

Paper 23b
March 1987

**THE COMMUNAL GRAZING CELL
EXPERIENCE IN BOTSWANA**

by

R. J. Sweet

Range Management Specialist (FAO/UNDP) with the Animal Production
Research Unit, Gaborone, Botswana

I INTRODUCTION

In 1975 the government of Botswana introduced the National Policy on Tribal Grazing Land (White paper No.2 of 1975), known as TGLP. Tribal grazing land was zoned into *Communal Areas*, in which communities retained collective land rights; *Commercial Areas*, in which leasehold rights were granted for ranching purposes; *Wildlife Management Areas*, in which wildlife utilisation was the primary form of land use but domestic stock were permitted; and Reserved Areas intended to be a reserve for development by future generations.

In 1978 the World Bank commenced funding Botswana's second Livestock Development Project (MDP II) to support livestock development, particularly TGLP, over the next five years. To address the issues of grazing control and better range management in the communal areas, the Animal Production Research Unit (APRU) was directed to establish twelve communal grazing units using communal area cattle, and a further two control units stocked and managed by APRU.

1. Objectives

The objectives of the communal area grazing units were twofold: firstly, to provide a practical demonstration of improved range condition and cattle performance through grazing management and control of stock numbers; secondly, to enable a comprehensive evaluation of different grazing systems for rehabilitation of degraded rangeland.

APRU (1976, 1977) had documented the differences in productivity between 'traditional' and 'reasonably acceptable' management. It was intended that the communal grazing cells would realise the same improvements in liveweight gain and fertility by a) parasite control, and b) unrestricted access to grazing, water and phosphate supplement.

Trials on APRU ranches had failed to demonstrate any consistent advantage of rotational over continuous grazing. However, in Zimbabwe and South Africa, claims were being made of carrying capacities being increased and degraded range improved through short duration grazing. It was therefore intended that the twelve communal grazing cells would implement four different grazing systems in each of the three major ecological zones of

Botswana. Each communal cell would practise only one grazing system but there would be sufficient area (block) replication that together with the two control cells, which would both have three grazing systems with two replicates, they would enable a thorough evaluation of the grazing systems.

In contrast to the group ranches, which made new grazing available, the communal grazing cells were to be located within the overgrazed zones surrounding villages, in order to demonstrate improved management of the existing grazing resources.

2. Description of a communal grazing cell

The basic concept of a grazing cell was a peripheral fence around a water source, with all management facilities located at the centre. Subdivision was achieved by fences radiating from the centre in a wagon-wheel layout. In practice the shape of the planned grazing cells was adapted to suit local topography (APRU, 1980) but was based upon a hexagon. The cellular design and the intention that the units would be replicable gave rise to the name 'grazing cell'.

The model cell would have 3km sides, enclosing an area of 2340ha, and accommodate 300 head of cattle. In practice, it was necessary to increase the size in inherently lower carrying capacity areas (e.g. the western Kalahari). APRU had shown that with reasonable management, weaners could achieve in two years suitable liveweight and condition for slaughter. Young stock were considered to be the class of animal most responsive to improved management. It was therefore recommended that the communal cells be stocked with weaners of 7-12 months age and maintained for two years. A fully operational cell would thus have a throughput of 150 head/year. For simplicity of management; it was originally proposed that only castrated males be accepted; this was later relaxed to include heifers.

The grazing cells were communally owned and operated, stocked with cattle from the community. They were intended for small cattle owners without sufficient cattle numbers or mobility to participate in the group ranching scheme. A prerequisite for funding of a grazing cell was the registration of the participants as an Agricultural Management Association (AMA) to give the group 'body corporate' status with limited liability.

After registration, construction of the cell could begin on a site selected by the group and approved by APBU. Peripheral fencing, paddock subdivision, a central watering point and handling facilities were provided. In addition the

government (APRU) undertook to provide a ranch manager for a period of up to five years, to allow for the training of a manager appointed by the group and to ensure a smooth transfer of responsibility.

All construction costs were covered by the UP II funding and the salary of the interim manager was paid by government. Only the operating costs such as infrastructural maintenance, labour wages and the purchase of consumables had to be found by the group, and these were to be met by a head levy payable to the treasurer. In 1981 the head levy recommended by APRU, on the basis of estimated fixed and variable costs, was P10 to P12 per head per year. In 1985 the head levy was recalculated in more detail for Ntimbale.

The conduct; of the AMA and the operation of the communal grazing cell were at least partially controlled by two documents: the constitution, and the annual management plan. A constitution suitable for grazing cell AMA's was drafted by staff of the Commissioner of Agricultural Management Associations, and subsequently modified according to suggestions by APRU. The management plan was drafted by APRU. Its purpose was to provide a set of guidelines and a management calendar for improved management practices.

A communal grazing cell was therefore defined as 'a ranching unit that is communally grazed, operated and owned by registered members of an Agricultural Management Association, and which has the objective of improving range condition and animal production'.

II THE EXTENSION EFFORT

The registration of a group as an AMA for a communal grazing cell involved various stages with inputs from different quarters. First a community interested in improving the status of their grazing was identified by the extension staff of the Ministry of Agriculture. Next, APRU addressed one or more kgotla meetings to explain the purpose, mode of operation and advantages of communal grazing cells. The local Agricultural Demonstrator (AD) was fully briefed, issued with descriptive material and charged with maintaining the group interest, answering questions and providing liaison between the group and APRU. Simultaneously the Agricultural Management Association Officer (AMAO) would start the task of formalising the group and leading it through to registration as an AMA. A site for the cell was selected by the group and approved by APRU, then an application was made to the Land Board to grant exclusive use of the site to members of the grazing cell AMA. Plans for the

fencing, water reticulation and handling facilities were drawn up by APRU and tenders invited for the siting and drilling of the borehole, and for construction of the cell. Work could begin only after registration of the group. For a control cell construction could begin as soon as a site was approved by the landboard, as there was no group involved.

The target was to have twelve communal cells and two control cells in five years. Listed below are the localities and groups which received active extension effort.

1. *Malkhi*. Situated northwest of Serowe in Central District, this was a cattlepost run under traditional management for many years until the death of the owner in 1978. The site became available to APRU and in 1979/80 the Makhi Control Cell was established around the original borehole. The cell supports three grazing systems (1, 3 and 9 paddocks per herd) with two replicates. It is stocked with castrated male Tswana-type weaners purchased from local cattle owners and sent to slaughter at the Botswana Meat Corporation after two years. The results to date show that excellent carcass weights and grades can be achieved two years after weaning, even on degraded sandveld, where the principles of adequate grazing, water, phosphorus supplementation and veterinary care are applied. Rotational grazing has not proven advantageous over continuous grazing (APRU Annual reports, 1980-84).
2. *Nimbale*. In mopaneveld in North East District, this was the first area selected, the first group registered and the first (and only) communal grazing cell constructed. More details are presented in the case study later in this report.
3. *Sefhophe*. Situated south of Selibe Phikwe in Central District. The first kgotla meeting addressed by APRU staff to promote the idea of communal cells was held in July, 1980. Reaction was favourable and a further meeting of interested cattle owners was held, during which more details of the scheme were explained and the steps towards registration as an AMA outlined. Over the following eighteen months various visits to Sefhophe were made by APRU staff, the AMAO and a senior representative of the Commission of Agricultural Management Associations. A site for the cell was selected, but interest waned and the group never registered as an AMA.
4. *Monwane*. Located northwest of Molepolole in Kweneng District, the

first meeting was held in August 1979 and was attended by approximately fifty people. The grazing cell scheme was explained and AMA booklets distributed. Subsequently a committee was elected and, with the help of the AMAO, a constitution was drafted but was lost by the committee. Further meetings were held in 1980 and a sample constitution was given the committee to help them draft their own. The expatriate AMAO left Botswana at the end of his contract, his replacement, was without transport and for a year there was no AD, so there was little progress. With the arrival of a new and enthusiastic AD, interest was revived and in 1983 the group became registered as an AMA. A water survey was commissioned and a borehole drilled but it proved to be blank. A second survey was conducted but no water was located. The World Bank funding period, which had been extended from June 1983 to March 1984, was coming to an end and there was pressure to release the funds for use in other sectors. The Monwane project was therefore abandoned.

5. *Rakopa*. The area was selected as one of the most devastated by overgrazing in Botswana. In December 1980 a village meeting was arranged by the AD and addressed by APRU. Only seventeen people attended as many were out ploughing, however great interest was expressed in the possibility of establishing a communal grazing cell. Unfortunately the expressed interest never developed into action and gradually hope faded of establishing an AMA or a grazing cell.

6. *Bodi*. This village is situated in a high cattle density area near to Lake Ngami and various meetings were addressed by the AMAO and APRU. While interest was shown in the potential advantages of a communal grazing cell, there was reluctance to be organised by the extension staff. There was also antipathy to fencing, and no real progress was made.

7. *Kang*. In this village in Kgalagadi District a meeting was held in November 1980 to explain the communal grazing cell concept. A group of sixty to seventy members had already applied for registration as an AMA for the purpose of forming a group ranch. Those present at the meeting were in favour of establishing a communal grazing cell. However there was no AD based in Kang, follow-up was slow and intermittent, and interest in the grazing cell was lost.

8/9. *Hukuntse and Lehututu*. These two villages typify the overgrazing pattern in the western Kalahari; kgotla meetings were addressed by APRU in November 1980. Considerable interest was expressed in the possibility of

establishing communal grazing cells. However, the villagers said they had received many unfulfilled promises of help under the Matsheng Land Use Plan and were sceptical of the likelihood of the grazing cells becoming reality. Liaison with the groups was maintained with the help of the District Agricultural Officer based in Hukuntsi. Sites for the grazing cells were selected and approved; the two groups were registered as AMA's in 1983. Tenders were called for the boreholes and for construction of fences and handling facilities. Only two possible sites for water were detected at each location; all four sites were drilled but no suitable water was found. Without water the grazing cells could not function. As the World Bank funding period was at an end, attempts to establish these grazing cells were abandoned.

10. Site for second control cell. No suitable site for a second control cell could be found. Various possibilities were considered but did not meet the criteria of being large enough, degraded through overgrazing, having reasonably uniform vegetation, and not being required for other purposes.

III NTIMBALE CASE STUDY

The area called Ntimbale is a grazing area on the eastern side of the Vukwe river that is used mainly by people from the villages of Masingwaneng and Mambo. There has been considerable range degradation, particularly near the river. In 1979 the area was identified by the Ranch Extension Officer in Francistown as being suitable for a communal grazing cell.

A series of meetings were addressed by appropriate people working with extension, AMA's and APRU, and a strong interest in the establishment of a communal grazing cell was expressed. As this was the first group to form an AMA for grazing cell purposes there was no model constitution in existence. Gradually an acceptable one was developed and the group became registered in April 1980, 15 months after its initial response.

Meanwhile a plan for the grazing cell was drawn up by APRU, fencing tenders called and the contract awarded. However no money could be committed until the AMA formalities were complete and by then the validity of the tender had expired. New tenders were called for the 35km of fences and firebreaks, and for the buildings and handling facilities. The tenders ranged from P3500 to P79000. The lowest was accepted but the contractor failed to do more than clear the firebreaks. The fencing was erected by casual labour supervised by APRU and completed in May 1981 at a cost of P12200, in addition to the

P13800 paid to the contractor for the firebreaks and trace lines. The cattle kraals were similarly erected under APRU supervision, and the housing and storage built by a contractor.

Construction of the cell preceded the establishment of a water point because it was originally planned to use a sand well in the river bed to provide water. This was discounted as being too uncertain and it was decided to drill a borehole within the cell boundaries. The quotation received from a hydro-geological firm in Gaborone to conduct a water survey was P5000. In the end a local water diviner identified two possible borehole locations, for a fee of P25. In May 1981 a drilling contractor sank a borehole at the first location and struck water at a depth of 20 metres.

The borehole was equipped with a windmill (provided under the Services to Livestock Owners in Communal Areas scheme) and a stand-by engine. The windmill was never a success and gave trouble from the beginning. There were problems with incompatibility of the windmill stroke with that of the engine, with the change over procedure from one to the other, and with the service provided by the Department of Water Affairs. Even when the windmill was turning briskly the water output at the central reservoir was inadequate for the needs of the cattle.

During 1983, owing to the drought, the water recharge rate of the borehole dropped below that of the required extraction rate and the cattle had to be watered outside the grazing cell. In January 1984 a second water diviner, who had a good reputation and claimed to specialise in resiting boreholes not precisely located within an aquifer was called in. He said the borehole was off centre by about 8m and marked a new spot which he was confident would provide adequate water. Tenders were called for drilling a borehole. At the same time the Department of Water Affairs embarked upon a campaign of siting and drilling community boreholes in drought affected villages, including the vicinity of Ntimbale. Agreement was reached for Water Affairs to site, drill and equip a new borehole for the grazing cell. In February 1984 they surveyed Ntimbale for water, found no evidence of water at the diviner's site but marked a probable site to the south of the cell. In April 1984 both sites were drilled. The diviner's site yielded 2cu.m. per hour after 48 hours of pumping, and the Water Affairs site 11cu.m. per hour after the same period.

The high yielding borehole was equipped with a pump and engine, new pipe was purchased, and AMA members were requested to dig the 2.7km trench

necessary for laying the pipe from the borehole to the central reservoir. Despite earlier complaints of lack of water, this simple task of connecting the new water supply was dragged out for almost a year. It was only completed after threats of disbandment of the whole grazing cell. The members were unable or unwilling to put in the small amount of effort required to dig the trench, progress was slow and intermittent, and the work was finally completed by casual labour paid out of AMA funds.

The total costs met by LDP II funds for constructing and equipping the Ntimbale communal grazing cell are show below:

Ntimbale Construction Costs

Item	Cost/Pula
Firebreaks	13 760
Fencing	12 200
Drilling 1st borehole	5 360
Equipping 1st borehole	4 450
Water storage and reticulation	9 890
Handling facilities	6 220
Housing and storage	5 620
Siting and drilling 2 new boreholes	8 300
Engine and new reticulation	4 450
TOTAL	70 250
Budget	50 000
Overcommitment	20 250

During the construction phase, protests against the Ntimbale Grazing Cell were registered by an amorphous gro.up called 'Mambo and Mainngwaneng Workers'. They claimed the cell occupied their grazing land and that they had not been duly consulted about the project. The Ranch Extension Officer, Francistown, pointed out that membership of the AMA was open to villagers of Mambo, Masingwareng, Makaleng, Sechele and Gulubane villages and that proper consultation procedures according to the Agricultural Management Association Act of 1978 had been followed with all the communities. A meeting was called to discuss the complaints, and gradually the issue subsided. The cell was constructed with six paddocks of 332ha, to provide two replicates of a three-paddock rotational grazing system. Stocking commenced in March 1982 and cattle numbers were limited to 200 in the first year, owing to the poor condition of the rangeland. Castrates and females were accepted at any age from weaning to approximately two years of age. Initially the castrates and

females formed two separate herds, each grazing one replicate in a 1 month graze: 2 months rest rotation.

A manager was supplied by APRU, and the AMA committee recruited two labourers and a manager-designate. The labourers were paid P15 per month and the manager-designate P20 per month, with the intention of reviewing the latter's salary after completion of his training course.

The manager-designate attended the Ranch Management Training Centre at Ramatlabama in 1983. This course was followed by a period of field experience on one of the APRU ranches. His new salary was set by the committee at P80 per month but they found they could not afford that much and dropped it to P40 per month. The head levy at this time was P2 per quarter. Permanent transects were established and the baseline vegetation parameters recorded (APRU 1982) to enable the monitoring of vegetation change. However, the lack of progress with the development of other communal grazing cells changed the objective from a multi-site grazing systems evaluation to a comparison over time of the range condition inside and outside the Ntimbale cell. The need for replication of the grazing system within the grazing cell diminished and a single six paddock rotation was adopted with periods of 1 week grazing: 5 weeks' rest.

To satisfy the breeding requirements APRU offered to supply bulls but the group preferred the wider choice available through artificial insemination (AI). These services have been provided annually by the Artificial Insemination Group of the Ministry of Agriculture.

The AMA became registered as a producer with the Botswana Meat Commission (BMC) in order to secure its own slaughter quotas. The carcass grades have been excellent and the AMA members have been impressed. For example in 1984 (during the drought), out of forty head slaughtered, with a mean cold dressed weight of 203kg, 2 obtained super grade, 32 grade 1, 5 grade 2 and only 1 grade 3. The average gross return was P278 per head. In subsequent years the number of animals slaughtered dropped to about twenty owing to an increased proportion of female stock in the cell. The small proportion of cattle leaving the cell that were actually sold made it very difficult to determine the financial benefits, perceived by the members, of grazing cell.

In order to evaluate, and demonstrate, the superior growth rate of the cattle in

the grazing cell, an attempt was made to mark and periodically weigh contemporary young stock in the participating villages. The Field Investigation Unit of APRU made a series of trips with a mobile scale to the villages for this purpose. Initially the farmers were co-operative and 194 animals were weighed in March, 1983. Subsequently interest waned and few of the marked animals came in for reweighing. Interest was temporarily restored by the incentive of spraying against ticks all the cattle brought in for weighing, but as conditions deteriorated during the drought, cattle were moved further away from the villages for grazing and the weighing had to be abandoned.

Despite poor rains in 1981 and 1983 the cattle in the grazing cell maintained excellent condition. Members of the AMA were pleased with animal performance and visitors were impressed. Better rain in the 1984/85 season produced a marked fence line contrast of grass within the cell and almost no grass in the adjacent, more densely stocked, communal grazing area.

Perversely, animal numbers in the grazing cell declined rather than increased, the problem being the head levy. The first difficulty had been the inability of the treasurer and other committee members to maintain a balanced record of income and expenditure, despite prior training and subsequent support by the AMAO. After four years of operation it is still not possible to determine the actual operating costs or derive an appropriate head levy. The second difficulty is the tardiness of some members in paying their quarterly instalments of the head levy, with the consequence that some members' cattle have been expelled from the cell and the group has lost revenue. The third and major difficulty is that members balked at paying the head levy when it was raised by the committee from P2.00 to P4.00 per quarter in September 1985. At this time, the animal numbers in the cell dropped to 88 head.

In order to establish the head levy on a less arbitrary basis a new set of calculations based on then current prices was made in November 1985. The costings, their derivation and the influence of animal numbers were carefully explained to the APRU manager, the AMAO and the committee. Allowing for the more realistic wages of P80 and P30 per month for the manager and labour respectively, the head levy estimate ranged from P13 to P27 per annum for an animal complement of 300 down to 100 head.

The derivation of the head levy estimates was explained at the Annual General Meeting of the group, but the estimates were rejected. Agreement was reached to raise the head levy to P2.50 per quarter but the manager did not get his recommended salary rise from P40 to P80 per month. The manager and

labourers stopped work once before because they were not being paid and it remains to be seen how long the present agreement will last.

In general the management plan has been followed reasonably well except where cash outlays are involved. There has been a definite reluctance to spend money even when it is sitting in the bank. The firebreaks have not been maintained. The APRU manager has had a constant battle trying to persuade the Committee to release funds for the purchase of mineral supplements, etc. In agreement; with the Committee, the APRU manager was withdrawn in January 1986, terminating formal responsibility of APRU for the Ntimbale communal grazing cell. Support from the local Ranch Extension Officer and Agricultural Management Association Officer is to continue indefinitely.

IV LDP PROGRESS EVALUATION REPORT

In 1981 the implementation of the major components of the Second Livestock Development Project was so much in arrears that the World Bank conducted an in-depth assessment of selected issues related to the continued viability of the original project design (Bekure and Dyson-Hudson, 1982).

The report noted the general lack of interest in the communal grazing scheme and suggested three reasons:

- 1) Communities were apprehensive about allocating part of an already overcrowded communal area for the exclusive use of a few members of the community.
- 2) The potential beneficiaries did not see sufficient incentives to motivate their acceptance.
- 3) The scheme was based on the alien concept of a large number of participants entering into a long term commitment of dealing with one another co-operatively in a formal organisation.

Further observations in the report were:

- Communities were often motivated by the possibility of securing additional grazing or an additional source of water rather than by a realisation of the need to improve the management of their existing resources.
- Lack of progress may have been partly due to lack of enthusiasm for

the scheme by extension staff, but it was doubtful whether even aggressive salesmanship could have generated interest in a scheme designed to solve a problem which the communities did not regard as paramount.

- Even if the scheme succeeded in rehabilitating the range within the grazing cells, there was no guarantee that the cattle coming out of the cells would be sold rather than put back on the communal rangelands.

- The design of the communal grazing cell component of the project was faulty in that it was structured to extend into communal area techniques of range rehabilitation hitherto untried and unproven in Botswana.

The report suggested that two further communal grazing cells in addition to Ntimbale would be sufficient to acquire the necessary insight into how groups of livestock owners would cope with the scheme, and recommended that the number of control cells be increased to three, one in each of the three major ecological zones.

On the basis of this report no new sites or communities were sought for communal grazing cells, but the extension effort was maintained with those groups already expressing interest. The search continued for suitable sites for two further control cells, but none was identified.

V CONSTRAINTS TO PROGRESS

A wide range of social, organisation and economic factors have mitigated against successful implementation of the communal grazing cell scheme. The major constraints to progress have been described by Sweet and Addy (1985) and are listed below.

1. Lack of recognition of the problem of overgrazing. The over grazed condition of the communal rangeland is not a sudden occurrence and is seldom considered an urgent problem if recognised at all.

2. Unwillingness to limit stock numbers. This is the fundamental problem which gave rise to the communal grazing cell scheme, but which cannot be solved by improved management practices alone. It is not yet recognised that grazing land is a finite resource on a village and a national basis. The 'Tragedy of the Commons' situation (Hardin, 1968) persists, wherein the incremental benefit of an extra animal accrues entirely to the owner while the incremental degradation is shared by the community.

3. Inadequate extension support. It was the task of the extension and

AMA staff to help identify suitable communities and to lead the groups through to registration as AMA's. Only thereafter could APRU commence construction of a communal grazing cell. The necessary extension support was often lacking, partly due to staff shortages and other work commitments, but partly also due to antipathy to TGLP. Grazing cells were seen as the first step in a move towards limiting stock numbers and as such were disfavoured by many of those who were supposed to promote them.

4. Inexperience of rural people in co-operative venture and formal grouping. It was difficult for villagers to formulate, understand and abide by constitutions and management plans. Despite interest shown at village meetings, progress in group formation was slow and the time interval before registration as an AMA was typically two to three years.

5. Loss of control over own cattle. It was a new and difficult step for many cattle owners to group their animals into a single herd over which none of them had direct control.

6. Payment of a head levy. Traditionally cattle are maintained rather than actively managed and the costs of ownership are mostly hidden ones. Thus a regular cash outlay to a third party was a particularly difficult concept to rationalise. Implicit in the justification of expenditure on improved production is a degree of commercialisation, but where the objective of cattle ownership is accumulation rather than turnover, a monetary return on investment is not realised and the proposition is unattractive. The objectives of range restoration and improved cattle performance were insufficient incentives to stimulate the payment of the head levies necessary to operate a communal grazing cell.

7. Reluctance to use AMA funds. Apart from reluctance to pay adequate head levies, there was also considerable reticence to spend the funds accrued. This was part of the syndrome of not being accustomed to spending money on cattle maintenance.

8. Insufficient literacy and numeracy of committee members. In the rural sector the main cattle owners tend to be older members of the community: many have had little education. The younger, better educated people normally have employment and are seldom resident in the villages, and hence are unavailable to hold committee positions. In the case of Ntimbale, the only communal cell to become operational, the inability of the treasurer to do

simple arithmetic has been a severe impediment to balanced book-keeping.

9. Exclusive allocation of grazing to an AMA. In some communities there has been reluctance to allow one group exclusive use of part of the commonage and to fence it off.

10. Too much too soon. The communal grazing cell scheme introduced too many new and alien concepts to be absorbed simultaneously. It is doubtful whether many AMA members really understood the managerial and financial implications of participating in a communal grazing cell.

11. Lack of identification with the grazing cell once established. Groups were actively encouraged to accept and adopt the communal grazing cell with a minimum of alteration and, as the members had little involvement with the construction and made no contribution to the costs, there was little feeling of ownership of the product.

12. Loss of condition of cattle coming out of the cell. At Ntimbale a contributory factor to the reluctance of members to pay for participation was the realisation that the cattle lost condition when returning to the communal area. Fat cattle have more to lose than lean cattle and hence members saw a more pronounced loss of condition on cattle freshly out of the cell than on their contemporaries during the dry season.

VI CONCLUSIONS

From the experience gained during six years of attempting to establish and operate communal grazing cells a number of conclusions can be drawn in relation to co-operative action and development project approaches and in the communal areas of Botswana.

1. The communal grazing cell scheme was badly designed. It introduced too many alien concepts simultaneously, took insufficient cognisance of traditional attitudes to cattle ownership, and did not secure active participation by the members.

2. Group action to overcome a problem perceived by outsiders can only be expected if that problem is also recognised and considered important by the community.

3. Ideas may be introduced but the actual initiative for change should come from the people. There are no solutions that can be directly imposed and successfully enforced by government. Ultimately management has to become an institutional force of the community itself.
4. The issues of grazing control and stock limitation can probably be successfully tackled only when the problems more readily perceived by the communities have been addressed and overcome.
5. Boundary recognition is an essential pre-requisite to voluntary stock control, and is more easily established for cohesive groups.
6. The procedures for group formation should be simplified and the AMA's should provide more assistance in the maintenance of financial records.
7. Key officials of AMAs and similar groups must be sufficiently literate and numerate for maintenance of essential records under the supervision of an AMAO
8. If progress in range and stock management is to be made in the traditional sector, all cattle keeping must carry a realistic cost. At present only those animals slaughtered through BMC are taxed and the cattle industry is heavily subsidised. The consequences are that a) there is little incentive to get rid of unproductive or surplus animals, and b) the costs of improved management are seen by the non-commercial cattle owners as too big a step up from zero cost. If there were a realistic basic cost, the incremental cost of improved management would be a smaller step and might be more acceptable.
9. Development programmes should work through local institutional frameworks where possible, in spaced logical steps, and with realistic time scales. Relatively short time frames imposed by funding agencies demand a sense of urgency seldom felt by the recipients, and carry the risk of acceptance without commitment

REFERENCES

- A.P.R.U. (1976). An integrated programme of beef cattle and range research in Botswana 1970-1976. Animal Production Research Unit, Gaborone

- A.P.R.U. (1977). An integrated programme of beef cattle and range research in Botswana 1970-1977. Animal Production Research Unit Gaborone.
- A.P.R.U. (1982). Livestock and range research in Botswana 1981-1982. Animal Production Research Unit, Gaborone.
- A.P.R.U. (1984). Livestock and range research in Botswana 1983-1984. Animal Production Research Unit. Gaborone.
- Bekure, S. and Dyson-Hudson, N. (1982). The operation and viability of the Second livestock Development Project: selected issues. Ministry of Agriculture, Gaborone
- Hardin, G. (1968) 'The tragedy of the commons'. *Science*, No.162: pp 1243-1248.
- Sweet, R. J. and Addy, B. L. (1985). 'An approach to group ranching and management of communal grazing in Botswana'. In: *The ecology and management of the world's savannas*. Ed. J. C. Tothill and J.J. Mott. The Australian Academy of Science, Canberra.
- White Paper No. 2. (1975) *National policy on tribal grazing land*. Government Printer, Gaborone.