LIVESTOCK PRODUCTION CONSTRAINTS IN A M2-2 SUB-AGROECOLOGICAL ZONE WITH SPECIAL REFERENCE TO GOAT PRODUCTION

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Abstract

An investigation was carried out between June and July 1999 into livestock production constraints in the M2-2 sub-agroecological zone (SAEZ) of Awassa Zuria district, Ethiopia through Participatory Rural Appraisal (PRA) to characterise, identify and understand farming systems with the aim of suggesting recommendations for research and development strategies. The overall livestock production constraints were feed shortages, livestock diseases, low genetic potential of indigenous livestock, lack of marketing infrastructure and water shortages. Goat production constraints were mainly feed shortage due to a lack of browse species resulting from deforestation and goat diseases. Goats are the second most important animal species kept in the target area. Goat production is being denied because of deforestation and shortage of browse species. However, opportunities such as existence of extensive rangelands could help increase goat production if veterinary intervention is promoted in the short-term plan. In the long-term plan, introduction of adaptive forage species and veterinary services together with improved goat genotypes is believed to be able to enhance goat production and secure future challenges of goat production in such SAEZ as M2-2 in the tropics. Research and development strategies are suggested.

Introduction

Small ruminants play a crucial role in food production in developing countries. The continent of Africa hosts 172 million goats, or approximately 29.1% of the world's population (Peacock, 1996). Ethiopia has about 18 million goats, having the third largest goat population in Africa behind Nigeria and Somalia who have 26 and 19 million, respectively (FAO, 1990). Goats are widely distributed and inhabit all climatic zones, with a higher concentration found in dry than humid areas (Ademosum, 1994). This is because they are well adapted to hot and dry conditions, and mainly due to the fact that in dry zones there is less opportunity for alternative land use. Goats can survive and produce in harsh environmental conditions and on poor quality fibrous feeds. They have a high reproductive performance and are drought resistance (Peacock, 1996). Their small size allows for quick and easy transport by their owners when necessary. Moreover, goats can be kept in areas where trypanosomosis is a great problem, since there are more goat breeds than cattle breeds resistant to this disease. However, goats are susceptible to broncho-pneumonia (Peacock, 1996). These factors have made them attractive to resource poor farmers. However, little attention has been given to methods of improving their productivity. Inadequate nutrition, health problems, low genetic potential and traditional production systems are major constraints of goat production in Africa (Ademosum, 1994).

There is little information on constraints to goat production in various agro-ecological zones (AEZ) in Ethiopia. The Ethiopian Agricultural Research Organisation (EARO) designed an agricultural production constraint identification survey with a multi-disciplinary team to characterise AEZ in 1999. A PRA technique (Peacock, 1996), which is a cost-effective method for assessing agricultural production constraints, was used. This paper reports the major livestock

production constraints with particular emphasis to goat production in M2-2 SAEZ of Awassa Zuria district.

2. Materials and Methods

2.1. Description of Study Area

Three peasant associations (PA) were selected randomly to represent the M2-2 SAEZ in Awassa Zuria Woreda. M2-2 SAEZ covers tepid to cool, moist mid-highlands and represents over 50% of the Woreda. The altitude ranges between 1700 and 2200 meters above sea level. The first PA, Tullo (TG-I), is located 5 km southeast of Awassa. The second was Dore Bafano (TG-II), 21 km south of Awassa. The farthest PA was Shamena-Kedida or Safara (TG-III), situated 34 km southwest of Awassa. Respectively, 1000, 300 and 223 households were identified in the PA. The climate is characterised by two distinct seasons, rainy (Kiremt) and dry (Bega) with small showers in short rainy seasons. The productivity of natural pasture is dependent on availability of water from the main rainy season that lasts between June and September. Consequently, forage availability is greater in September and October with lesser quantities available in August and July. Maize stalks and green grass are readily available in July and August. Crop residues are available from November until March, depending on the size of an individual farmer's cropping land and crop production.

2.2. Methodology

The study was conducted between June and July, 1999 using PRA techniques (Peacock, 1996), where key informants from the farmers groups and secondary information were main sources of information. In this technique, a reversal of learning rapidly and progressively by offsetting biases, optimising trade-offs and triangulating was employed to arrive at conclusions. Consultation with various classes of professionals had helped to collect reliable information. These included secondary data from the zonal agricultural bureau, Woreda Agricultural Office (WAO), development agents, leaders of PA and farmers. A small group of key informants (7-10 farmers) were formed from the farmers of the PA by an electoral process in a large public meeting. The composition of the farmers was from different classes (e.g., age group) and wealth categories. Women groups were also included in the key informants. The overall ranking of the constraints was done in a large public meeting consisting of 35-50 farmers per PA, whereas daily PRA was carried out with key informants. Transect walks, direct observation, resource maps, feed and disease calendars and problem ranking were done together with key informants. Simple items such as corn seeds were used for proportional pilling and sticks for drawing feed and disease calendars. This was found to be a low-cost method of assessing livestock production problems. Information was analysed in the field with farmers, priority problems were identified and recommendations were forwarded.

3. Results and Discussion

3.1. Livestock Population

According to farmers (Table 1) and secondary data (Table 2) obtained from WAO, the livestock species kept in the M2-2 SAEZ include cattle, goats, sheep, poultry and equine in their order of importance. Farmers were given corn seeds to rank the animals raised in the zone.

From Table 1 it is noted that the farther the PA from town, the higher the percentage composition

of goats. This implies that goat production is highly dependent on the availability of pastureland, mainly rangeland. The discrepancy observed between the proportion of goats given by farmers and the secondary information on goat population might be due to the sample size.

Table 1. Percentage interspecies composition in the target groups

Animal species	TG-I	TG-II	TG-III	Overall
Cattle	50.0	53.3	50.0	51.10
Goats	12.0	16.7	26.7	18.47
Sheep	14.0	13.3	13.3	13.53
Poultry	20.0	10.0	6.7	12.23
Equine	4.0	6.7	3.3	4.67

Source: 22 farmers

Table 2. Livestock population in Awassa Zuria Woreda

Livestock species	Number
Cattle	264,400
Sheep	70,700
Goats	33,000
Donkeys	18,400
Horses	33,900
Mules	380
Poultry	334,800

Source: WAO, 1991.

3.2. Flock Structure

With regard to flock structure of goats, according to farmers kids represented 48.9%, does represented 32.2% and bucks represented 18.9% of the goat population.

3.3. Purpose of Keeping Goats

The goats are mainly kept for income, milk, meat and skin. According to farmers, goats were very important in generating household income 30 years ago but as the forest continued to disappear from their localities through deforestation, keeping goats has become problematic mainly because of a shortage of browse species. Consequently, when compared with other domestic livestock species, the current relative contribution of goats to household income is fourth behind sheep, donkeys and cattle in the target groups.

3.4. Trend of Goat Population overYears

The goat population is estimated to have decreased by 60% compared with their number 10-15 years ago and buck numbers have decreased by 50%. The main reason given was the lack of browse due to deforestation.

3.5. Goat Breeds and Breeding Practices

The goat types observed in the target areas are medium to large in size and color varies from brown, to black with white, patches or plain white. Hairiness was also observed in some animals. The breed is similar to the Arsi-Bale and Woito-Guji (Workneh, 1992; FARM-Africa, 1996). No breed introduction was reported in the three target groups although reports exist on introduced exotic breeds around Awassa.

3.6.Goat Management and Husbandry Practices

The production system of the study area is a mixed crop/livestock production system. However, animals are managed with an extensive management system where communal grazing is practiced during the rainy season between March/April and October/November using the local grazing management system called *Doytio*. Under the *Doytio* system, animals are sent off-farm 10 to 40 km into the rangelands where communal grazing is practiced. These places are *Shallo, Wondo Tika, Lalima, Rukessa, Tatessa, Hare* and *Worsessa* and are estimated to be 15-40 km from the target groups. During those times weak animals, lactating cows, non-weaned calves, kids, lambs and draught animals are managed around homesteads and graze either tethered or on marginal land and roadsides. In the *Doytio* system, two tribes, namely Arusi and Sidama, have experienced serious problems and the conflict has taken the lives of quite a number of people.

According to the farmers interviewed, for cattle 60% of the parturitions occur between the months of July and September while the rest occur between January and February. Farmers indicated that if feed were readily available, goats would kid throughout the year. Milk production in goats is heavily dependent on feed availability. Goat milk is usually given to children.

3.6.1. Housing, Watering and Rearing Practices

Goats are housed either in a shared-house '*Hadiro*' with the family or in the kraals outdoors adjacent to the family house called a *Howe*. Goats are watered either every 2 to 5 days or every 7 to 10 days depending on water availability in the nearby pastureland. The farmers believe that goats can resist water shortage and stress. Lactating does with kids are supplemented with green grass, browse and corn cobs, corn stalks and leaves. Kids are kept indoors for about two weeks until they are strong enough to resist environmental stress, mainly sunstroke. Kids are separated from their dam during and after milking. Weaning is usually at 5 months of age when their dam conceives. At night kids may be covered with a bucket made of bamboo '*Gimbola*' to protect them from cold. They are also supplemented with browse species such as '*Chucho*' (*Buddelja polystachya*), *'Masincho'* (*Croton macrostachys*), among others. If the kids are triplets, only two kids are allowed to suckle at a time.

3.7. Reproductive Performance of Goats

Age at sexual maturity in does is 7 to 8 months and 12 months for bucks. According to farmers, twinning is nearly 50%, whereas abortion occurs in about 1 to 10% of does. The kidding interval was reported to be 9 to 12 months.

3.8. Access and Control over the Resource

Men have 50% access and 70% control over the goat resource, whereas women have 50% access and 30% control over the resource. Male children and household heads conduct herding of goats, whereas women and female children carry out all other activities related to milking, cleaning barns, supplementing kids and product harvesting.

3.9. Feed Resources

Feed resources for livestock are entirely based on natural pasture, browse species and crop residues. The livelihood of animals in M2-2 SAEZ almost fully depends on the use of extensive rangelands located at a distance of 10-40 km**.** However, the major problem hampering efficient utilisation of these rangelands are tribal wars and a lack of watering points. These rangelands are comprised of diversified native plant association communities. The low accessibility of these plant communities for human and animal use may be attributable to the presence of tribal wars and the lack of watering points. This has left parts of the natural ecosystem relatively untouched. According to farmers, goats prefer browsing over grazing and feeding on crop residues.

3.9.1. Crop Residues and Stubble

Crop residues are very important feed resources for animals in developing countries. Farmers usually harvest residues together with the grain and after threshing conserve the straw in a heap for emergency use. The major crops grown in the target groups are maize and enset or false banana. Additionally, teff (a small grain), haricoat bean, Irish potato, sweat potato, cabbage/kale and *Taro/Kolchoma* are also grown. Stimulants such as coffee and Chat, where the young leaves and shoots are chewed, are grown as well. Both maize and teff straw are used as livestock feeds. Maize and enset are more readily available than other feedstuffs. The remainder left in the field after harvesting the main crop has great value as stubble for animals. Seasonal feed availability and a feeding calendar is shown in Table 3.

Table 3. Seasonal calendar showing animal feed availability.

	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
Pasture availability						■	■	■	■	■	■	
Browse	■	■	■	■								■
Stubble	■										■	■
Cut and carry (grass)							■	■	■			
Green maize stalk							■	■	■			
Enset	■	■										
Maize residue	■	■								■	■	■
Elephant grass	■	■	■	■	■	■	■	■	■	■	■	■
Sesbania spp.	■	■	■	■	■	■	■	■	■	■	■	■

Source: 21 farmers

3.9.2. Supplementary Feeds

Other supplementary feeds that can be purchased are wheat bran and noug cake (*Guizotia abyssinica*). These supplementary feeds are usually given to lactating cows and fattening oxen. Supplementation of feeds to different classes of animals is given in Table 4. From the table it is clear that goats are less supplemented than other species of livestock.

Table 4. Supplementary of feeds to different classes of animals

Supplementary feeds	Cattle	Sheep	Goat	Equine	Poultry
Maize corn					*
Wheat bran	*	*	*		*
Noug cake	*	*			
Maize stalk (green)	*				
Maize residue (dry)	*				
Teff straw	*	*		*	
Hay	*			*	
Browses			*		
Grass (green)	*			*	
Rhodes grass	*				
Elephant grass	*				
Sesbania	*				

Source: 20 farmers

According to key informants, less than 5% of the farmers purchase feeds for their livestock. They purchase pastureland, wheat bran and noug cake. The pastureland is used both for haymaking and grazing. Great feed shortages occur between the months of February and March. Strategies used to cope with feed shortages in these months were supplementing livestock with browse and the leaves, stem and tuber (root) of enset. Hay making is not a common practice because of the shortage of pastureland. *Sesbania spp*., a multipurpose tree legume, was introduced as an improved forage crop between 1982– 1985. Naturally available potential animal feed resources in the M2-2 SAEZ are listed in Table 5. It is presumed that most of the trees and grass species are palatable to goats, which is not the case with other domestic livestock species.

3.9.3. Feed Related Problems Hampering Goat Production

Major problems associated with goat feeds are deforestation, lack of pastureland, human population pressure claiming more land for cropping and the limited supplementation of goats.

3.10. Animal Health

3.10.1. Major Disease Type and Prevalence

A number of livestock diseases were reported in the study area. Based on the respective symptoms enumerated by the key informants, each disease was given the nearest possible Amharic and English or scientific synonyms (Table 6). Most local disease classifications and descriptions of distinguishing features of the major diseases coincided almost exactly with veterinary definitions (Hansen and Perry, 1990; Radostits et al., 1994). A livestock disease calendar and rankings of their prevalence and mortality is depicted in Tables 7 and 8.

Table 5. Indigenous potential animal feed resources ranked based on their drought resistance and palatability to goats

Amharic (Am.) or Sidamic (Sid.) names	Botanical names	Drought tolerance rank	Palatability
a. Browse			
Abukaatoo (Sid.)	*Persea americana*	2	4
Acacha (Sid.)	*Sesbania sesban*	1	1
Agam (Am.)	*Carissa edulis*	3	2
Ameja (Am.)	*Hypericum quartinianum*	4	6
Anfare (Am.)	*Buddleja polystachya*	6	2
Atat (Am.)	*Maytenus spp., Sideroxylon spp.*	8	2
Bisana (Am.)/Masincho (Sid.)	*Croton macrostachys.*	10	7
Digita (Am.)	*Carissa spp., Syzygium spp.*	11	10
Ebichcha (Sid.)/Gujo (Am.)	*Vernonia amygdalina*	2	5
Embuacho (Am.)	*Rumex nervosus*	9	5
Embuay (Am.)	*Solanum spp.*	14	11
Girar (Am.)/Bura (Sid.)	*Accacia albida*	1	1
Hato (Sid.)	*Albizia gummeifera*	3	10
Kega (Am.)	*Rosa abyssinica*	2	3
Kitkita (Am.)	*Dodonea spp.*	5	4
Maangoo (Sid.)	*Mangifera indica*	6	3
Odako (Sid.) Shola (Am.)	*Ficus sycomous*	1	12
Shonkora (Sid.)	*Saccharum officinarum*	6	3
Tatesa (Sid.)	*Rhus natalensis*	3	2
Tedo (Am.)	*Rhamnus staddo*	12	9
Wadicho (Sid.)/Wanza (Am.)	*Cordia africana*	1	4
Warka (Am.)	*Ficus vasta*	1	3
Weira (Am.)/Ejersa (Sid.)	*Olea africana, O. hochstetteri*	7	1
Welako (Sid.)	*Erythrina abyssinica*	2	4
b. Grasses			
Alado/Kune (Sid.)	Paspalum spp.	5	3
Dufure (Sid.)	Andropogon spp.	2	1
Dumaro (Sid.)		2	1
Gicha (Am.)	Cyperus rotundus	1	3
Hant'o (Sid.)	Setaria spp.	2	2
Maget (Am.)	*Trifolium spp.*	4	1
Mankise (Sid.)		3	1
Mujja (Am.)	*Snowdenia polystachya*	4	4
Senbelet (Am.)	*Hyperhennia spp., Cymbopogon spp*	3	NR
Serdo (Am.)	*Cynodon dactylon*	2	2
Sindedo (Am.)	*Pennisetum shimprai*	3	NR

NR, not ranked due to either absence of animals in such areas or undesirable to them

Table 6. Vernacular name, species of animals affected, clinical symptoms and veterinary equivalent of livestock diseases

Local name	Species affected	Clinical signs and epidemiology	Veterinary equivalent
Arisho	Calves	Affects calves, spasm of eye lids, shivering, sometimes diarrhea cries and dies suddenly	Sunstroke
Balamo	Cattle, goats,	Depression, bloody nasal discharge from nostrils,	CBPP, CCPP

	sheep	swelling of throat, lesions on tongue, inappetance, hair erection, coughing	
Bicha	Cattle, goats, sheep and equines	Progressive emaciation, hair erection, fecal drying, inappetance, animals eat but belly does not get full, decreased milk production, lags behind the herd	Trypanosomosis
Bochoka	Horses	Lameness with painful diffuse swelling and abscesses in a row in the pectoral and ventral abdominal regions	Lymphangitis
Borronta	Cattle	Circumscribed, slightly raised nodules cover the skin, hair loss, often occurs in outbreak form, usually comes after *Doytio* grazing management when animals are mixed	Lumpy skin disease
Chine	Calves	Bloody diarrhea, straining, affects calves, due to grazing unburned pasture	Endoparasites
Chinna / Chaffa	Cattle, goats, sheep and equines	Hair erection, ataxia/shivering of front quarter, bloat and sudden death, highly transmissible and affects all specie of animals including man, if slaughtered enlargement of spleen was observed	Anthrax
Chiwe	Calves	Whitish, teff-sized ova (nits) attached to the hair of calves, lambs and kids are usually seen	Lice (Ectoparasite)
Dedhe	Cattle, goats, sheep and horses	Ticks are found attached to animals, lameness in goats, mastitis in cows, affects all species of animals except donkeys.	Ticks
Dingetegnaho	Cattle	Cattle cries, fall, drools frothy saliva and dies suddenly. Death of an ox while ploughing or drinking water; no time to treat; affects animals in good body condition	Sudden death
Fetela	Goats and sheep	Papular lesions on the skin of lips, interdigital region and around coronet, udder and on the gums in lambs and kids.	Orf/contagious pustular dermatitis
Gabito	Cattle, goats and sheep	Swelling of the hip or shoulder, lameness, tremor, death with in 24hr, dark stained affected muscle	Black Leg
Gadansa	Cattle and goats	Swelling of udder and teat, blood in milk, animals refuse to be milked, the teats will be permanently stenoted, no milk	Mastitis
Gagassa	Goats and cattle	Feed related poisoning from leafy plants; goat cries, vomits and dies suddenly	Plant toxicity
Gognogna	Cattle, goats and sheep	Swelling at submandibular area, emaciation, diarrhea, depression, death, carcass slippery, liver enlarged	Fasciolosis/Bunostomosis/Haemonchosis
Gororsa	Cattle	Drooling of saliva, swelling of tongue, swelling of throat (symmetrical), kills within 24hr by suffocation (farmers do believe that it occurs when domestic animals gets in contact with wild animals)	Malignant Catarrhal Fever, Blue Tongue, Pasteurellosis
Hadho	Cattle, goats and sheep	Swelling at knee joint, abortion	Brucellosis
Laboba	Cattle, goats, sheep and equines	Muscle stiffness, recumbency, struggling and tonic spasms, hyperaesthesia and death several days after the first sign	Tetanus
Masa	Cattle, goats and sheep	Swelling of interdigital space and coronet, lesions in mouth parts, lameness, salivation, and emaciation of animals mainly because of inability to feed	Foot and Mouth Disease
Munde-shumadha	Cattle	Blood in the urine, emaciation, a disease associated with 'Bicha', some cases respond to trypanocidal drugs while others die after a week	Bacillary Haemoglobinuria / Babesiosis / Trypanosomosis
Qenqem'a	Lambs and kids	Hind paralysis, kids and lambs cannot stand but have bright face, no treatment available, transmissible as they believe, slaughtering is the only solution	Swayback /Enzootic ataxia
Ulaule	Cattle, goats, sheep and equines	Attaches itself, causes coughing, severe bleeding mostly from distal parts of legs and from mouth, leech comes out	Leech
Umo Amada	Poultry	Head hangs down, occurs at outbreak, chickens do not open eyes, dropping wings, dragging legs,	Newcastle Disease

		depression or 'sleeping', sneezing or coughing, twisting of head and neck, and mass death.	
Woranto	Cattle	Diarrhea with or without blood, inappetance, constipation in some, and death in those with bloody diarrhea	Enteritis
Woshichu dhiba	Cattle, goats, sheep and equines	Salivation, frenziness, all species of animals are affected if bitten by sick dog	Rabies

Source: 19 farmers

Table 7. Livestock disease calendar for major diseases

Disease	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
CBPP, CCPP	■	■	■	■	■	■	■	■	■	■	■	■
Trypanosomosis	■	■	■	■	■	■	■	■	■	■	■	■
Lymphangitis				■	■	■	■	■				
Lumpy skin disease	■	■	■	■	■	■	■	■	■	■	■	■
Endoparasites	■	■	■	■	■	■	■	■	■	■	■	■
Anthrax	■	■								■	■	■
Ticks			■	■	■	■	■	■	■			
Orf						■	■		■			
Black leg	■	■	■	■	■						■	■
Mastitis	■	■	■	■	■	■	■	■	■	■	■	■
Plant toxicity		■	■	■	■							
Fasciolosis/Bunostomosis/ Haemonchosis						■	■	■				
MCF/Blue Tongue/Pasteurellosis	----	----	-----	----	-----	----	----	----	----	----	----	-----
Brucellosis	■	■	■	■	■	■	■	■	■	■	■	■
Foot and Mouth Disease	----	----	-----	----	-----	----	----	----	----	----	----	-----
Bacillary haemoglobinuria/ Babesiosis/Trypanosomosis	■	■	■	■						■	■	■
Swayback/Enzootic ataxia	■	■	■	■	■	■	■	■	■	■	■	■
Leech	■	■	■	■	■	■	■	■	■	■	■	■
Newcastle Disease				■	■							
Enteritis	■	■	■	■	■	■	■	■	■	■	■	■
Rabies	■	■	■							■	■	■

Note: Broken lines indicate that the disease occurs sporadically

Source: 18 farmers

With regard to age-related mortality, farmers were given corn seeds to represent age classes of animals dying, which was later transformed into percentages. According to farmers, calves, lambs and kids are estimated to represent 33.3, 50 and 50%, respectively, of the overall deaths in each species. This observation is in agreement with the findings of Wilson et al. (1985).

3.10.4 Vaccination and Other Health Services

The Ministry of Agriculture (MOA) vaccinates livestock upon request by farmers. There is no governmental health station, except the first PA (TG-I) that had access to the Woreda veterinary clinic which was destroyed during the change of government in 1991. Some farmers do purchase medicines and inject animals themselves especially for disease such as Trypanosomosis, Anthrax and Blackleg. The drugs they purchase are Berenil (diminzene acturate) for Trypanosomosis and Penicillin for Anthrax and Blackleg. The farmers have strongly stated that they cannot afford to buy medicines. However, the farmers also said that the disease pressure is increasing and they cannot afford to do without medicine in the future.

3.10.5. Indigenous Knowledge in Preventing and Controlling Animal Health Problems

Farmers of the target group were able to identify and treat various livestock diseases (Table 9). This indigenous knowledge should be evaluated in veterinary research laboratories and promoted for use in the future.

Table 8. Livestock diseases ranked on the basis of their prevalence and mortality

Disease	Prevalence	Mortality	Overall rank
Newcastle disease	1	1	1
Swayback/Enzootic ataxia	2	7	2
Anthrax	3	3	3
Sunstroke	5	3	4
CBPP, CCPP	4	5	5
Trypanosomosis	8	2	6
Black leg	3	6	7
Endoparasites	6	8	8
Tetanus	11	5	9
Pasteurellosis/malignant catarrhal fever/Blue tongue	14	4	10
Lumpy skin disease	13	7	11
Leech	5	15	12
Ticks	7	14	13
Enteritis	9	11	14
Bacillary-haemoglobinuria/Trypanosomosis/Babesiosis	17	9	15
Mastitis	10	13	16
Lymphangitis	16	10	17
Foot-and-Mouth Disease	12	17	18
Fasciolosis/Haemonchosis/Bunostmosis	15	18	19
Orf (contagious pustular dermatitis)	18	16	20
Brucellosis	17	19	21

Note: Figures are transformed from pair-wise ranks obtained from target groups. The overall rank was obtained from the average of weighted-rank from prevalence and mortality of the target groups.

Source: 22 farmers

3.11. Livestock Marketing and Utilisation

3.11.1. Marketing

Farmers in the target area do sell their livestock under normal conditions to build a house, for weddings, to acquire new oxen for draft purposes, for schooling and to buy clothes. Livestock also serve as a bank account that is used under emergency conditions such as for tax payments, health problems, death of a family member, payment of credit and purchase of food items during crop failure. Goats are the second animals to be sold following cattle under normal and emergency conditions. Farmers prefer to sell goats, sheep, and old and inefficient oxen, which are not good for ploughing.

>The four market places where livestock are sold are *Tulla, Yirba, Shamena Kedida* and *Awassa*. These markets are located 7 to 35 km from the target groups depending on their location. There is no transportation to move animals to market places. Consequently, two days trekking on foot is required for the target PA 35 km away. The price of animals increases between September and November and April and May, and is low in the rainy season between June and August. Minimum and maximum price estimates are given in Table 10. The price of whey and butter is high in the months of March and April and is low between July and October. Skin and hides are sold between January and February with no significant variation by season, although it follows the animal slaughter calendar. Most farmers do not sell their skin and hides but use them as mattresses. With regard to decisions on use of income from livestock sales, the head of household had 56.7%, wives had 33.3% and children had only a 10% right to decide on its use.

Table 9. Ethnoveterinary practices in the target areas

Disease	Indigenous Knowledge/practice
Anthrax	- Withholding of water and branding at the left side of the animals at 3rd rib from last rib over the spleen - Mince Koso (*Hagenia abyssinica*) and drench a full of one Tella Tassa (one glass). - Crush root, seed and leaves of Yedimet Duba (Am.) and drench
Brucellosis	- Draining by surgical incision and then branding
CBPP	- Madhesisa (root and leaves, drench) - Yedimet Duba (Sid.) root, seed and leaves, drench - Meu'u Shana (Sid.), drench
Ectoparasites (lice)	- Crush Chekata (Sid.) leaves, mix with water and wash the whole body by rubbing with the plant
Endoparasites	- Entalcha (Sid.)/KitKita (Am.) leaves, drench - Udo (Sid.) leaves, drench - Hetcho (Sid.) leaves, drench - Kirkiticho (Sid.) leaves and roots, drench
Enteritis and/or endoparasitism	- Crush Hetcho (sid.), Maticho (Sid.), Tontono (Sid.) and Sonne (Sid.), mix with water and drench

	- Crush leaves of Nole (Sid.), Bangude (Sid.) and Gada (sid.), mix with water and drench - Dhokono/Dobi (Am.) (*hareg* type) leaves, drench - Choe (*hareg* type) leaves, drench
Leech	- Crush tobacco leaves, mix with water and drench
Lice	- Paste leaves of Chekata (Sid.) on the affected skin - Tobacco leaves (paste on the skin)
Mastitis	- Cook the root of Mundressa (Sid.) and drench
Newcastle disease	- Branding of head , ≤ 50% response
Sunstroke	- Embuay (Am.) fruit , drench - Welako (Sid.) skin, drench - Haranje (Sid.)/Endod (Am.), seeds and leaves, drench - Masincho (Sid.)/Bisana (Am.) leaves, drench
Ticks	- Manual removal

Table 10. Minimum and maximum price estimates of livestock species and classes

Species	Class		Price (Birr)		
			Minimum		Maximum
Sheep	Ram		120-180		250-300
	Ewe		60-80		120
Goat	Buck		180		210
	Doe		80-90		120
Cattle	Ox		500-700		900-1000
	Cow		200-250		400
	Heifer		300		400
	Calf		150		200
Donkey	Male		250-300		400
	Female		120		150
Poultry	Cock		10		15
	Hen		6		8

Source: 17 farmers, June/July 1999.

3.11.2. Slaughter of Livestock and Consumption of Animal Products

Animals are slaughtered for household consumption during public holidays such as *Meskel* (end of September), *Gannaa* (early January), *Fitche* (occurs at any time once a year) and *Fasika* (mid April). Farmers also slaughter animals when wives gives birth, for guests, for wedding ceremonies and other feasting occasions. According to farmers, goats are most preferred for slaughtering, then sheep, cattle and poultry. However, goat meat is the least preferred for

consumption compared with chicken, mutton and beef mainly for its disgusting taste/odor, especially that found in meat from breeding bucks.

Pair-wise ranking of animal products indicate that fresh milk is preferred to yogurt, butter, meat, eggs and whey. The ratio in animal-product consumption between household head, children and women is 5:3:2. Seasonally, high consumption of dairy and dairy products is reported in the months of August, September and October whereas low consumption occurs in the months between February and May. The farmers associated this with feed availability.

3.12. Livestock Production Constraints Analysis

Farmers have identified the major livestock production constraints. Pair-wise ranking has revealed that feed shortage, livestock disease, low genetic potential of indigenous livestock and water shortage in *Doytio* grazing management to be the major constraints to livestock production in the target groups. Livestock production constraints, potential solutions and recommendations are depicted in Table 11.

Table 11. Livestock production constraints, potential solutions and recommendations

	Constraints	Potential solutions	Opportunities	Recommendations
1	Feed shortage as a result of deforestation and grazing land shortage from increased crop land	Introduction of multi-purpose trees, improved forage species, grasses, etc.	Existence of *Sesbania spp*. and Elephant grass well adapted to the environment; existence of *Doytio* grazing management, enset, etc.	Livestock extension department of WAO should promote these and other adaptive forage species
2	Goat diseases	Conduct epidemiological studies of determinants of diseases; validate ethnoveterinary practices; establishment of veterinary clinics and promotion of veterinary services	Existence of Woreda Veterinary Services which could be extended and animal health division in Debub University to assist disease surveillance and diagnosis	Woreda Veterinary Service should be promoted in such a way that accessible veterinary clinics are built in the target areas
3	Low genetic potential of indigenous goat types	Introduction of improved goat breeds	Existence of Debub University – the formerly Awassa College of Agriculture and activities of FARM-Africa	Debub University should undertake an initiative with the livestock extension department and FARM-Africa to introduce improved goat breeds
4	Deforestation; uncontrolled grazing management	Livestock extension department and afforestation program of WAO could help in dry season grazing management and proper use of available natural resources	Existence of *Doytio* grazing system at various rangelands (*Shallo, Rukessa, Lalima*, etc.)	Conduct monitoring of closed pasture rejuvenation; screen suitable species/varieties of grasses, herbs and browses for pasture enrichment; implement participatory land use planning/grazing land management;
5	Lack of marketing infrastructure	Develop marketing infrastructure by enhancing farmers-merchants associations, introduction of investors, transport facilities	Existence of basic road facilities, proximity of the Woreda to Awassa town	WOA should take initiatives

4. Conclusions

In developing countries, the human population is increasing at an alarming rate. Therefore, in the tepid moist mid-highland areas where integrated crop-livestock farming systems exist, crop production competes with grazing for land use. Hence, waste and unproductive pocket areas are allotted as communal grazing areas. Concentrations of livestock above a land's carrying capacity automatically leads to overgrazing. Consequences of such actions include soil erosion and degradation and rangeland deterioration due to overstocking. These factors make rangelands prone to invasion by low-nutritive and less palatable inferior grass species bringing about animal feed resource scarcity and ecological disturbance. The results presented here undoubtedly show practical evidence of declining trends in the productivity and quality of the range vegetation. If this situation persists, there is a danger of the extinction of life forms in these areas.

Traditional animal husbandry systems used in the past have continued as cultural practices today. They mainly target a subsistence type of living and contribute to the low productivity of our indigenous breeds. There is a gap of knowledge by farmers to modern animal rearing techniques that can be rectified through training. Feed scarcity is the basis of the low animal productivity observed and an underlying contributing factor in many other animal production problems, such as disease incidence. Farmers under extremely severe drought periods can save the life of their animals by feeding chopped enset and various browse species. In relatively better conditions, feeds conserved as hay and straw were also potential drought escape mechanisms.

Potential solutions for improving the productivity of the local genotype for high input management systems are available. However, maintenance of the indigenous genetic resources, which are adapted to the local environment, should be given prior consideration. With the existing natural resource base (reduced grazing area/feed shortage), disease prevalence and subsistence management practices, adoption of improved breeds is likely to be very low. Thus, synthesis of available research results and the development and testing of technology packages is a critical area to be considered.

Implementation of most livestock development solutions are linked with feed resource development and investment for which there exists very little opportunity because of land shortages and an unreliable climate. The challenge should thus be identification/development of technologies that can perform under such environments and require low inputs, targeting the poor farmer. Conversely, situations exist that could take advantage of improved technologies using more costly inputs specifically targeting increased production on a larger scale.

In general, goats are the second most important animal in the target area. Goat production is being denied because of deforestation and lack of browse species. However, production opportunities are present, such as the existence of rangelands, although a bit far from the target groups, and the interest of farmers in raising goats. Therefore, introduction of improved forage species and veterinary services together with improved goat genotypes should enhance present goat production and improve the future outlook.

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