

Veld Condition Trend of Grazing Areas

Why poor livestock production in the tropics?

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Grazing Condition in Marginal Areas

In sub-Saharan Africa, poverty is literally endemic and seems to be an inextricable part of the lives of the majority of people in this region. Recent estimates indicate that the gap between the rich and poor countries has increased over the last few years. This scenario has been further complicated by the HIV/AIDS pandemic.¹ However, agriculture still represents an option that is touted to have the potential to revitalize the livelihoods of the rural poor and the general populace.

Like most developing nations, Zimbabwe's agriculture is a key component of economic growth.² Field crops such as cotton, tobacco, maize, wheat, and livestock production dominate the sector. The importance of the livestock sub-sector is underscored by contract supply of beef under the European Union and African, Caribbean, and Pacific trade arrangements. Recent changes in agriculture have ushered in small farmers who now dominate the livestock production landscape in Zimbabwe.

The basis of cattle production in Zimbabwe is mainly natural grazing from the veld or range. Cattle production is heavily dependent on the nature, conditions, and quality of the grazing land. However, veld deterioration resulting from mismanagement is becoming more apparent, particularly in the communal areas of Zimbabwe. Despite the important role that cattle play in the livelihoods of smallholder farmers (draft power, milk, meat, hides, aesthetic values, and form of wealth), communal farmers fail to increase calving rate and herd sizes because of deteriorated grazing land.



Figure 1. Wedza communal and commercial lands in Zimbabwe.

Overstocking further exacerbates the situation in communal areas. Stocking rates used to be as high as 15 times the recommended level of 1 Livestock Unit (500 kg) to 3 ha grazing area.³ Although the national herd has significantly declined, pockets of overstocking still exist, particularly in low rainfall areas such as Masvingo Province where rates of about 80% above normal were recorded.⁴

Because of the extensive variations in veld conditions across the communal areas of Zimbabwe, this research was focused

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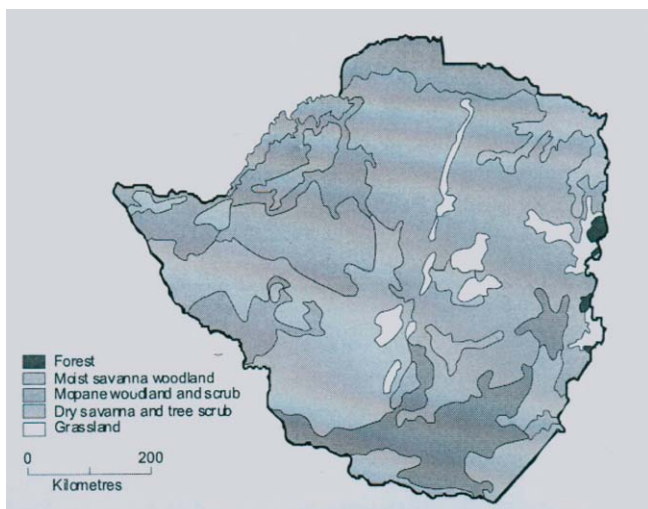


Figure 2. Vegetation zones in Zimbabwe.

on Wedza communal lands as a case study. The Wedza communal area is located in natural region I1b (Fig. 1), and the vegetation of this area is mainly savanna woodland with the miombo tree species dominating (Fig. 2). Thatching grass is the dominant grass species. While it may be acceptable that it is the responsibility of the local community to ensure a well-managed veld, it seems little attention has been paid to ways of improving veld condition in Zimbabwe. There is also a relative dearth of information on studies focusing on continuous assessment of the condition of grazing land within the context of the land and agrarian reforms in the country and sub-Saharan Africa in general.

Effects of Veld Mismanagement

Although smallholder livestock agriculture is vital to the lives of the rural poor, a nexus of social, economic, and environmental factors affect it. The declining quality of the veld in communal areas has serious ramifications at both the micro- and macrolevels. At the microlevel, this implies loss of cattle value and ultimately compromising the household economy. At the macrolevel, this means reduced consumer welfare due to rising prices as a result of dwindling supply. It also means a loss of foreign currency that could be earned through export of “Genetically Modified Organism-free” cattle products. Ecologically, there will be loss of plant biodiversity, loss of topsoil, and siltation of rivers and dams. A well-managed veld could potentially reverse the above effects. There is need to assess the quality of grazing land as well as exploring options that can be used to promote sustainable livestock production.

Why Veld Assessment?

The main objective of this study was to assess the condition of grazing land in communal lands of Zimbabwe and adjacent protected commercial areas (formerly called European Land in Rhodesia).

The specific objectives of the study were to:

- Describe the grass species distribution found in selected

grazing areas and explain the veld condition.

- Determine the degree of veld deterioration in communal grazing land measured against benchmark sites in protected commercial areas.
- Identify constraints to sustainable management of communal grazing lands.
- Develop options that can be used to sustain good quality grazing lands.

Issues Underpinning Grazing Management

The quality of grazing land is affected by social (human), physical, and natural factors. Social factors that affect quality include activities such as deforestation and stream bank cultivation. These activities reduce soil cover, hence the area under grazing land. Physical and natural factors such as rainfall patterns and ambient temperatures affect the types of plant species that can potentially be found in an area. Economic factors such as the returns to farm investments may also have an implication on the exploitation of natural resources. If the returns to farming are relatively lower than nonagricultural activities, households may engage in activities such as gold panning or deforestation (selling of firewood), which results in overextraction of resources. There is a positive relationship between poverty and land degradation.⁵ In addition, if the community members do not have access to appropriate training in management of grazing land and use of resources this may lead to reduced quality of grazing land in the long term.

Assessing Veld Condition

In assessing the veld condition, one of the following criteria based on floristic composition may be used:

- The state of the vegetation with respect to its ecological status.
- The proportion of plants, which decrease, increase or invade under grazing.
- The forage production of a site.

Ecological Status

Ecological conditional classes are as mentioned in Table 1.

Forage Production

Current forage production was compared with what is considered to be produced under the best possible management (Table 2).

Table 1. Ecological status

State	Classification
Excellent	76–100% of climax species
Good	50–75% of climax species
Fair	25–49 of climax species
Poor to very poor	0–24% of climax species

Table 2. Forage production classifications	
Class	Percentage
Excellent	75–100% of possible forage production
Good	50–74% of possible forage production
Fair	25–49% of possible forage production
Poor	Less than 25%

Practical Assessment of Veld Condition

In carrying out the project, both qualitative and quantitative methods of assessing veld condition were used. A condition score sheet adapted from Rattray⁶ was used since it has stood the test of time in tropical grasslands. In using the qualitative system of veld assessment, 5 paired sites were chosen from commercial and communal farming areas. The sites that were located in commercial farming areas were referred to as the benchmark sites because they were in good condition. The

INSTRUMENT 1 VELD CONDITION SCORE SHEET

Farm:..... Farmer:.....
 Conservation Area:..... Date of Survey:.....
 Paddock No.....

Criteria	Excellent 10-9	Good 8-7	Fair 6-5	Poor 4-3	Very poor 2-1
Grass species composition					
Basal cover					
Forage production					
Litter and plant residue					
Soil compaction and erosion					
Veld-Final rating					
Grass Species composition					

BASAL COVER.....

FORAGE PRODUCTION AND PLANT VIGOUR

SEEDLINGS.....

AGE DISTRIBUTION OF GRASSES.....

Dead or dying tufts.....

Est. carrying capacity.....Est. potential c.c.....

LITTER. Type and quantity.....

SOIL COMPACTION AND EROSION

Surface capping.....

Litter fans.....

Sheet erosion.....

Erosion pedestals and pavements.....

TERMITE ACTIVITY.....

PHYSIOGNOMIC TYPE.....

Dominant trees.....

Bush encroachment.....

Figure 3. Instrument 1: Veld Condition Score sheet.⁷

veld in communal areas within the same climatic zone, soil type, and same position on slope and aspect was rated against such benchmark sites. Selection of benchmark sites was subjective. It involved the selection of sites that were stable with a lot of decreaser grass species, particularly thatching grass species. Adjacent sites contained desirable grass species, mainly increasers. Sites that were in poor condition were selected within a distance of 100 m from benchmarks. Sites for assessment were selected away from roads, fences, and water points in order to reduce the incidence of assessing veld that is not representative of the area due to disturbance.

Veld Condition Scoring Sheets

Veld condition score sheets were used for the overall veld assessment (Fig. 3). Aspects measured included ground cover.

The proportion of plants that decrease, increase, or invade under grazing pressure was used to show variability in the veld condition between commercial and communal grazing lands.

Five paired sites that were 50 m × 50 m were selected. Within each site, species composition and ground cover were recorded at 200 selected positions using the line-transect and step-point methods, respectively.

Semistructured interviews were conducted with farmers and local leadership in communal areas to elicit their thoughts with regards to sustainable grazing options for them.

Results were analyzed using 2-way analysis of variance (ANOVA), chi-square, and *t* tests.

Findings

Score Sheet Recordings

The assessment of veld condition using score sheets (Instrument 1) showed that the condition of the veld in commercial areas was generally good (Fig. 4) with some excellent sites. Veld condition in communal land was fair to poor among the assessed sites (Fig. 5). This might explain why the condition of animals in communal areas is relatively poor.



Figure 4. Commercial grazing land.

Species Composition

For the proportion of decreasers, increasers, invaders, and weeds for the adjacent sites, there was a statistically significant difference between communal and commercial areas at the 10% level. A greater proportion of decreasers were observed in commercial sites and this might be responsible for the better beef production in commercial areas where a high proportion of decreaser species exist.

Ground Cover

The percentage ground cover obtained using line-transect and step-point methods for commercial and communal areas showed that commercial land has better ground cover as opposed to communal grazing land. Perhaps this is why soil erosion is easily observable in the communal areas of Wedza and most communal lands since ground cover helps to reduce the effects of raindrop erosion.

What Farmers Have to Say

Interviews with communal farmers using semistructured meetings revealed that:

- They were in favor of controlled grazing through the use of paddocks.
- They were against destocking expressing that their cattle were a source of wealth to be bequeathed to children.
- They also insisted on using their own bulls for honoring their ancestors (traditional rituals).

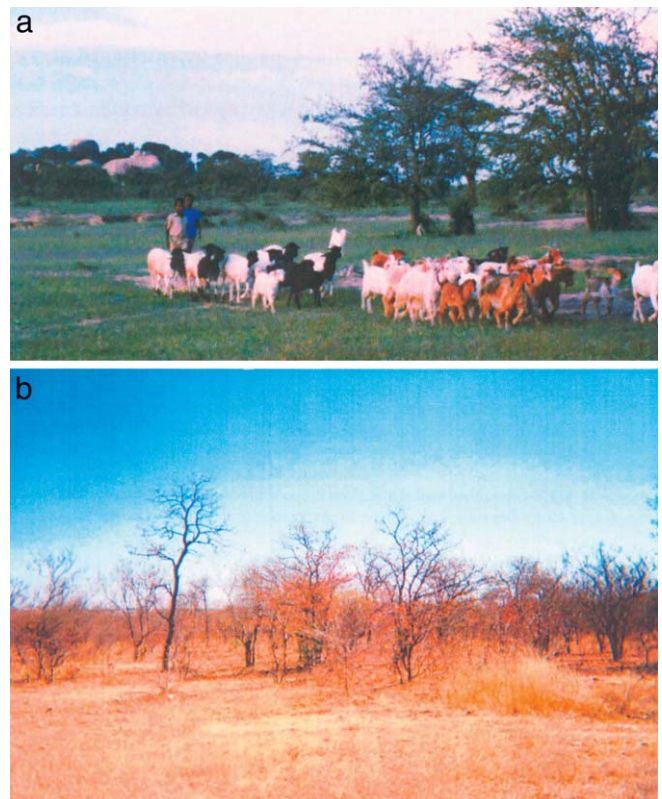


Figure 5. Communal grazing land toward end of wet season (a). Communal grazing land during the dry season (b).

Interviews with the government extension staff showed that grazing schemes should be introduced in communal areas, farmers should practice pen fattening to reduce grazing pressure, they should establish legumes on contour ridges to improve winter grazing, and they should ask trained staff for help.

Conclusions

Veld condition in protected commercial areas is better than that in unprotected communal areas. Less vegetation is found in the communal areas because grass mismanagement through overstocking has led to much vegetation loss. Loss in vegetation results in animals walking long distances in search of pastures and more energy used in obtaining feed. This is an important factor leading to reduced productivity.

The following systems of reclaiming veld in a deteriorated state can be applied to most tropical grasslands under open grazing systems:

- Seasonal resting 2-paddock system per herd.
- Destocking and supplementation with plant residue.
- Pen fattening animals and planting legumes on contour ridges to improve grazing in winter.
- Constant appraisal of the veld to establish the trend.

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