Knowledge Sovereignty among African Cattle Herders

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Chapter Nine
Discussion of the main findings

The extensive description of cattle production, husbandry and health management (Chapters 4, 5 and 6) has shown that the Beni-Amer take great care to maintain the general wellbeing of their livestock, as well as paying special attention to the particular needs of the animals they have bred specifically for their fragile local ecology. The combination of management strategies, herding techniques and animal health care practised by the Beni-Amer constitutes a management regime that is complex and ordered.

The Beni-Amer, as I have emphasised throughout, have mastery over breeding and animal husbandry, and an analysis of a range of topics in their methods of animal production, husbandry and animal health clearly demonstrates the resilience of the pastoralist system. Among the general pool of pastoral knowledge and practice already described, the following will be subject to further analysis: productivity of pastoral herds, knowledge of breeds and breeding and selective breeding and practice, animal health (ethno-veterinary semantics, disease perception, etc.), preventive and curative methods, and use of traditional veterinarians.

An analysis of the productive potential of the Bgait cattle in the study area

The productivity of the Bgait cattle has appealed to some regional researchers and institutions, most notably, the EIAR, which conducted several trials on the Bgait breed that included improved management and crossbreeding.
From 1966 to 1972, an assessment was made by the EIAR of how traditional breeds would respond to better feeding and management systems; the Bgait were shown to be superior in milk production and fertility rates to other Ethiopian breeds, such as the Boran and the Horro. The Bgait cattle of the Beni-Amer were known to produce around 1500–1800 litres per lactation under improved environmental and feeding conditions, with an average fertility rate of 70 per cent being common, while the Boran, in normal years, had a fertility rate of 60 per cent (Gedamu et al. 1984).

Crossbreeding Bgait with Friesian and Ayrshire stock imported from Europe from the early 1960s until the escalation in 1975 of the Eritrean Independence War (1961–91) saw remarkable production: Eritrean dairy farms surpassed the local demand for milk and were supplying markets across the border in parts of Ethiopia (Sherman 1980).

At the EIAR stations in Ethiopia, Bgait crossed well with Friesian cattle, and crossbred calves out of Bgait dams have a high rate of weight gain, clearly superior to that of other Ethiopian breeds such as Boran and Horro (FAO/UNEP 1982). Results from a large number of crossbred calves out of the European-breed dams (heifers) and Ethiopian-breed sires suggest the performance ranking for rate gain is, in descending order, Bgait, Boran and Horro; thus, the Bgait outperformed the better-known Boran breed of southern Ethiopia.

Unfortunately the war and conflict between Eritrea and Ethiopia from 1961 to 1993 and 1998 to 2000 (Fre 2002) has practically undermined joint cross-border research efforts between the countries and, to date, relations between the two neighbouring countries have not been normalised, which stifles the potential for regional cooperation on key research issues, including livestock production and cross-border trade.

I admit I have limited knowledge of the Boran and Horro breeds from southern Ethiopia. Therefore, it should be noted that these breeds may have been selected by pastoralists in southern Ethiopia for aesthetic and environmental considerations; high milk productivity may not have been the critical requirement.

Table 9.1 shows that the Bgait are producing high-quality steers and high levels of butterfat, but smaller amounts of milk than European breeds. The Bgait and other local breeds are disease- and heat-resistant compared with the European breeds.
Table 9.1  Productivity of Bgait cattle in comparison with European/temperate and local breeds (per lactation)

<table>
<thead>
<tr>
<th>Breed name</th>
<th>Milk yield (kg per lactation)</th>
<th>Butterfat (%)</th>
<th>Crossbred steers</th>
</tr>
</thead>
<tbody>
<tr>
<td>Jersey (UK)</td>
<td>3300</td>
<td>5.0</td>
<td>Fair to good</td>
</tr>
<tr>
<td>Guernsey (UK)</td>
<td>3500</td>
<td>4.6</td>
<td>Fair to good</td>
</tr>
<tr>
<td>Ayrshire (UK)</td>
<td>4000</td>
<td>3.9</td>
<td>Fair to good</td>
</tr>
<tr>
<td>Friesian (Dutch)</td>
<td>4500</td>
<td>3.7</td>
<td>Very good</td>
</tr>
<tr>
<td>Red Poll (UK)</td>
<td>3500</td>
<td>3.7</td>
<td>Excellent</td>
</tr>
<tr>
<td>Arado (Eritrea)</td>
<td>60–90</td>
<td>(not available)</td>
<td>(not available)</td>
</tr>
<tr>
<td>Bgait (Eritrea)</td>
<td>1630+</td>
<td>6</td>
<td>Very good</td>
</tr>
<tr>
<td>Dankalia (Eritrea)</td>
<td>200–300</td>
<td>(not available)</td>
<td>(not available)</td>
</tr>
</tbody>
</table>

Source: Barrett and Larkin 1979; Mason and Maule 1960; FAO/UNEP 1982; Fre 2009a

Research by the EIAR on the comparative advantage of the Bgait breeds

At the EIAR stations in Ethiopia, Bgait crossed well with Friesian cattle, and crossbred calves out of Bgait dams have a high rate of weight gain, clearly superior to that of other Ethiopian breeds such as Boran and Horro (FAO/UNEP 1982). Results from a large number of crossbred calves out of the European-breed dams (heifers) and Ethiopian-breed sires suggest the performance ranking for rate gain is, in descending order, Bgait, Boran and Horro; thus the Bgait outperformed the better-known Boran breed of southern Ethiopia. The second phase (since 1982) of experiments conducted at the EIAR involves crossing exotic breeds, Friesian, Simmental and Jersey, with local breeds, Bgait, Boran and Horro. The result is that during their first lactation the F₁ (first generation) Bgait × European heifer cows showed a higher productivity than F₁ heifer cows from the other two local breeds (Boran and Horro). The animals in the experiment were kept under slightly improved conditions and fed coarse hay from natural grasses, a limited amount of maize silage (10 kg per head), and a fixed amount of concentrates (2 kg per day), regardless of milk yield.

The above research outcomes show that the hybridisation of western and indigenous knowledge of Bgait cattle demonstrates three things:
The first phase of breed selection should be based on upgrading local genetic material and using available indigenous genetic information.

The case of the Bgait shows that better management (better feeding and veterinary care) alone could lead to better milk yields and weight gain without the introduction of exotic blood.

Although exotic crossbreeding is not seen as a priority by the Beni-Amer cattle herders, the scientific evidence is that crossbreeding is possible and the Bgait scored highest (compared with other Ethiopian breeds) in live-weight gain, milk yields, food conversion ratio and growth rate. Under conditions of intensive production (e.g. dairy and beef), there is indeed a great potential for Bgait–European crosses.

It is also clear that the Beni-Amer not only breed cattle for milk production, but look for qualities such as hardiness, walkability and disease resistance. It can be argued that cattle are multi-purpose animals and their importance should not be judged by comparing milk yields with those of exotic breeds. Resistance to disease and hardiness are important considerations for cattle herders and the comparison of exotic systems with traditional ones is irrelevant as long as we lack basic data for the latter.

### Knowledge of breeds and breeding

In rudimentary genetics, the Beni-Amer breeding system, in relation to Bulad/Bgait, can be described as follows. Traditionally, in their home base in western Eritrea, they breed from: a) *Emat-aha* or mother cows of well-known pedigree; or b) cows of less well-known pedigree whose

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**Table 9.2 Comparison of first lactation milk yield of F1 heifers out of European-breed sires and three local breeds based on EIAR research in Ethiopia**

<table>
<thead>
<tr>
<th>Heifers European cross local</th>
<th>No. of animals</th>
<th>Milk production kg in 350 days</th>
<th>kg per cow day</th>
</tr>
</thead>
<tbody>
<tr>
<td>Bgait dam</td>
<td>22</td>
<td>2042</td>
<td>5.83</td>
</tr>
<tr>
<td>Boran dam</td>
<td>66</td>
<td>1909</td>
<td>5.45</td>
</tr>
<tr>
<td>Horro dam</td>
<td>36</td>
<td>1665</td>
<td>4.75</td>
</tr>
</tbody>
</table>

*Source: Gedamu et al. 1984*
productive traits may be less well known. Genetically speaking, most Beni-Amer breed cattle with the same genotype (they are purebred).

One can assume, therefore, that the Bulad/Bgait were more productive, much aspired to and liked by Beni-Amer herders, and in an ideal situation (of no conflict), they would breed Bgait bulls with Bgait cows to maximise productivity and ensure characteristic cool-heartedness (docile, with less fight-or-flight behaviour). Genetics, in general, is a very complicated subject, and for the purposes of my research, an average result from groups of animals is more important than individual animal performance.

A critical reflection on curative practices and management

It has been shown in the assessment of ethno-veterinary knowledge and methods among the Beni-Amer that their curative practices have, along with their many virtues, inherent weaknesses, yet they still remain in wide use. The traditional practice, despite its limitations, is still the only medical system widely accessible to the majority of cattle owners.

The purpose of describing the preventive practices employed by the Beni-Amer and the curative options open to them is to show that their animal healthcare combines prophylactic measures based on good management with curative measures based on some indigenous skills and limited use of western veterinary medicine. An evaluation of this nature, based on exploratory research, must be limited to assessing only some curative pastoral skills. Needless to say, much more detailed veterinary and anthropological research is needed to fully evaluate traditional practices and the incorporation of western veterinary practices in the study area. For example, laboratory-based chemical analysis of specific plants currently used as herbal medicine (and claimed by pastoralists to be effective) is vitally important (see Table 9.3).

Similar laboratory-based research and use of indigenous plant knowledge are initially important in the study area if traditional practice is to be developed, and such a research could develop from the information in Chapter 7.

Among the Beni-Amer herders, the fact that 13 per cent of a total of 24 diseases are explained in supernatural terms is an indication that the knowledge has some magico-religious elements that need to be understood in the proper context.
In many cases, animal husbandry, religion and healing are viewed together. McCorkle and Jimenez-Zamalloa (1982) point out that Quechua villagers in Peru make little or no distinction between natural and supernatural illnesses and cures. Maliki (1981) notes that among the WoDaaBe of Niger and Mali the line between pharmaceutical and magical veterinary treatments is thin. Wolfgang (1983) has conducted detailed ethno-veterinary research among the Fulbe herders in Upper Volta (Burkina Faso) and found that they possess a wealth of ethno-veterinary knowledge. However, they prefer western veterinary medicine for reasons not clear to me, since I have found that ethno-veterinary knowledge is widely used by the Beni-Amer in the study area.

The Beni-Amer believe that fire and disease do not stay together, so a wide variety of ailments (swellings, muscular strains, tick bites, clotting, etc.) are treated by cauterising specific points on the body. The Beni-Amer use tšset or cauterisation with a curative purpose; pin firing, which is similar to acupuncture, is used to encourage blood flow, and elamet or branding (tribal marking) is used for herd management purposes.

The success or failure of these curative practices very much depends on the skills of the practitioner and the management of the animal that follows treatment (e.g. good feeding and rest). The role of traditional veterinarians is crucial if the cauterisation requires special skills, but very often the herders do it themselves, with varying degrees of success. Selective cauterisation is also used as a back-up to surgical operations such as blood letting and broken bone setting, but the intention of this back-up practice is not clear to me.

Tribal, clan or family branding, or elamet, also uses fire to mark the animal, and, since this is a management and not a curative practice, every

<table>
<thead>
<tr>
<th>Plant name</th>
<th>Parts used for medicine</th>
</tr>
</thead>
<tbody>
<tr>
<td><em>Capparis decidua</em></td>
<td>Extracts</td>
</tr>
<tr>
<td><em>Balanites aegyptiaca</em></td>
<td>Bark and fruit</td>
</tr>
<tr>
<td><em>Esculentus</em> sp.</td>
<td>Fruit</td>
</tr>
<tr>
<td><em>Ziziphus spinosa-Christi</em></td>
<td>Leaves/fruit</td>
</tr>
<tr>
<td><em>Hamta</em> (unidentified plant)</td>
<td>Leaves</td>
</tr>
<tr>
<td><em>Kulnt</em> (unidentified plant)</td>
<td>Leaves</td>
</tr>
<tr>
<td><em>Cordia abyssinica</em></td>
<td>Leaves</td>
</tr>
<tr>
<td><em>Calotropis procera</em></td>
<td>Sap</td>
</tr>
<tr>
<td><em>Tabacum</em> sp.</td>
<td>Leaves</td>
</tr>
</tbody>
</table>

Table 9.3 Plants and their medicinal applications
Dehorning of calves by burning the tip of the horn is another management practice undertaken by herders themselves, but castration of males requires specialised skills, which may involve traditional veterinarians.

Fumigation of goat or sheep houses by burning tree branches from *Acacia senegal* is a different example of the use of fire to fight off disease-bearing pests, but this is more of a prophylaxis than a cure.

The *knife or blade* is a well-known tool for treating many ailments; it is used for surgical purposes that range from simple foot trimming to surgical removal of dead blood from a swollen ankle. At the end of the operation, wounds are washed and dressed with salt, kerosene and a herbal preparation. Works by several authors show that Sahelian and other pastoralists extensively use cauterisation (pin firing and marking) and surgical incisions to cure a variety of illnesses (Maliki 1981; Ohta 1984; Schwabe and Kuojok 1981; Wolfgang 1983).

In conclusion, it is worth highlighting the inherent weaknesses in the ethno-veterinary system:

- The knowledge is unevenly distributed (it is restricted to males) and there is a limited role for women in the health management of cattle.
- Discreet diseases, or those with no clear symptoms, tend to be ignored. Sometimes they are even misdiagnosed because symptoms are misread.
- Some herders blend western veterinary medicine with traditional medicine to cure certain diseases, but they may use drugs that are expired or as a treatment for the wrong disease.
- Overdosing and underdosing is common when herders treat their own animals using western medicine, since they are not trained to do this.
- Traditional veterinarians cannot treat certain major diseases, and the use of western curative medicine then becomes indispensable.
- The traditional medicinal plant sources are dwindling, and persistent drought in the study area has meant more pastoral destitution and hence the redundancy of traditional veterinarians, which results in the eventual loss of their skills.

This chapter has focused on verifying the productivity of the Bgait (Beni-Amer) cattle, evaluating the Beni-Amer breeding systems, and analysing the pastoral capacity to manage and produce healthy cattle for the domestic and regional markets.
There is a scientific basis for arguing that the Bgait cattle is an indigenous breed with the greatest genetic potential for breeding and milk production. Basically, the indigenous genetic source is there to be potentially improved. The key to increased production is improved management through better feeding, better healthcare, and the use of traditional skills and concepts, along with western concepts and practices.

The evaluation of the curative and preventive practice common among the Beni-Amer has shown that the herders have a very positive attitude towards western veterinary medicine (especially for those diseases which cannot be controlled or cured by traditional means), and in some cases emphasise the possibility of combining the two systems.

The evaluation, in general, shows that the traditional ethno-veterinary concepts and practices of the Beni-Amer have significant limitations in the diagnosis and treatment of diseases, particularly of those caused by bacteria and viruses.

In non-disease-related health problems (bone fractures, physiological problems and environmental illnesses), the evaluation has shown that the traditional practice has many merits. On the basis of evidence provided in this and the previous chapters, I conclude that the preventive practices that result from the adoption of good management skills enhance animal health and productivity.

The final chapter will make specific recommendations and suggest strategies and interventions, which, hopefully, will advance the cause of indigenous knowledge sovereignty and its sustainability among the cattle herders in the Horn of Africa and elsewhere.