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## Case study of Azerbaijan on animal recording. Breeding and management strategies of Buffalo

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The situation of buffalo reproduction in Azerbaijan was first examined in 1926 under the leadership of E.E. Kaluga. Later, this work was chaired by A.A. Agabayli (1950-1967) who learned exterior, constitution, productivity and fodder problems in the maintenance and caring of young buffalo. Buffaloes have always been the most valuable genefund of Azerbaijan.

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### Introduction

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*Table 1. Trends and recent changes in the total number of buffaloes in Azerbaijan.*

Category	Unit	Year				
		1995	1996	1997	1998	1999
Total number of buffaloes	'000 heads	291.9	298.0	302.0	293.3	288.8
Mother buffaloes	'000 heads	122.9	128.0	134.9	135.5	132.3

*Table 2. The past situation in the total number of buffaloes and different production in Azerbaijan.*

Category	Unit	Year		
		1982	1987	1988
Total number of buffaloes	'000 heads	105.9	128.4	126.8
Mother buffaloes	'000 heads	25.8	29.0	29.5
Milk production	'000 tons	26.9	27.5	28.4
Average milk production per lactation	Kg	1 086	1 024	1 019
Calf crop	%	69	68	68

*Table 3. The approximate overall input level of the production environment in Azerbaijan in 1999.*

Category	Four State Pedigree farms				Total
	Dashuz	Devechi	Zardob	Khanlar	
Total number of buffaloes, heads	279	315	57	273	1 224
Mother buffaloes, heads	87	92	82	84	345
Milk production, tons	27.1	19.0	16.7	55.5	118.3
Milk production per lactation, kg	525	152	141	542	312
Calf crop, %	66	37	26	62	45
Pedigree sale, heads	15	10	10	25	60
Average body weight, kg	290	290	290	290	290
Meat production, tons	9.5	19	34.8	6.9	88

*Table 4. Approximate number of recorded buffaloes.*

Category	Year	
	1999	2000
Number of recorded buffaloes (on State pedigree farms), herds	474	563

Before reforms there were 45 pedigree farms of buffaloes in the kolkhozes and sovkhoses of Azerbaijan. There were about 50 State Pedigree Amalgamations in all the regions of Azerbaijan. These State Pedigree Amalgamations carried out selection-pedigree work, annual evaluation, individual registration, milk production and fat registration, etc. They recorded all categories of animals maintained in all sovkhoses and kolkhozes. After reforms, the activity of these State Pedigree Amalgamations stopped. Now only four State Pedigree Farms remain. The approximate total number of recorded buffaloes of these State Pedigree Farms is about 400-563 heads.

Animal categories involved in the recording process:

- All offspring

### **Purposes of the system**

- On-farm health decisions (free vaccination) and farm breeding decisions.
- Before reforms all kolkhozes and sovkhoses and all of the State Pedigree Amalgamations used records for farm breeding decisions. The Republic State Pedigree Amalgamation (RSPA) used records for central breeding decisions. The veterinary laboratories in parallel used records for health decisions (for carrying out of free vaccination). The Azerbaijan Research Institution of Animals used records mainly for research purposes.

- The RSPA produced technical monthly, quarterly and annual records and sent them to the farms (kolkhozes and sovkhoses). The reports included: the total number of buffaloes on the farms, milk and meat production, offspring, average daily increase, average fat percentage, buffaloes slaughtered, average milk yield, sold breeding buffaloes and feeding, reproduction etc.
- Now most private farms use hand kept records for controlling farm activity and help decision-making in farm management. The State Pedigree farms and the RSPA used records for farm breeding decisions and the veterinary laboratories used records for health decisions. The Azerbaijan Research Institution of Animals used records mainly for research purposes.

- eartags;
- ear painting;
- tweezers.

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**Type of animal identification employed**

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For estimation of exterior of cattle, measurements were taken from measures implements:

- measured stick;
- measured compasses;
- measured ribbon.

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**Traits measured, frequency, etc.**

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The most widespread measures are the following:

- By measured stick
  - small of the back height;
  - depth of breast;
  - breadth of breast behind the shoulder-blades;
  - slanting length of body, etc.
- By measured ribbon
  - slanting length of body (such as by measured stick);
  - straight length of body;
  - circumference of breast;
  - circumference of heel.
- By measured compasses
  - slanting length of croup;
  - slanting length of back;
  - measures of head (length of head, length of frontal (forehead), etc.

Every year in October, the estimation of the exterior of cattle are taken by State Pedigree farms.

RSPA had produced and sent forms to the farms:

- Form 1- pedigree sire card;
- Form 2 - cows registration card;
- Form 3 - dry and breeding of animals;

- Form 4 - calves registration;
- Form 5 - analysis of milk productions;
- Form 6- milk control list, etc.

The number of forms has now been reduced. Before reforms we only had the social sector. Privatisation has already come to an end. Only a small part of animals remained State property (on Pedigree Farms) but the others were privatised as a whole. The farming structure in Azerbaijan consists of 36 000 peasant (farmer) housekeepings. About 96 percent of buffaloes are maintained in small herds (1-10 heads). The supporting services of AI, milk recording, genetic evaluation and milk marketing systems are not available. When breeding bulls are selected, we give more emphasis to milk and meat production. In the past and at present, an aggregate index has built up from both milk and meat productivity.

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**Other information collected**

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- pedigree;
- milk production;
- health;
- development;
- weight;
- constitution, etc.

Information on health includes fertility, calving interval, age at first calving, mortality, strength.

Types of analyses of crude data: on-State pedigree farms.

Data are not computerised and stored

We have registers on paper (see section above on Traits, measures, frequencies, etc.). There is an exchange of buffaloes between the four State Pedigree Farms in order to avoid inbreeding.

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**Government and farmer involvement**

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- State pedigree farms: very little financial support is given from the Government.
- On farmer farms: at their own expense.

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**Who pays the recording**

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Before reforms (until 1990), Government paid for the recording, now it is the State Pedigree farms who pay.

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**Genetic improvement programme**

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During the period of the Soviet Union reign we had genetic improvement programmes (plans) for buffalo. These genetic improvement programmes were prepared every ten years. Now the State Pedigree farms do not have the financial possibilities to continue these programmes. The programmes have not stopped now, but it is very difficult to continue their operation.

All females and all bulls are evaluated every year.

At present, on State Pedigree farms about 300-500 heads of buffaloes are evaluated and the level of carrying out evaluation is very low.

In the past each of the 60 buffalo farms evaluated 2 127 bulls and 34 042 mother buffaloes every year. Then and now State Pedigree farms evaluated their own animals jointly with the zooengineer-selectioner from RSPA and from the Ministry of Agriculture and determine class, age and other indexes. On the basis of these indexes the following are decided:

- to cull less productive or less desirable bulls from a herd; or
- to remain; or
- to sell.

On the four State Pedigree farms about 18-20 bulls (15-20 mother buffaloes per bull) are evaluated every year and these bulls are used for natural insemination. However, there are no AI stations of buffaloes and no official progeny test of bulls. In the past on all 60 buffalo farms and now on all of the four State Pedigree farms, the selection of bulls was made through the data collected on buffaloes.

See section on Traits, Measurements, etc. and previous section. It is not possible to answer this question in more detail as a lot of documents have been destroyed.

The State Pedigree farms are responsible for the genetic evaluation. See a former section. Twenty persons (on small farms) and 40-50 persons (on large farms) were at each Pedigree Amalgamate. They were in subordination of the RSPA and of the Ministry of Agriculture, but they served farms by agreement (contract).

There are no natural breeding stations in Azerbaijan, therefore private farmers keep their own bulls or borrow the bull from other farmers or from pedigree farms (if the farm is near the pedigree farms). The State Pedigree farms serve about 15-20 mother buffaloes for each bull every year and the female buffalo is left with the bull for mating.

The farms buy them. The price of a young proven bull is about US\$500 (proven young female is about US\$300-350). The price of an old proven bull is about US\$1 000 (proven young female US\$700).

The price of a young non-proven bull from another farmer is about US\$250 (female is about US\$150-170) and old non-proven is about US\$500-600 (female is about US\$300-350).

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**How is the genetic merit established?**

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**Organization responsible for the genetic evaluation**

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**Genetic improvement distributed throughout the country**

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It is very important to specify if some kind of genetic improvement programme was established in the past but finished for some reason, describe the reasons.

- The Azerbaijan Scientific-Research Institute of Pedigree Cattle Breeding for fifty years (1951-1999) developed and applied methods, technologies and systems of feeding, breeding, reproduction and AI of buffaloes. Numerous large buffalo farms were established with pedigree buffalo stock. The Republic of Azerbaijan within the USSR was the only republic where buffalo breeding was a traditional and widely developed branch of agriculture: 85 percent of buffaloes bred in the USSR came from Azerbaijan, while 15 percent of buffaloes in other republics also originated from Azerbaijan. All scientific projects in the former USSR concerning buffalo breeding were coordinated from Azerbaijan.
- Thus, it was not pure chance that in the beginning of the 1960s, we (Dr. E. Bashirov) had to undertake a very important mission to select and to send from India (Bombay) to Bulgaria by sea transport (former USSR ship) buffaloes, Murrah strain. Later Bulgarian scientists created a world-known, highly-productive buffalo strain "Bulgarian Murrah". Representatives of this strain are used in Azerbaijan as a pedigree stock for cross-breeding with Caucasian buffalo.
- We keep separate pedigree records for Murrah cross-bred buffaloes and for pure-bred Caucasian (now called Azerbaijanian) buffaloes. Only about ten old mother buffaloes are Murrah in Dashuz. Almost all of the total 132 295 mother buffaloes of Azerbaijan are Azerbaijanian (Caucasian) buffaloes. All bulls and mother buffaloes kept at Dashuz, Devechi, Zardob and Khanlar are also Azerbaijanian buffaloes.
- It may be that there are some Murrah cross-bred on private farms, but no information is available.
- Unfortunately, during the transition period, after the USSR collapse, we are facing many difficulties and problems in buffalo breeding. Privatisation of cattle growing farms was quite successful, in particular that of buffalo-growing farms (the former sovkhoses and kolkhozes). However, in general the establishment of new buffalo-rearing farms is behind the times due to the shortage of finances and a few buffalo farms are facing numerous difficulties, related mainly to financing. The selection and improvement of buffaloes are now carried out spontaneously.
- To date, there has been no coordination-consulting centre in the Republic on buffalo-breeding. This also adversely affects research activity and practical work in this area. The number of buffaloes in many regions of the Republic is reducing. Valuable pedigree cattle are used for slaughter.

However, in the Republic of Azerbaijan we have all the necessary conditions for the organization of a specialised coordination-consulting centre on buffalo-breeding with FAO on buffalo-breeding, with experimental farms (both usual and pedigree cattle rearing farms), land sites, feed stock and personnel.