The Busha cattle – a breed originated in middle ages made for the 21st century?

This paper is a work in progress.

**Keywords:** Busha, cattle, Brachyceros, Kosovo

1. **Introduction**

Nowadays native cattle breeds are hardly found in modern industrial dairy and meat production. Commercial breeding focuses on high output of milk or rapid growing of the cattle to minimize costs of holding animals and maximize efforts. Economically, it is useful to produce as much as possible with the smallest possible effort. But how reasonable/useful can this be for a region that cannot afford raising or feeding these “turbo” cattle?

The Busha cattle (*Bos primigenius f. taurus*) is a very original cattle breed on the Balkan Peninsula. Mostly located in the mountains, Bushas live on grass and bushes during summertime. From autumn until springtime they are kept in small stables, fed with small amounts of hay and sometimes corn or wheat. The Bushas provide the farmers and their families with sufficient milk and meat on a high quality level for the autonomic survival.

The following article will describe the advantages and disadvantages of pure Busha, synthetic Busha-commercial crosses and modern breeds at the example of the municipality of Suva Reka (Kosovo, Serbia). For this we needed to analyze data from local markets, prices of hay, corn, raw milk and life weight.

2. **Data reliability**

The Data has been surveyed in the course of many different visits to the farmers. A specific questionnaire was developed and translated into Albanian (see addenda xx). Of course, the data is dependent on the truthfulness of the farmers’ accounts. Often, the farmers do not argue scientifically, but they embed their motives and the situation of their cattle into their own family history and perspective, which is often shaded by history, tradition and the experience of war. Besides our own observations we have no other control mechanisms for the data. However, we especially observed the general performance data of those Busha cattle, their crossbreeds, veterinary service needed and personal statements of keeping Bushas.

Under the constrains of primary survey, the data is reliable, in so far as the interviews and structured questionnaires with the farmers are coherent.

3. **Busha in their environment**

3.1. **The Busha cattle**

The Busha (also Buša or Busa) belongs to an autochthon group of cattle throughout the Balkan Peninsula, including Eastern Bulgaria and Greece. All of those breeds show small height, red to grey color, dark nose, short horns (“Brachyceros”) and are mostly
located in the mountains. Relationship of Busha cattle to the following breeds is probable:

- Busha cattle of former Yugoslavia
- Rhodope cattle of Eastern Bulgaria
- Illyrian dwarf cattle in Albania
- Prespa cattle in Albania
- Brachyceros cattle in Greece
- Uncertain: Buša: Region of Lika, Croatia (Curic I., Dzidic A., 2004)
- Uncertain: Indigenous breeds of Turkey (Turkish grey, Eastern anatolian red, Native black cattle, Southern yellow red)

The performance of the kosovarian Busha cattle is well adapted to mountain regions and hard living conditions. Keeping this as ground for this account, Bushas are long-living, used to small amounts on feed, resistant against illnesses and parasites, have high fertility and are easy in calving. Cows produce up to 1000 kg milk per lactation, one calf each year is standard. Because of the surrounding conditions lasting for centuries, Bushas are small cattle (on average 114cm), with small finishing weight (on average 260 kg) and late precocity (24 to 36 months). Because of their small weight, Bushas are optimal for pasturing the sensitive grass landscape of mountains. Farmers notice more destroying by crossbreeds and pure commercial cattle (Bytyqi H., 2006).

Bulls stay with their herd and artificial insemination is very seldom, because the sperm of Busha bulls is hardly to get. But even in those cows, which are artificially inseminated, pregnancy between 85% and 90% at first time is normal. Calves are born easily, mostly outside stables in mountain regions without any help of humans. Their living weight at birth ranges between 15 kg and 25 kg, death at birth or during upbringing period is rare (Bytyqi H., 2006). Milk of Busha cows contents the same quantity of fat as commercial breeds and is well-tasting. Until now, Busha milk has not been investigated on basic quality components, especially on fat, raw protein, minerals and vitamins.

3.2. Busha cross breeds

After World War II, farmers started to crossbreed Bushas with modern cattle like Fleckvieh, Tyrolean Grey, Brown Swiss, Red Danish and Holstein Frisian. This crossbreeding was not coordinated by governmental organizations or by the farmers themselves. Comparing these crossbreeds to pure Bushas, crossbreeds are larger at birth, grow faster and their cows produce more milk. But veterinary service is more often needed, papillomas, diarrhea etc. are more common than in Bushas. Comparing to pure commercial breeds, the cross breeds are more resistant against illnesses and parasites and need less amount of feed. So, Bushas influence cross breeds positively in natural resistance, toughness, pregnancy rate and feed conversity, negatively in performance.

Summarizing these observations, an overall view in Table 1 is given. In Busha crossbreeds performance depends on commercial breed, which is crossed in.
Table 1: Comparison Busha – Busha cross – Commercial breed

<table>
<thead>
<tr>
<th>BUSHA BREED</th>
<th>BUSHA CROSSBREEDS</th>
<th>COMMERCIAL BREEDS</th>
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| ➢ Small; small body weight
➢ Max. 10 liters per day
➢ Low dependent on humans
➢ High fertility
➢ Easy calving
➢ Resistant against illnesses and parasites | ➢ Larger and heavier than Busha pure breed
➢ Milk yield dependent on commercial breed
➢ Dependent on humans
➢ Better fertility than commercial breeds
➢ Calving problems when crossed in breed is to large
➢ Higher resistance than commercial breeds | ➢ Large; high body weight
➢ Max. 40 liters per day
➢ Dependent on humans
➢ Middle or bad fertility
➢ Problems in calving
➢ Low resistance against illnesses and parasites |

4. Economic comparison

4.1. Current situation in Municipality of Suva Reka

In 2006 and 2007, farmers could hay only once a year. The absence of snow during the winter period 2006/2007 and dry and hot weather in summertime prevented a second or third harvest. Prices upraised starting with approximately 1.40 € per bale of hay (10 to 15 kg) in April 2007 to 2.70 € - 3.50 € in September 2007. In percentage, a farmer has to pay approximately 250% more for one bale of hay. 40 kg corn rose from 6 € in April up to 16 € in September (+170%). Dairies pay not more than 0.30 €/liter milk (0.27 € in April, +11%), on market sometimes farmers get 0.90 per liter. Many farmers began to sell their cattle, just keeping a few cows to survive next winter, resulting that price for cattle did not get significantly higher since April 2007 (1.65 €/kg up to 1.85 €/kg live weight). Some farmers stopped housing cattle completely. This cleaning process allows only well situated or well economizing farmers to survive. And give those cattle chances which are low in costs and high in effort.

4.2. Comparison in dairy production

A 500 kg cow of Fleckvieh breed producing 25 liters milk a day at time of maximum lactation needs about 30 kg hay (cheapest possible quality taken for calculation) and 10 kg corn a day to fulfill its performance. In April farmer would have to pay 4.30 € just for feed and get, if he sells the milk to dairies, 6.75 € for 25 liters (+ 2.45 €). In September, he would have to buy the same amount of feed for 9.40 € and only get 7.50 € for his product. A net loss of 1.90 € a day! Not included costs for the veterinarian (artificial insemination, treatments, correction of claws, etc.) or other overhead.

Pure Busha breed is not able to produce 25 liters of milk per day. Farmers told us a maximum of 10 liters yield per day, but this amount is continuously produced by Busha cows until next calving, additional the mother cow has to feed its calf. Beginning in springtime lasting often until November Bushas live and pasture outside in the mountain regions. They leave their stables early in the morning, around 8.00
p.m. the herd returns. The whole grazing period in the summer is done without extra hay or corn.

Typical Busha farmers keep those cattle because of mainly three reasons: first of all they are easy housing animals, which do not need much feed, they are easy calving, every year a calf for sure and calving interval is shorter; secondly, vets are only needed for ear marking, vaccination and deworming. Bushas even survive fractures (for example of their legs) because of their small body weight and very good healing conditions. And, thirdly, farmers keep Bushas because of tradition. Often, Bushas were present in families for more than one century.

Busha farmers consume milk and dairy products within their family. These products are seldom sold to neighbors or in local markets. In the winter, Bushas need 15 kg hay (cheapest possible quality taken for calculation) per cow per day, sometimes farmers feed them with 2 to 3 kg corn. Therefore, farmers do not have any costs during summertime, and in the winter, if Bushas live in their stables, with prices taken from September 2007, the farmer would need approximately 4.50 € per cow per day. If a farmer would sell 10 liters milk a day, he would gain 3.00 € from diaries at the moment. If he buys milk from other farmers or supermarket, he would have to pay the usual price for 10 liters of raw milk of about 9.00 €.

In total: A farmer with one Fleckvieh cow must pay for feed for one month 129 € in April, 282 € in September (+119%). The price for raw milk raised only 0.03 € or 11% per liter (total: 202.5 € in April up to 225 € in September for 25 liters milk): A total profit of 73.5 € in April, a total loss of 57 € in September. For one Busha cow, the feeding costs also raised up by 108% (53.25 € in April, 111 € in September). The profit in April would be 27.75 €, the loss in September 21 €.

This small calculation, of course, is not quite correct. Firstly, Bushas are kept outside and do not need extra feeding. Commercial cattle do need additional hay and corn, although they pasture every day. So farmers profit of animals, which do not need much additional feeding. Second, the average output of milk of one Fleckvieh cow in Kosovo is about 15 to 20 liters daily. The reasons for this phenomenon are many and various. Hay in Kosovo is not of the same good quality as in central European states. Farmers hay too late, therefore, the raw fiber quantity is too high, important components like raw protein, minerals and vitamins are too low. To be able to milk more than e.g. 10 liters a day, farmers have to feed their cattle additionally with corn, rye, wheat and soya, furthermore with vitamins and minerals. Feeding optimal balanced food five times per day is not a standard procedure in Kosovo. The reasons for this may be: ignorance, lack of knowledge or financial problems. As a consequence, calves grow slowly, do not reach their maximum possible body weight, cows have problems with oestrus cycle and need often more than three inseminations to become pregnant. Maximum lactation cannot be noted at, for example, a mark of 30 liters, but perhaps 20 liters or even less a day.
4.3. Comparison in meat production

Prices per kg body weight correlate with season. In wintertime, the price is higher, during the summer months, when most of engagements and weddings take place in Kosovo, the price is low. Traditionally, bulls are slaughtered for these family events. In April 2007, the price was noted about 1.65 € per kg body weight, slightly higher in September 2007 (1.85 €/kg). Normally, bulls are fattened until an age of one year and sold in neighborhood or at local markets. Bulls of Fleckvieh weigh about 400 kg at this age, Busha-bulls approximately only 150 kg. Bushas cannot be compared to commercial breeds, because of their low daily increase of body weight (maximum 450 g) and longer upbringing period, definitively other breeds have advantages. Bushas’ disadvantage is minimized in crossbreeds. Crossing Bushas and commercial breeds mix advantages of both types. Bushas bring in their resistance and toughness, commercial breeds their rapid increasing body weight and higher slaughter weight in less time. Quality of Busha meat is told to be much higher than of modern breeds. Hard conditions, a lot of herbs in feed, slow growth and daily sport in the mountains are possible explanations.

5. Project

A project to save, cultivate and develop this old breed would be desirable. Here, we try to expose some cornerstones of its design. Within this project, kosovarian and Austrian veterinarians at university level and local vets in Kosovo as well as the SAVE foundation of Switzerland will cooperate. So far, we have defined 15 main targets:

1. Collecting data and preservation of
   a. Population in Kosovo
   b. Data of performance
   c. Gene pool
2. Receive of
   a. traditional landscape of the area
   b. traditional agricultural structures
   c. natural hotspots – Cooperation with Organizations
3. Set up database, herd book, strategy of breed, newsletter for breeders
4. Comparison with old middle European breeds (genetics)
5. Foundation of breeding organization, basics for support of breed, bonus for housing, regular income source for breeders
6. Network of breeders, cooperation at private, university and public level
7. Transnational network
8. Network with European scientific institutes
9. Set up a breeding station for saving the genetic pool, production of nitrogen frozen semen (cryobank), possibility for embryo transfer
10. Promotion/Support of local specialties (dairy and meat products) made from Busha, supporting the private sector
11. Education of consciousness to keep this breed alive in the local population
12. Education and training of local veterinary students by Austrian veterinarians from Veterinary University of Vienna
13. Publications in international Journals
14. Set up and operating an Internet-Homepage for Busha cattle
15. Model for preservation other old breeds of Kosovo

Of course, all these targets mean hard work for all partners, but the breed of Busha cattle is worth keeping alive. This article is published to make first steps into this project and introduce Bushas to the public.

6. Conclusion

Nowadays non-commercial breeds are highly endangered, because from a superficial point of view they are not able to match with modern, industrially stamped breeds. Uncontrolled crossing of modern breeds nearly extincted Bushas. Both modern and old breeds are very important for developing new cattle breeds, which combine advantages and minimize disadvantages. However, by crossing them deliberatively farmers forgot their special aptitudes, e.g. their better shape for the environment.

Breeding better, faster, larger growing cattle also means loss of adaptation ability to environment, higher incidence of illnesses, higher costs for owners and often pains for the animal itself. Heavy cattle destroy sensitive mountain areas, need larger stables and special feed. Old breeds cannot claim modern performance, to get the same amount of milk three or four have to be housed instead of one cow of commercial breeding. Slow growth and late precocity are further disadvantages of those old-fashioned cattle.

Cross-breeds, although uncontrolled bred, between Busha and modern cattle grow larger and faster, amount of milk is larger and body weight is higher. They are much more resistant than pure modern breeds, fertility rate is increased, and complications in giving birth are less. Life age of crossbreed cows was noticed up to 25 years, still calving once a year.

But without preservation of old Busha breed, fresh crossing is not impossible. Especially it is important to keep Busha bulls, which are unfortunately very rare. One of the first steps of the project to save Bushas will be saving bulls and promote exchanging them in between the local breeding groups.

Watching development of prices throughout summer time, feeding high performance cattle will be very difficult and not affordable for many farmers during next winter. Even as soon as now in September we noticed many cattle with very low body weight, although most of them pastured on fields and grass land during summer. Farmers owning extensive cattle (Busha, Busha crossbreeds) will profit definitively and be able to survive winter months.
7. Photographic documentation of Busha

Picture 1: Typical Busha in mountain region in the southwest of Kosovo

Picture 2: Typical Busha face (mountain region in the southwest of Kosovo)
Picture 3: Busha bull in mountain region in the southwest of Kosovo

Picture 4: Busha calf, male, approximately 3 months old (mountain regions, southwest of Kosovo)
Picture 5: Busha cross breed cow, approximately 25 years old, southwest of Kosovo

Picture 6: Mountain regions in southwest of Kosovo with mixed Busha and Busha crossbreed herd
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All pictures made by the author.