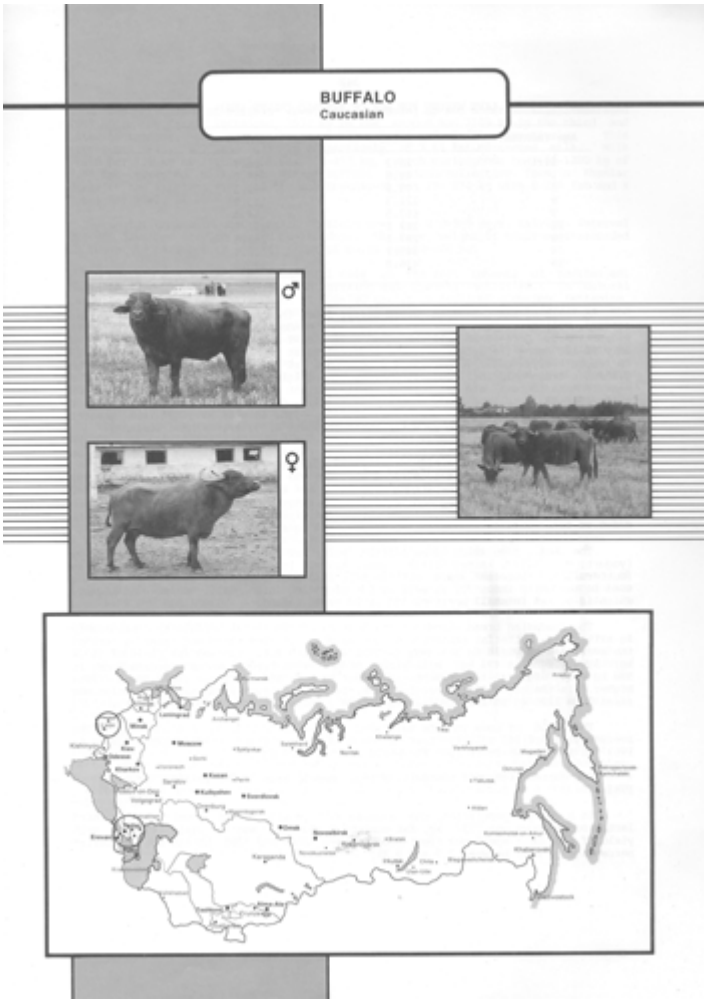

In the USSR Asian buffaloes (Bubalus bubalis) are kept in Transcaucasia and in the lowland areas of Dagestan, Checheno-Ingushetia and Ossetia (Table 7.1); in the past they were raised in the Crimea and in some districts of Stavropol. Azerbaijan accounts for more than 70% of the entire stock of buffaloes in the country. The bulk of these animals are concentrated in the northwest and southeast of the Republic, in the lowland and piedmont zones. They are especially widespread in the Sheki-Zakataly area (23.8%). (see Table 7.2

Table 7.1 BUFFALO POPULATION IN THE USSR
(1 January 1985)

Azerbaijan	308	200
Georgia	49	500
Russian Federation (North Caucasus)	23	400
Armenia		600
Ukraine (Carpathians)		500

In Georgia buffaloes amount to 10% and in Armenia to 5-6% of the cattle populations. Buffaloes are water-loving animals; therefore they are kept in areas with a profusion of water (rivers, ponds and other water bodies).

Table 7.2 BUFFALO STOCK IN AZERBAIJAN

Year	Total number	% of cattle population
1980	365 612	22.22
1981	335 103	20.00
1979	337 867	23.00
1982	322 337	18.73
1983	309 865	18.00

Buffaloes in the Soviet Union are of Indian origin but they have existed in Transcaucasia from the earliest ¦ times as testified by archaeological findings of skulls and other bones dated to the 1st millennium B.C. Caucasian buffaloes are similar to some Indian breeds e.g. Nili-Ravi.
The buffalo population of the Caucasus and Transcaucasia is a product of popular selection. Under the impact of specific economic conditions different buffalo types were formed. In areas where there was an active trade in agricultural products and other goods, a buffalo type having a coarse constitution and long strong legs developed. Some authors considered this a large-sized type. It was a perfect draft animal and was used as such in all parts of Transcaucasia. A small buffalo type developed in the Shirvan and Mugan regions; it had good milk and meat features and because of the latter it became widespread.
Buffaloes in the southeast of Azerbaijan were, in the past, influenced to some extent by the Iranian buffalo.
The local buffalo had, according to I.I. Kalugin's data, the following faults in conformation: roof-like back, sloping rump, crooked legs, underdeveloped udder (goat-like and round forms), short trunk, high crest and poorly developed forequarters. This primitive type prevailed in the population. The milk yield of buffalo cows was 700-800 kg, the butterfat content being 7.5% and the fat yield totalling 53-60 kg per lactation. According to A.A. Kalantar (1885), the best cows in Azerbaijan yielded 640 kg of milk. The live weight of mature buffalo cows was 410 kg, the slaughter yield reaching 42-45%. Because of the all-year pasture management of buffaloes, their sexual activity and calving was seasonal: calving occurred in summer. The calving interval was often 450, sometimes 500 days, the service period being 150 days or more and lactation length 150-180 days. Buffalo cows were notable for their strong maternal instinct, typical of primitive animals. Milking of

cows, especially of first-calf heifers, was a most difficult business. Very often cows calving for the first time did not allow milkers to approach them for a long time.

All this required a radical transformation with the aim of improving productivity and overcoming serious conformation faults. Much effort was needed to eliminate features which are characteristic of wild forms (not permitting milking, for example).

To carry out effective breeding work, in 1935, Kirovobad state buffalo breeding station was set up in Azerbaijan because this republic has the greatest number of buffaloes. Within reach of the station special buffalo breeding farms were set up. Directions for buffalo breeding have been worked out and implemented, including judging guides, standards for animal appraisal and recording in herdbooks, instructions for artificial insemination and for rational feeding and stall barn housing, measures to prevent barrenness and to promote productive buffalo breeding. The long selection work created the Caucasian breed, which is noted for its high milk and meat production. This breed was approved (recognized) in 1970.

The main prerequisites of this breed were adaptability to local conditions, resistance to diseases and strong constitution. Buffaloes tolerate foot-and-mouth disease better than cattle; they are not affected by anthrax - no cases of this disease have been recorded - nor by gadflies; brucellosis can be detected but only clinically; no miscarriages have been observed.

In developing the breed, pure breeding of local buffaloes, including inbreeding, was used. The work was done through selecting and matching the best specimens and providing for optimal feeding and management. Evaluation and selection of the young stock was done according to origin, live weight at birth and at later ages. Both positive and negative assortative mating were used.

The buffalo breeding farms in Azerbaijan at present use the tied stall system in winter and camp and pasture management in summer. Calves are reared en masse by group suckling. Machine milking is practised.

The conformation of the Caucasian buffalo breed is as follows: large head with coarse features and narrow forehead; large well-developed thick horns, occasionally polled; long broad ears; long neck; back short or of medium length, broad, slightly roof-like or straight; the small of the back is long, broad and straight; the rump is raised and the belly voluminous. Buffalo cows of the Caucasian breed have a rounded and bowl-like udder with well-developed glandular tissue; teats are long and correctly set. The hair coat is not dense. The prevailing colour is dark brown to black; some individuals have a white spot on the forehead. The tail tip is white. Legs are long and thick. Among the faults of conformation are: front legs too close together, sloping and roof-like rump.

Table 7.3 LIVE WEIGHT FOR AGE OF BUFFALO CALVES (KG)

Age (months)	Males	Females
Birth	26.2	25.3
1	41.8	40.0
3	73.9	71.2
6	121.3	113.9
9	167.5	154.4
12	212.1	191.6
18	287.1	255.6
24	345.7	300.4
36	436.0	376.0

Animals of the Caucasian breed differ from the original form in their taller stature, well-developed brisket, middle and hindquarters. The build is well proportioned. More than half the cows have a bowl-shaped udder, as compared with only 11-12% among the original stock, udder girth at the base being 97-100 and 70-73 cm respectively. Udder weight is 4.2 kg. Cows of the Caucasian breed have 70% of glandular tissue in their udder, whereas the original strain has only 60%. The measurements of cows are as follows (cm): height at withers 132-136.1, width of chest 40.7-43.7, oblique body length 144.1-144.5, depth of chest 70.0-75.3, heart girth 194.5-196.6 and shank girth 20.3-20.8 cm. The animals have acquired greater massiveness and length of body, while cases of acute hindquarters have lessened.

In breeding Caucasian buffalo herds, three constitutional types can be distinguished: strong with high milk yield and butterfat content; compact type, similar to the milk-and-meat type of cattle, and the rangy type with gaining ability. The milk yield of cows of the strong type is 1 694 kg in 305 days with a fat content of 8.01%, as against 1 223 kg and 8.16% in the rangy type. In a number of pedigree farms the milk yield of high-yielding strong constitution cows is 2 000-2 500 kg with 8.0-8.1% fat. This is equivalent to 4 000-5 000 kg of 3.6% fat-corrected milk.

The local population uses buffalo milk for making such products as gatyg (yogurt, sour milk), kaimag (cream), shor, kyasmig (curds, cottage cheese) and airan (buttermilk). In recent years buffalo milk standardized to 3.2% butterfat is being used in the dairy industry, as well as for producing high-quality cheese and kaimag, which is packed in small portions and is in great demand.

The Caucasian breed surpasses the initial strain (local buffaloes) considerably in milk yield, butterfat content and live weight. In the third and later lactations the average milk yield in 305 days is 1352 kg, with 8.11% fat and fat yield of 109.4 kg; live weight is 473 kg. Milk yield of Caucasian breed cows in breeding farms is 536 kg (66%) higher; fat content is higher by 0.6% and total fat yield 48 kg (79%) higher. In the big buffalo-breeding farm, Dashyuz in Azerbaijan, milk production has risen from 1100 kg in 1981 to 1400 kg in 1985, while butterfat content is 8.1%.

The yield of cows in the selection groups is increasing continuously. The average yield of 141 selected cows in the herd of the state breeding farm Dashyuz in 1963 was 1435 kg while in 1983 the yield reached 1927 kg.

Fat content changed insignificantly, namely from 8.09% in 1963 to 8.17% in 1983.

In a large population, the average milk yield (of 25 cows) in the third lactation or above was 1787 kg, fat content being 8.1% and fat yield 145 kg. Milk yield of the best specimens fluctuated between 2080 and 3760 kg and the butterfat percentage in milk between 7.7 and 9.3%.

The milk yield of buffalo cows, after steaming up and udder massage, averaged 1547 kg in the first lactation, 1837 kg in the second and 2109 kg in the third and later lactations, fat content being 8.27%, 8.42% and 8.40% respectively. This represents 3620, 4278 and 4643 kg respectively of 3.6% fat-corrected milk. Milk yield per 100 kg of live weight was 450-460 kg, which corresponds to 1160-1200 kg of 3.6% fat-corrected milk. At Nizami buffalo breeding collective farm in Khanlar district the lifetime yield of the cow Shykhly-31 was 19 874 kg with 8.24% fat and a total fat yield of 1585 kg.

Lactation length of Caucasian buffalo cows is 270-300 days, calving interval 350-400 days and service period 60-100 days. The live weight of adult cows recorded in the state herdbook is 500 kg; that of bulls is 650-700 kg.

Buffalo meat plays an essential role in the meat balance of Azerbaijan. Buffaloes are known for their good grazing and feeding abilities. On natural pastures their average daily gain is 600-700 g; it is 800-1000 g during fattening. Slaughter yield is 43-53%. At the age of 18 months animals weigh 300-320 kg and 350-360 kg after intensive fattening. Hides are valuable raw material for leather production. The average hide weight is 25-30 kg and the maximum 50 kg; the thickness is 4-9 mm. The flesh of adult buffaloes is less palatable than that of cows and oxen, being coarse-fibred. The meat of young buffaloes, slaughtered at the age of 1.5-2 years, is notable for its good taste, juiciness and high protein content.

Buffalo cows of the Caucasian breed are known for their good reproductive ability: calving rate averages 85%, whereas in the original strain it is only 60-70%. With artificial insemination the conception rate is 84% or more.

One essential for improving the Caucasian buffalo is- the selection of cows adapted to machine milking (as regards udder shape, rate of milk flow and equal development of the quarters).

Milk yield of buffalo cows in test farms in the first lactation is 1150-1250 kg, in the second 1250-1500 and in the third and later lactations 1500-2500 kg, with a fat content of 8.0-8.1% and protein 4.7-5.0%. The live weight of mature cows is 480-500 kg, the speed of milk flow 0.7-1.01 kg/min and the udder index 40%.

In recent years the Caucasian breed is being improved by sires of Indian x Bulgarian breeding imported from Bulgaria. The results obtained are promising and are improving the Caucasian breed in early maturity and milk yield. It is possible to mate the crossbred heifers at the age of two years instead of three or more.

The main method being used at present to improve the Caucasian buffalo breed in Azerbaijan is intensive individual selection of bulls on the basis of their progeny test for conformation, constitution, milk yield, protein and fat content. At the same time blood of the Indian Murrah breed, which has a higher milk yield, is being introduced to produce a new type which better meets the requirements of industrial technology.

The development of buffalo breeding in Azerbaijan is the basis for promoting this species in areas where ecological conditions are suitable and can be put to better use i.e. lowlands with abundant bodies of water in Georgia, Armenia, Dagestan, Ossetia, Checheno-Ingushetia and in some southern regions of Ukraine. These zones previously had many buffaloes and are now resuming buffalo rearing as a complement to dairy cattle raising.

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