

## **PART IV**

### **RECENT ADVANCES IN PASTORAL EXTENSION SERVICES AND THE ROLE OF INDIGENOUS KNOWLEDGE**

#### **8. Pastoral and Agro-Pastoral Extension Services, How They Differ From Conventional Livestock Development Extension services**

*N.K.R. Musimba*

Extension is a means of information delivery to farmers (Moris 1991). However, it also involves training in the use of new technology and the creation of farmers' institutions that take decisions and facilitate information exchange (Butcher 1994).

In pastoral sets, extension is really given emphasis *per se*; however, elements of extension are seen in respective of pastoral development, management and administration. Also, due to the unique physical and socio-political factors that prevail within pastoral environments, traditional extension models are often inappropriate for use in pastoral systems. This is clearly manifested when attributes of extension services are seen in perspectives of pastoralist systems as below.

**Table 5: Comparing attributes of traditional extension systems with those of pastoral systems.**

ATTRIBUTES OF EXTENSION SERVICES AND THEIR MEMBERS	ATTRIBUTES OF PASTORALISTS AND PASTORAL SYSTEMS
Training of livestock officers based on sedentary systems of livestock keeping. Extension services may be even town-based.	Mobility is key feature of pure pastoralists and even in tranhumants. Some may be cross-border either opportunistic and difficult to predict.
Organizational government structure may be rigid and insufficiently flexible to deal with complex linkages	Decision made in pastoral system may not be accessible. Herders may be reluctant to change husbandry without consultations
Extension staff are specialized	To survive harsh environments pastoralists tend to be generalists
Extension staff are mostly men	Pastoralist may be men or women
Calibre and motivation of staff may be poor, using remote areas as source of punishment	Pastoralist level to lack in literacy and formal education, thus limiting their communication with outsiders
Non-pastoral staff who often make the extension staff tend to put down pastoralist and feel themselves as superior and better educated	Pastoralists are often reluctant to mix with other ethnic groups, and may even refuse to attend hospital and training with other groups
Most projects have failed in their objectives in these pastoral areas due to problem above	The rampant project failures have further complicated the creation of confidence on the pastoralist as it relates to external interventions
Pastoral population are viewed as conservative and frightening by extensionist unused to their customs and culture	Pastoral system is a unique system of exploitation of environment, unsuitable to agriculture. Unpopular decisions such as crop agriculture and livestock reduction policies have negative impact on pastoral development

These mismatches underlie the failures of extension services within pastoral systems and this calls for alternative approaches that will underscore the need of setting up appropriate objectives for extension programmes and address problems of institutionalizing appropriate responses.

Swift and Maliki (1984) have identified two factors contributing to the failure of most pastoral livestock development projects: (i) the way in which pastoral problems were defined and (ii) the lack of appropriate institutes to address the problems.

Problem definition arises due to misconceptions about livestock production and pastoral development. According to Tadingar (1994), these misconceptions arose from the fact that pastoral development programmes had been based on commercial livestock production models as practised in temperate ranching operations. This ignored the distinct differences between these production systems that are key to their development.

The misconception of equating livestock development to pastoral development has been reflected in faulty policy formulation and project implementation in pastoral Africa.

*Pastoral development* is predominantly a social activity aimed at the provision of health, education, veterinary services, water and other facilities together with institution building for improved systems of range management (Salih 1991; Sandford 1983; Gefu 1991). Thus, pastoral development is people-centered. It involves management of people. It integrates the anthropological aspects, socio-cultural

beliefs and practices of a people into a comprehensive development plan.

*Livestock development*, on the other hand, is an economic activity based on cost recovery. It is geared towards the improvement of livestock and livestock products and their availability for market consumption. Thus, it takes, as a priority in problem definition, narrow technical approaches which neglect the socio - cultural and ecological particularities of pastoral production systems. Gefu (1991) sees the emphasis placed on technical attributes of livestock development as a major reason for the low success rate of pastoral development projects.

In these perspectives, the role of pastoral extension is to bring change that will lead to development. Therefore, attempts should be made to embrace local participation and incorporate indigenous knowledge and problem definition into the design of extension projects. As a prerequisite, greater understanding of constraints to pastoral systems will be necessary.

**Table 6: Comparing characteristic features of pastoral and livestock development.**

PASTORAL SOCIETY	LIVESTOCK DEVELOPMENT
Use of ASALs variable resources, survive on opportunistic life styles such as water, feed in space and time.	Occupy semi arid to humid areas with technical advancement to avert adversities of water and feed
Disease control is mainly through traditional/ethnoveterinary practices	Use of modern veterinary medicine is the practice
Diversified livestock production system to produce, milk as food, meat and other social values of wide variety of stock.	Usually specialized in varieties of species and product either meat (beef) or dairy for milk, but can be diversified to dairy ranching
Pastoralists main assets (livestock) are mobile. Regulating grazing through traditional wisdom and knowledge	Modern grazing system are employed to ensure optimal animal performance including supplement feeds in stationary pens
Land use is large scale to ensure wet and dry season grazing and emergency reserve with no defined boundaries	Land use can be small to large scale but with defined boundaries
Land tenure is usually on communal basis	Land ownership is individualized through legal/political mechanisms
Pastoralist may use resources simultaneously or alternatively with other groups, some may be crop lands	Organised rotational use of land for livestock and crops
Traditional mechanisms of preservation and transformation of products such as milk for short term home consumption	Industrialized transformation of animal products (meat, milk, dairy products- all perishable) for long term storage through technical advancement to evade losses
Traditional marketing systems including barter and exchange of products	Developed integrated marketing systems including boards and the emergency of middlemen and whole-sale traders at in local, regional and national markets
Institutional set up involves household group as basic operational unit for negotiations of reverse use among households, clans and ethnic groups	A formal lease arrangement exists with the legal system

In terms of institutional frameworks, livestock extension services have been provided by the public sector. These services mainly focus on crop agriculture (Moris 1991). On the other hand, livestock services have been largely offered by government departments dominated by veterinarians (Moris 1991; Bonfiglioli, 1992). As a result, there is under-appreciation of non - monetary uses of livestock, and of how the existing livestock system fits in with other aspects of pastoral life. Furthermore, livestock extensionists are too highly specialized and limited in coping with the wider range of pastoral issues. Butcher (1994) has further observed that extension workers are mainly men who are barred by custom from addressing women. This calls for institutional reforms that emphasize empowering and strengthening of local institutions run by pastoralists. There is also a need to build strong support services that can handle the bottom-up approach packed with relevant technical approaches and experience to deliver the desired extension packages.

Pastoral institutional reforms should address any problems of inappropriate representation and internal conflict (Bonfiglioli 1992). Emphasis should be directed to those attributes that enhance participatory communication particularly; a closely-knit institutional network, ability to mobilize the community by leadership, clear division of labour and assignments, proper ranking of priorities and strategies and bridging of the gaps between planners and the community. Barrow (1987) and Bonfiglioli (1992) assert that the effectiveness of pastoral institutions in the long term depends on viewing them as part of a wider institutional framework with appropriate legal support.

In conclusion, extension projects practised highlight the need for bridging the communication gap between extension services and pastoralists. The way of achieving this is through greater use of extension service agents from pastoral backgrounds, who are based within the pastoral area or move with the pastoralists. Extension models, like the paravets projects (Butcher 1994) that are rural-based and mobile and whose training focuses on nomadic rather than sedentary systems of livestock system, need to be embraced. Furthermore, differences in pastoralists' perceptions of extension services can be reduced by allowing the pastoralists a greater say in extension design and implementation. To this end, a suitable organizational structure of pastoral institutions is required. This is particularly critical, considering that pastoral structures may be sustained but may be inappropriate for a particular development task, while new or adapted structures may not be long lasting. This is further complicated by the fact that new organizations and their leaders may not have the status associated with traditional organizations (Abdalla 1994). However, that notwithstanding, linking together pastoral organizations with each other and with the government remains crucial in determining the direction and impact of pastoral extension services.

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## **9. Animal Draft Power in Poor Resource Based Rural Agro-pastoral System as a Key to Development and Increased Production.**

*Waithanji, E.M.<sup>1</sup>, Mutua, J.M.<sup>2</sup> and Kaumbutho, P.G.<sup>3</sup>*

### **Abstract**

Fragmented and small land size, socio-economic status of the average Kenyan and the high cost of motorized power (tractorialisation) make Animal Draft Power (ADP) the only viable source of farm power for the poor rural-based agro-pastoral areas. Its promotion and adoption can play a vital role in increasing production and in the general development in these areas. Unfortunately, little is known about this technology as well as the animals in question.

This paper highlights some of the constraints and challenges posed by the use of ADP.

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The most commonly used draft animals in the Kenyan ASALs are oxen, donkeys and camels. Oxen are mainly used for tillage, while donkeys and camels are used for transport. Other possible uses of draft animals that are not being exploited for various reasons are for vegetable oil processing (Shitanda 1995) and road construction (Fiscer 1992).

## **Discussion**

The challenges faced in animal traction technology have been discussed under specific topics; namely (ATNESA 1995):

1. Environmental impact and sustainable production.
2. Animals used.
  - Cows (oxen)
  - Donkeys and others.
3. Transport and equipment.
4. Gender issues and challenges.
5. Animal power for weed control.
6. Participatory process in animal traction.

### **1. Environmental impact and sustainable production**

Little information regarding environmental implications of animal traction and alternative options exists. It is, however, known that deforestation and erosion inevitably occur whether cultivation is by hand, animals or tractors. Certain animal-powered technologies may be inappropriate in some situations, for instance (moldboard plows in arid areas and sledges in some ecosystems (Mutua 1995).

There is, however, no scientific evidence relating to differential environmental impact of donkeys, oxen, cows or over-working animals (ATNESA 1995).

Regarding soil conservation, draft animals can be used to construct terraces and earth bunds saving on human labour. Stones gathered for stone bund construction could be done using draft animals especially in the drier areas of Kenya where they are quite common. Further, draft animals can be used in planting and harvesting vegetative strips whose dual purposes are as fodder and for soil conservation. Unfortunately, these tedious practices are currently being carried out by hand and the appropriate equipment has not been developed (Wakindiki 1995).

## **2. Animals used Cattle (oxen and cows)**

In Kenya, oxen are used for draft but cross-bred cows, which are multi-purpose, are being reverted to in other parts of Africa. As pressure on land increases, use for cows is on the increase for small-holder farmers with occasional requirements for cultivation and transport. Research suggests that, with adequate feeding, cows perform reasonable work with little loss in milk and reproductive performance. (The losses are compensated for by work).

### **Donkeys and camels**

These have an increasingly important role in transport (pack and carts). Donkeys are also used for light cultivation especially in semi-arid areas where oxen do not thrive either. Women are often beneficiaries of this work as the role of transport is usually on them

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(Koiyman and Kabutha 1995). Teamed in pairs or fours, well-fed and well-maintained donkeys are able to perform most tasks undertaken by oxen. They are also cheaper than oxen and less attractive to livestock rustlers (Mutua *et al* 1995). Although donkeys are popular, because they can survive with minimal attention and rough grazing, they benefit from good feeding and management.

Camels are used for transport alone (pack) as they are desert animals and tillage is not possible in their natural habitat.

Lack of appropriate implements for donkeys has resulted in poor harnessing. ((Direct transfer of ox-harnessing with or without slight modification is injurious to the donkey (Mutua *et al.*, 1995) and full utilization of camels is also not achieved as little is known about their harnessing.))

### **3. Transport and equipment**

Animal-powered transport (cart or pack) can have major socio-economic benefits for women and men in rural areas. Access to transport reduces drudgery, favors higher agricultural inputs and outputs, enhances marketing opportunities and promotes social and economic development (draft animal hire services).

### **4. Gender issues and challenges**

Women play a major role in agriculture, but official services are generally directed towards men. Household decision-making and control of animal traction have been dominated by men, although

women are increasingly responsible for these. Some tasks that are traditionally females' can be greatly helped by animal power (e.g. transport and weeding). Women often lack access to assets such as land, capital and credit to buy equipment and animals. Gender aspects of animal traction are under-researched.

## **5. Animal power for tillage and weed control**

Weeding is a major constraint in agriculture as hand and hoes are the main weeding tools in Africa. Limitation of human power and time means that effective weeding is difficult or delayed. Weeding using animal power can save labour and money. Few animal weeders exist but their adoption by communities is low. Tillage implements are usually not suitable, are expensive and sometimes unavailable in rural areas.

## **6. Participatory process in animal traction**

Conventional top-down approaches to developing and promoting animal traction need to be changed. Several animal traction projects in the region (Sudan, Zambia, Kenya and Tanzania) - have successfully used participatory technological development methods. Farmers, village artisans and other stakeholders are involved at all stages in the selection, modification and diffusion of technologies. Participatory rural appraisals help to identify and prioritise constraints. Projects have facilitating roles as farmers are assisted to review, screen, rank and test technological options on their own farms.

Using their own knowledge, farmers and artisans can identify problems and help control and direct research development processes. Participatory methods should also be used in animal traction extension as extensionists work closely with male and female farmers to identify problems and help control, identify and rank their actual needs. Greater farm level involvement of artisans and manufacturers is required.

## **Recommendations**

1. There is a need for research on the impact of animal traction on the environment in different regions.
2. There are few implements designed for donkeys and participatory testing; development and extension work is required on these and on effective low-cost harnessing systems. Appropriate harnesses for pack and carting for camels should also be designed and tested.
3. There is a need to promote better management systems and to increase public awareness of the value of donkeys and their role for women and men in sustainable production, marketing and income generation.
4. A study is required to estimate the socio-economic advantages of reducing women's drudgery through animal power.
5. Information on weeding issues should be disseminated and participatory training on the same practised. Farmers and national networks need more information on weeding technology and options.
6. Participatory work on use of existing plough frames as weeders and on alternative lightweight designs or ridgers and cultivators is required.
7. Local blacksmiths (*Jua Kali* artisans) and large manufacturers should be involved at farm level.

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## **10. SUMMARY OF SUPPORTIVE PAPERS**

### **Participatory Rural Appraisal (PRA) as relates to soil and water conservation**

*J.W. Nzevela*

Soil and water conservation can be defined as land husbandry activities and techniques to maintain both the physical and socio-economic environment for a sound production of food, livestock, wood and other products based on a sustainable use of land, species and ecosystems.

Before PRA was introduced, the Catchment Approach (Focal area or area of concentration) was mostly used in soil and water conservation. The Catchment Approach was introduced in 1987 as a method for planning and implementation of programmes. In recent years the programme has broadened its activities to include fertility improvement and community participation. Until 1989, most conservation efforts were addressing problems in high potential areas. However, ASAL areas are now given increasing attention, with water conservation as one of the main components.

PRA, which was introduced in 1992, is being used as a method for problem identification and community mobilization. The ideas of the local community members are placed in focus and incorporated into planning, decision-making, monitoring and evaluation. Such early involvement will result in personal commitment and sustainable participation of the ultimate beneficiaries who are the

land users themselves. The Divisional Planning Teams (DPT's) are responsible for the planning and implementation of soil conservation measures in a large number of catchments.

Participatory planning assumes that those directly concerned with and affected by the conservation measures have reached a common understanding and that way share this understanding with the officers in the DPT. PRA brings a move from first telling people what to do to listening to them. The intention with the PRA exercise is that not only physical and technical aspects but also relevant social and economic aspects should be considered and incorporated into the catchment planning and in the overall planning and monitoring of the programme.

At the end of the farm visit, the DPT and the farmer will draw up an activity sheet and implementation schedule and a copy left with the farmer for reference where applicable.

The author raises the issues that:

- 1) ASAL areas are unpredictable. However, the local people have their ways of "cushioning" themselves against the environmental shocks but they are reserved; i.e., they do not volunteer information easily. This is a setback to the PRA programmes.
- 2) The decision - making mechanism is still in the hands of the men as heads of homes. When men are away from home then decision - making is delayed.
- 3) Dependency syndrome exist - local people tend to depend on the extension staff who come to assist.

## **Case studies of environmental impacts of agricultural irrigation and drainage practices in some parts of arid and semi-arid Kenya**

*S.M. Kinyali*

Much of the land currently under agriculture is deteriorating due to inappropriate planning, implementation and management. Environmental disturbances include: soil erosion, desertification, salinization, waterlogging, depletion and pollution of water supplies which reduce productivity and jeopardize long-term sustainability. There is a tendency to move to arid and semi-arid lands where farming is done under irrigation. In Kenya, over 83% of the land is ASAL.

The problem of salinity is worsened by the development of irrigation systems without adequate provision for drainage and are being aggravated by poor water management practices and unsound reclamation procedures. In a case study of Kiboko/Makindu, it was recommended that high salinity water could be preferably used on light textured soils without much increase in salinity level of the soil, ploughing under Farm Yard Manure (FYM) or manuring crops could improve drainage and sufficient drainage could lower ground water level below the root zone. Also avoiding excessive irrigation water could reduce salt accumulation on the soil surface by capillary movement of salts along with water.

In a case study of the Naivasha area, it was found out that there were both high salinity and alkalinity in the soils and the quality of the irrigation water was poor. Salt build-up was found in a vegetable

farm due to the use of poor quality water. Thus it was recommended that new boreholes should be sunk with better quality water for use in irrigation. The soils were mainly clay-to-sandy clay having Montmorillonite, hence moderately high in CEC. The subsoil was massive and had low hydraulic conductivity. Application of gypsum and leaching out of the soil were recommendable. Also digging of drainage ways, such as sub-surface file drains or mole drains together with growing of tolerant vegetables, could be used to reclaim the land.

This paper illustrates the hazards of actual or secondary salinization which results from an intensive and controlled agricultural system and ways to prevent it. It also mainly points out some of the aspects of actual salt accumulation as a man - made process rather than as soil enrichment by salts through natural process.

### **Experiences with paravets and pastoral extension services**

*Fiona Percy - ITDG-Kenya*

The Rural Agriculture and Pastoral Programme (RAPP), a project under ITDG - Kenya, pastoral programme goal is "to increase the livelihood security of pastoralists and marginal farmers in ASAL areas of Kenya through widening their choice of technology and strengthening community capacity to take control of their own development.

Rural Agricultural and Pastoral Programme (RAPP) extension approach involves community organization and institution capacity

building; participation of all stakeholders and beneficiaries at all stages including participatory technology development; using existing local knowledge and appropriate alternative options, new improved appropriate technology which are accessible to the poor; and improvement of community access to resources information through linkages.

The extension approach is made easier by the recruitment of Community Animal Health Workers "Wasaidizi wa Mifugo". During the recruitment process, Participatory Rural Appraisal was used to identify training needs and Animal Health Assistants (AHA's) were trained as trainers. A training package, drug supply system and referral system, as well as supervision and monitoring were also designed.

The Wasaidizi treat simple diseases, give first aid and teach farmers on how to treat their own animals correctly. They are local livestock keepers and respected community members selected by the community.

The experiences of the Wasaidizi have been both positive and negative. They are positive in that their activities lead to improved livestock health, better sale prices, more milk, reduced liver condemnations. The Wasaidizi continue working and are in demand by the community, in improved application of treatment, i.e. correct doses of drugs etc., and they complement government vet services.

Their experiences are negative in that no significant economic benefits to Wasaidizi occur; privatization and withdrawal of GK

veterinary services reduces local support referral possibilities; emphasis on modern drugs discriminates against the poor and effective ethno-vet practices and poor selection of Wasaidizi lead to high drop-outs.

## **Indigenous Livestock Care (ILC)**

*P.M.F. Mbithi*

Indigenous Livestock Care (ILC) represents the traditional basis for a livelihood and a technocultural tool for animal health care among African pastoralists. It is the ethnoveterinary system for tackling the various animal health problems and it can be preventive or curative.

Indigenous Livestock Care products include: plants which are either medicinal or nutritional, mineral soils and animal products. The knowledge, skills and practices of ILC have been adopted since livestock keepers adopted livestock and every pastoral culture holds its traditions, values and institutions which have developed with time.

The problems of its development stems from the association of native culture with backwardness and from disregard of indigenous knowledge in livestock health development projects.

The author presents also the methodologies for evaluation of indigenous practices for management of East Coast Fever (ECF) and collection of information on ethnoveterinary practices, major

thrusts and extension activities in Range Management and livestock production in Kibwezi Division.

## **Leadership Skills**

*R. Biteyi*

Leadership is important because in any organization or group there is a need for an individual who will bind people or groups together and represent the group elsewhere. Four types of leadership styles exist: (i) Autocratic - leaders control the people and make decisions; (ii) Paternalistic - leaders share control with the people (iii) Consultative - leaders share control and consult with the people; and (iv) Participative - group control exist and delegates make decisions.

Good leadership is an important contribution to development. The leadership has to be enabling because development is about development of the people. There is no one leadership style that is suitable for all situations. A mix of leadership skills may be necessary in some situations.

The author highlights the differences between a boss and a leader as that whereas the boss drives people, depends on authority, says "I", inspires fear, fixes blame for breakdown and knows how it is done; the leader supports them, depends on goodwill, says "We", inspires enthusiasm, fixes the breakdown and says, "Let us do".