

Experiences in participatory action research to promote animal health and food safety in rural, peri-urban, urban and settlement areas in South Africa

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Abstract

Since 1994, participatory action research has been used to investigate the resources and needs of small-scale farmers and animal owners in North West Province, Mpumalanga and Gauteng. Using participatory methods, objectives can be selected, evaluated and ranked. Long-term sustainability is more likely if people are motivated and empowered through capacity building. Planning of interventions is important and knowledge of the characteristics of the community, its social and material assets, perceptions and traditional practices, the level of knowledge and technology and the cost/benefit ratio of the interventions can be determined through a situational (systems or holistic) analysis with full participation of the target audience. It is asked: "Is skills training a part of action and participatory research?" If so it is a part often forgotten. The "deficit model" or "handout syndrome" is paternalistic and prescriptive and suppresses motivation and self-respect of the target audience who become passive recipients rather than active participants. This has a negative impact on the sustainability of a project - it falls away as soon as the funding vanishes.

The sustainability of animal health, improved animal management and safety of food of animal origin varies according to the socio-economic and environmental situation in which it occurs. This paper presents results of research done between 1994 and 2003 and discusses principles based on field experiences of successful veterinary extension, primary animal health care and small-scale farming in rural, peri-urban, urban and settlement areas in South Africa.

Introduction

Veterinary services in South Africa played an important role in controlling the major infectious diseases of livestock such as rinderpest, bluetongue, nagana and rabies (Coetzer *et al*, 1994). As a result, stock farming became viable and farmers were able to utilise large tracts of land that previously were suitable only for game. Animal products make up a large proportion of South Africa's exports. Within the boundaries of South Africa locally produced poultry, eggs, dairy products, red meat and pork contribute to food security.

Many of these outputs depend on the commercial farmer and it was previously government policy to concentrate its efforts in this sector. Yet food production cannot be left to commercial farmers alone. During the previous decade, the least understood veterinary needs were at the level of small scale and subsistence farmers where there is a lack of capital to buy land and communal grazing is a possible alternative. Household food security becomes an issue at the level of the subsistence farmer and the sub-programme Land Redistribution for Agricultural Development (LRAD), initiated by the State, is bringing previously disadvantaged farmers into commercial agriculture through redistribution of land and financial assistance from the Land Bank.

Veterinarians, due to their broad based training, can play an important part in community development and animal production (McC Crindle *et al.*, 1996; McC Crindle, 1998). Yet, human factors and the environmental impact may be ignored and only the interaction between animals and their diseases considered.

Previously, animal disease control and food safety legislation was rigid and based on state subsidised quarantine, vaccination and slaughter-out policies with criminal prosecutions and confiscation used as tools to control epidemic diseases and food safety. A change from these reactive policies to more pro-active policies and wide consultation has occurred within the last decade. However, in order to plan and implement proactive strategies in animal health and food safety, it is essential that farming systems and veterinary needs of the target communities be well understood.

The literature shows that innovations adapted from other countries are seldom successful in Africa. This is because of poor livestock health due to many tropical diseases, lack of consultation with livestock owners and constraints such as droughts, political instability and stock-theft (McC Crindle *et al.*, 1996; McC Crindle, 1998). The "deficit model" (McKnight, 1985; 1987) or "handout syndrome" is paternalistic and prescriptive and suppresses motivation and self-respect of the target audience who become passive recipients rather than active participants. Unfortunately it is characteristic of aid packages from international donors. This has a negative impact on the sustainability of a project - it falls away as soon as the funding vanishes.

Participatory action research enables small-scale farmers and animal owners to become actively involved in the assessment of their own veterinary needs. Using participatory methods, objectives can be selected, evaluated and ranked. The emphasis is that the veterinary services are structured in terms of the target audience, rather than the animals. This approach is in contrast to one that is paternalistic, prescriptive and animal-centred and where the owner's interests are disregarded (McC Crindle *et al.*, 1999; McC Crindle, 2003).

According to Wade (1989), a developmental process starts from where people are and takes them to where they want to be. He calls this "anticipatory needs". The definition commonly used for "felt needs" is the difference between where people are and where they should be. Either of these approaches incorporates facilitation and management of change - something well known in management theory (Hersey and Blanchard, 1973). To paraphrase Bembridge (1991), extension can only function effectively if the objectives of the extension worker and animal owner coincide.

Getting them to coincide involves situational (systems) analysis and management of change (McCrindle, 2003).

Change is linked to perceptions and can consequently only be achieved by listening to people and observing the situation objectively. It is a systems approach (Lazlo, 1983), where all the variables intrinsic and extrinsic to a particular system as well as all the interactions are identified, analysed and evaluated in a participatory way. People capital (strengths and abilities), access to resources (asset mapping) as well as constraints should be included (Flora, 1997; Stewart *et al*, 1998). Planning of interventions is important and knowledge of the characteristics of the community, its social and material assets, perceptions and traditional practices, the level of knowledge and technology and the cost/benefit ratio of the interventions can be determined through a situational (systems or holistic) analysis with full participation of the target audience.

The results and impacts of a series of holistic veterinary needs appraisals based on active research and participatory principles, conducted in North West Province, Mpumalanga and Gauteng between 1996 and 1999 will be discussed in this paper. Preparation for the research project began in 1994 with discussions and field-testing. The findings were published as Technical Reports and have been used at provincial government level and by animal welfare societies to influence policy in regard to previously disadvantaged livestock owners and rural agricultural communities. Since 1999, there has been ongoing research into the questions raised during the Veterinary Needs Appraisals (VNA) done between 1996 and 1999, as certain interventions have been implemented and evaluated.

Methods

Mettrick, (1993) has described a farming systems approach. The system of interest to veterinarians has three main components: people, animals and diseases (Fig 1).

Like an ecosystem, this triad of intrinsic factors will be affected and influenced by extrinsic factors. The extrinsic factors fall into two categories: environmental (rainfall, climate, vegetation, geographic location) and socio-economic/ socio-political (cultural, social, economic, and political factors). The interplay between all the variables in the system can only be assessed if the appraisal is holistic.

The concept of rapid rural appraisal was first formulated by Chambers in 1980 and reviewed in 1992. It was defined as:

A systematic but semi-structured activity carried out in the field by a multidisciplinary team and designed to rapidly acquire new information with appropriate imprecision.

Mettrick (1993) has described the core principles. The methods used during the rapid appraisals (VNA) done between 1996 and 1999, were modified after the detailed methods described by Hildebrand (1981) and are described below.

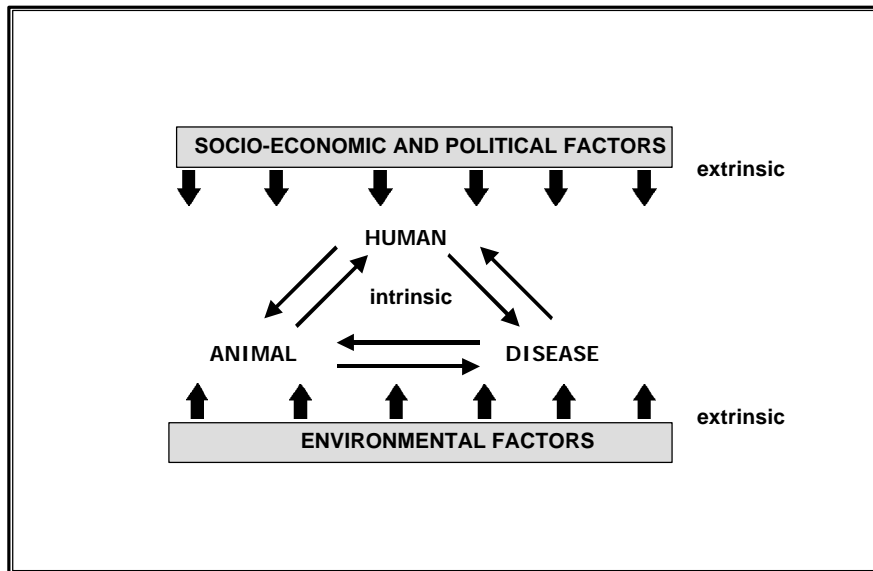


Figure 1: Holistic systems approach showing intrinsic and extrinsic factors

The steps in the process were:

- Phase one: Pre-planning:
 - Identify the target community
 - Contact stakeholders/role-players with a good knowledge of the community in question
 - Set up a multidisciplinary research team (there were up to 60 members per team) - including health professionals, human sciences professionals, environmental professionals, economists, a statistician and community representatives.
 - Hold a planning session using project management principles
 - Consult with identified community role-players and obtain permission from all political factions, government departments and non-governmental organisations present in the area, set up dates and locations.
- Phase two: Gather background information:
 - Demographics of human and animal populations, socio-economics of the human population, geography and environment (e.g. soil types, rainfall, vegetation type). This task is divided up among the team e.g. a technical expert in the agricultural field will get the geographical information systems (GIS) data required, whereas community role-players will be asked to give background on the cultural characteristics and language of the target group.
- Phase 3: Field work: 5 to 7 days
 - Initial community meeting: This must be inclusive - stakeholders and role-players representing the interests of animal owners, representatives from state and non-governmental organisations - are gathered for the initial meeting on day one. The entire research team was also present as observers. After a brief explanation, which is translated into the languages of the participants, they broke up into small focus groups with a facilitator, to describe their perceptions of veterinary needs within their interest group. The groups reported back and then discussion and consensus was achieved in the plenary. This list of perceived needs and available resources was duplicated and distributed to the research team group-leaders. In general three questions were asked of the focus groups:

- What problems do you have with animals in this area?
 - How do you think these problems could be solved with veterinary help?
 - What help is available in the area for sick animals?
- Members of the research team split into groups for fieldwork, each under a group leader. The teams were based on the species of animal (pets, traction animals, cattle, small-stock, pigs and poultry) and in addition there was a team to look at the marketing of animal products (e.g. spaza shops selling locally slaughtered meat) and another to look at the resources and infrastructure (e.g. schools, clinics, shops, state of the roads etc.). These teams went out every morning for four days to meet with animal owners and examine all animals presented. Faecal and blood samples were taken from randomly selected animals to indicate health status. Photographs were taken to record the farming systems and breeds of animals. In the afternoon all teams returned to the central venue to report back on their findings. Community members were present to comment on the report-backs and verify the impressions of the research team. The reports were recorded immediately.
 - Last day (day 5 or 7): Consolidation of daily reports and summary by group leaders in consultation with group members. Report-back to all stakeholders and role-players. Crosschecking of findings with community members and ranking of veterinary needs. Listing of suggested resources for community members to solve identified problems in the specific area.
- Phase 4: Preparation and dissemination of report
 - Preparation of report and circulation to research team members, within seven days of end of fieldwork, for comment.
 - Summary of results of quantitative data (e.g. results of laboratory specimens) and further information on available resources.
 - Preparation, editing and finalisation of report within 14 days of fieldwork.
 - Duplication, binding and circulation of report to funding agency, research team members and all stakeholders.

Results and discussion

A great deal of qualitative data was generated during the VNA and was presented in four technical reports. These are summarised in Table 1.

Table 1: Reports on the veterinary needs of resource-limited communities

Area covered by report	Date	Area
Mashishing, near Lydenburg in Mpumalanga	1996	Peri-urban
Jericho in North West Province	1997	Rural
Zuurbekom, West Rand and Vereeniging in Gauteng	1998	Townships (urban)
Mamelodi East in Gauteng	1999	Informal settlements

The differences between the findings in each area (peri-urban, rural, urban and settlement) are summarised in Table 2. It may be seen from this table that animal health, improved animal management and safety of food of animal origin varies according to the socio-economic and environmental situation in which it occurs.

Extrinsic environmental and socio-economic factors have a marked influence on the human-animal-disease triad shown diagrammatically in Figure 1.

If the situation is compared with the norms for commercial farming systems in South Africa, the difference in approach required by veterinary services becomes very obvious. Commercial agriculture is aware of the availability of veterinary services and symptoms of animal diseases. Most commercial farmers treat their own animals using stock remedies available over the counter from farmer's co-operatives. They have formal representation at government level through farmer's organisations and can influence policy. Animals are marketed through formal channels, which allow the state veterinary, and health authorities to monitor quality and safety of products processed through abattoirs and the dairy industry. Communication at all levels is facilitated through telecommunications, radio and television, agricultural journals as well as regular farmer's days and visits by animal health technicians. Access to credit and economies of scale cushion against natural disasters such as fire, flood and drought.

In contrast the infrastructure in resource poor areas was found to be lacking. Water supplies for both humans and animals were minimal - a whole village might, for example, have only one borehole and a dam for the animals. Roads are not tarred and it was found that maps did not exist for the so-called "homeland" areas - so Geographical Information Systems had to be used. The State Veterinary Services did this. Census figures for both human and animal populations, prior to 1996, were found to be highly inaccurate. With all the best will in the world it was very difficult for state veterinary staff to manage the disease status of animals - yet the VNA showed that they had amazing success due to the training and visit system where animal health technicians visited farming districts on a rotational basis. However staff requirements for resource poor areas were far higher than those required in commercial farming areas. Part of this was due to communication difficulties. The advent of the cell phone has made a major impact - since 1999, communication with farming communities has increased dramatically.

**Table 2: Ranking of findings in each area
(Score of 0 to 5 where 0 =low, and 5=high)***

Findings	Peri-urban	Rural	Township	Settlement
Knowledge about state veterinary services	1	4	1	0
Knowledge about animal welfare facilities	4	0	5	1
Knowledge about private veterinary clinics	1	0	2	1
Knowledge about animal diseases	3	3	1	0
Request for information days	4	5	5	4
Many more animals than estimated in census	2	3	5	3
High level of diseases/injuries in livestock	2	1	2	1
High level of diseases in dogs	3	2	2	3
High level of parasites infesting animals	4	3	5	5
High level of malnutrition in animals	3	3	3	4
Availability of water for animals	1	2	4	1
Availability of animal feed (purchased)	4	2	1	0
Stock remedies easily available locally	2	1	2	2
Stock remedies affordable	1	2	1	0
Stock-theft a major problem	3	5	3	2
Stray dogs kill stock	4	2	4	4
Stray dogs as a nuisance	2	1	4	3

Wild animals a nuisance	2	4	0	0
Age and infirmity of cattle owners (Pensioners)	4	4	3	0
Conflict between animal owners and community (Goats, chickens, donkeys, dogs)	4	2	5	2
Dependency on outside agencies to do things	2	3	4	3
Communication a problem within community	4	2	4	0
Communication with resource providers a problem	5	5	5	5
People eat animals that die of disease	1	1	1	4
People slaughter animals for weddings/funerals	5	5	5	5
Animals marketed through formal channels	1	1	0	0
Animals marketed through informal channels	4	4	4	4
Informal marketing (selling) of animal products	1	2	4	4
Formal marketing of animal products	4	3	4	1
Food hygiene and safety must be addressed	3	2	4	4
Transport of animals lacking	5	2	4	5

The differences between the different socio-economic and environmental situations are interesting. Settlement areas, for example, are socially very cohesive. Many of the inhabitants are unemployed (consequently they are at home) and communication at community level is very good. Motivation is low - however, so is dependency. The general feeling seems to be that "no-one cares about us so we have to care about ourselves". In contrast, the rural areas, which were located in a previous homeland, were accustomed to state subsidised veterinary services, free clinics and parasite control. However, contact with veterinary services had resulted in a better ability to recognise and treat diseases in their own animals.

The major constraint throughout seemed to be the affordability and accessibility of stock remedies. Part of the problem was that remedies were packaged for the commercial farmer with many animals, rather than the communal farmer with only a few. Discussions on buying and sharing a large volume between several farmers were not met with enthusiasm as it was felt that this would lead to conflict. Remedies for the control of parasites in dogs were particularly expensive and obviously aimed at the upmarket wealthy pet owner. This had public health implications as approximately 80% of dogs were infected with hookworm (which causes *cutaneous larval migrans* in children). This problem has been addressed to some extent since 1997 by manufacturers packaging stock remedies in smaller containers. However the high level of parasites has not markedly decreased and participatory research done subsequently in the nearby Odi District (Sekokotla *et al*, 2002) showed that although it was possible to increase the knowledge of farmers about parasite control in cattle through extension and skills training, they did not necessarily apply the knowledge and skills.

There were some very interesting observations made about the species of animals kept. In Jericho, for example, several of the villagers kept pigeons. This is probably an under-utilised source of protein and possible more suited to the prevailing conditions than chickens. However in the intervening years, the numbers of people keeping pigeons have not increased, despite suggestions made during information days on poultry keeping. Another surprising finding was the large number of livestock kept around Mamelodi East settlement areas and Soweto. There were more goats and sheep in Soweto area and more cattle in the Mamelodi area. This has probably more to do with the available grazing land than socio-economic factors. The

concentration of livestock is probably related to the enormous market for animals slaughtered for ritual purposes. Following the rapid appraisals, contact between the state veterinary services, animal welfare agencies and the speculators and owners of these animals has been maintained and expanded to the benefit of all parties. This has been an important step forward as it accommodates cultural practices into the legislative framework. The number of dogs kept was far higher than expected with the lowest number kept in the settlement areas and the highest (one dog for every third household) in Jericho. In Mashishing there was a communal area for pigsties and the pigs were fed edible swill from the households in the village. Information gained has been used by the Society for the Protection of Animals (SPCA) to produce pamphlets on management of pigs. Few people kept donkeys and horses and, even in the rural areas, they were not used for ploughing the lands but for transport of water and chairs for church meetings, weddings and funerals. Harnessing was poor and the castration of donkey stallions was more expensive than the purchase price. Wild animals such as jackals and warthogs were considered a problem in Jericho.

The livestock did not really provide much food security, as, with the exception of chickens and pigs, they were not slaughtered for food but mainly for ceremonial occasions. The purchase price was therefore related to the colour, age and gender rather than weight of the animal, in contrast to commercial systems where meat is sold by the kilogram. Livestock were, however, a form of financial security as they were sold if there was a family crisis or money was required for school fees. A subsequent study on goats in Jericho (Sebei *et al.*, 2002) revealed that the return on investment was higher than if the owner had invested his capital in a savings account. Water and feed scarcity, particularly in winter, remain severe constraints to stock farming.

Calculations done in Jericho indicate that approximately 100 hectares would be required to provide an income of R1000.00 per month from extensive cattle farming. This is not feasible as the population density, even in rural areas, is too high. Sales of livestock are, however, used to supplement pensions and many of the owners are pensioners.

Food safety was found to be a problem as the uncooked animal products sold informally (such as meat and milk) were not hygienically prepared or stored. This has subsequently received a great deal of attention from the state veterinary services through extension and skills training and gradually the situation is improving.

The diversity of data obtained (Figure 2) resulted in different objectives for different areas. These objectives were originally selected and ranked during each VNA. This has subsequently resulted in a dynamic system where objectives have changed over time. The main success, in retrospect, was the facilitation of interaction between the communities and resource providers such as the SPCA and the Department of Agriculture, Conservation and the Environment (DACE). The SPCA and DACE have developed extension messages and skills training to meet the requested educational needs of the different communities. These have included such diverse topics as "How to see if your animal is sick", "Making donkey harnesses of affordable materials", and "Caring for pigs" among others. The funding has long since vanished - yet the interaction continues. It has been quite amazing how sustainable this has

been - mainly due to the motivation of local people who have continued the process without further interventions. A spin - off has been the initiation of action research into specific veterinary aspects encountered during the VNA, such as control of parasites, survivability of goat kids and fertility of communal livestock^{12,17,18}. Further research is still in progress and will be published in due time. With the exception of these specific research studies, however, it has been found to be difficult to quantitatively measure the impact of interventions, using as a baseline the qualitative data obtained from the rapid appraisals.

Yet, it must be said that although the VNA method is to be recommended because it produces so much information in a short time and gives immediate feedback to all the stakeholders, the immense impact of the extrinsic factors of environment and socio-economics on human-animal interactions in resource poor communities cannot be underestimated. It is possible to empower animal owners to solve their own problems at primary animal health care level with some assistance from resource providers - however they cannot cope with factors such as severe droughts, AIDS, stock theft and poverty. A paternalistic and prescriptive approach to these extrinsic factors is probably the main factor in maintaining the dependency syndrome encountered in low-income communities.

Conclusions

The method developed for rapid appraisal of veterinary needs was surprisingly easy to manage and relatively inexpensive. The data generated has been useful for strategic planning by the Gauteng and North West Provincial Departments of Agriculture as well as by the National Council of SPCA's livestock division. Several research projects that have originated from the findings of the VNA have produced quantifiable results. In general it has been found that skills training works better than just information to empower farmers to improve their livestock management and disease control.

Although it is theoretically possible to use a qualitative study as a baseline, it has been found to be difficult to measure the impact of specific interventions since 1999. This is a possible limitation of rapid appraisal techniques.

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