TOWARDS DESCRIBING SMALL SCALE AGRICULTURE: AN ANALYSIS OF DIVERSITY AND THE IMPACT THEREOF ON EXTENSION SERVICES: THE CASE OF THE LELIEFONTEIN AREA (NORTHERN CAPE, SOUTH AFRICA)

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ABSTRACT

This article reports on a study which was undertaken in one of the historically "coloured reserves" of the Northern Cape Province called Leliefontein. The overall objective of the study was to compile an understanding about the diversity in farming households. Typology analysis was applied on a sample of 108 households. The findings of the study show that there exists substantial diversity among the households in this predominantly farming community. The knowledge of this diversity might be of importance for extension service. There are seven types of households reflecting this diversity namely, Autonomous Households; Livestock Holders; Irregular Income Earners; the Poorest; Regular Income Earners and Social Transfer Dependent types. These findings are then applied to assist with the design of extension services.

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1.   INTRODUCTION

The South African rural environment today is diverse with agriculture largely dualistic, which is partly the result of a history dominated by phenomenon such as colonialism, racism, apartheid, cultural diversity, sexism, repressive practices as well as aspects such as economic deregulation, urbanization, natural resource endowments and environment changes (Van Rooyen, Nqgangweni, Groenewald & Fényes, 1998).

Out of nine provinces of South Africa seven have more people in rural areas than urban areas (Development Bank Southern Africa, 1997). Rural societies are mainly still engaged in agriculture, either directly or indirectly. Understanding the nature of agriculture in South Africa's rural areas is fundamental to understand development and providing effective extension services, as agriculture remains a key activity in the rural areas of South Africa (De Lange, 2000). This also refers implicitly to the needs of "small scale" or "small holder" farming as the major type of agriculture in the rural environment of the developing countries. But who or what describes small scale agriculture in South African rural areas?

This article attempts to describe the concept of small scale agriculture as it manifests in the historically disadvantaged community of Leliefontein in the Northern Cape Province of South Africa. It will report on a study on the diversity in the agricultural environment of Leliefontein, a previous "coloured reserve". The study shows how diversity can be analysed and formalised (Anseeuw, Laurent, Modiselle, Carstens & Van der Poll, 2001). Diversity is determined by typology analysis and the impact of this diversity is considered for agricultural extension services in Leliefontein (Modiselle, 2001).

Leliefontein consists of nine villages, which are characterised by underdevelopment and lack of economic self-sufficiency. Since December 2000 it is controlled by the Leliefontein Transitional Local Council. There is both crop (mainly small grains and cereals) and livestock (sheep, goats and cattle) farming activities. The agricultural extension service is rendered to the community by the Department of Agriculture, Northern Cape in Springbok, a regional centre.

2.   DESCRIBING SMALL SCALE AGRICULTURE: PROBLEM STATEMENT AND METHODOLOGY

Presently much consideration in agricultural policies in South Africa is focused on small scale agriculture and rural development (Kirsten, Van Zyl and Vink, 1998). This is a complex sector, as it does not only include economic and natural resource determinants but also non-economic determinants such as family and community cohesion. Small farmer programmes are currently viewed as an important aspect of agricultural development in South Africa. It is likely to be an important programme for growth with an equity strategy in South African agriculture (Van Rooyen, Ngqangweni and Njobe, 1994). Eckert and William (1995); Van Rooyen and Nene, (1996) and Singini and Van Rooyen (1995) agree that a common mistake in earlier agricultural development programmes was to assume that small scale farmers were an undifferentiated group which could be accurately defined with mean and median. This view is confirmed by the studies cited in the work of Kirsten, Parker and Van Zyl, (1996); D'Haese, Van Rooyen, Van Huylenbroeck and D'Haese (1998); Laurent, Van Rooyen, Madikezela, Bonnal and Carstens (1997), where it is argued that there exist different types of small scale farmers that need to be described.

The determinants of farmer decision making should thus not only include households characteristics and land holdings but also the totality of physical, social, economic, biological and institutional setting in which the farmer operates (Laurent *et al.*, 1997). Therefore it is essential that this study considers a farm household as well as the environment in which it is operating. It must thus be expected that there is great variability among the small farmers. This needs to be well understood so that support services, especially extension can be appropriately adapted and focused.

The above approach was requested by the Department of Agriculture in the Northern Cape Province after a series of consultations with the University of Pretoria; the *Institut National de la Recherche Agronomique* (INRA) of France and the Agricultural Research Council (ARC) of South Africa. The extension officers of the department need to have a clear knowledge about their farmers. The department aims at improving their extension service to the rural communities by focusing on target groups. This approach leads to the following two questions: how can

diversity in farming rural households be identified and described; and following on this: how can appropriate agricultural strategies to serve diverse farming households be designed and implemented. At the heart of these two questions is the fundamental issue of: how to define and describe small scale agriculture in a typical South African underdeveloped rural setting (Modiselle, 2001).

In line with the above statements and hypothesis the overall objective of the study was to apply an appropriate methodology to identify and describe the diversity in the farming households of the Leliefontein area so that it can be used systematically by the agricultural extension service in planning and in rural development initiatives. The specific objectives were: to develop a methodology to identify and explain the diversity of rural livelihood amongst farming households; to characterise the diverse behaviour of rural households with regard to decision making related to farming; and to group similar household types together i.e. to develop a typology.

The methodological sequence started with formulation of relevant questions (see Figure 1). Firstly, there was a discussion with agricultural extension officers and agricultural economists on the focus of the study. Preliminary interviews were also realized with a sample size of 28 households and were aimed at gaining a better understanding of the people in the villages. Those interviews were conducted using an open-ended questionnaire and the respondents were allowed to express their views freely, which allowed for flexibility and exposure of certain issues and the further development of the questionnaire. The close-ended questionnaire was then built with further inputs of all stakeholders.

The second part of methodological sequence represented data collection from 108 households. This sample included some of the 28 households that were visited during the first round of interviews. Interviews were conducted in collaboration with the extension officers. The third part of methodological sequence was data processing and the identification and analysis of possible diversity. The first typology to describe diversity was developed by qualitative analysis. A second typology was then developed according to the comments and inputs of participants. Key variables were selected and the discriminant analysis and logistic regression were then run to confirm the results of the
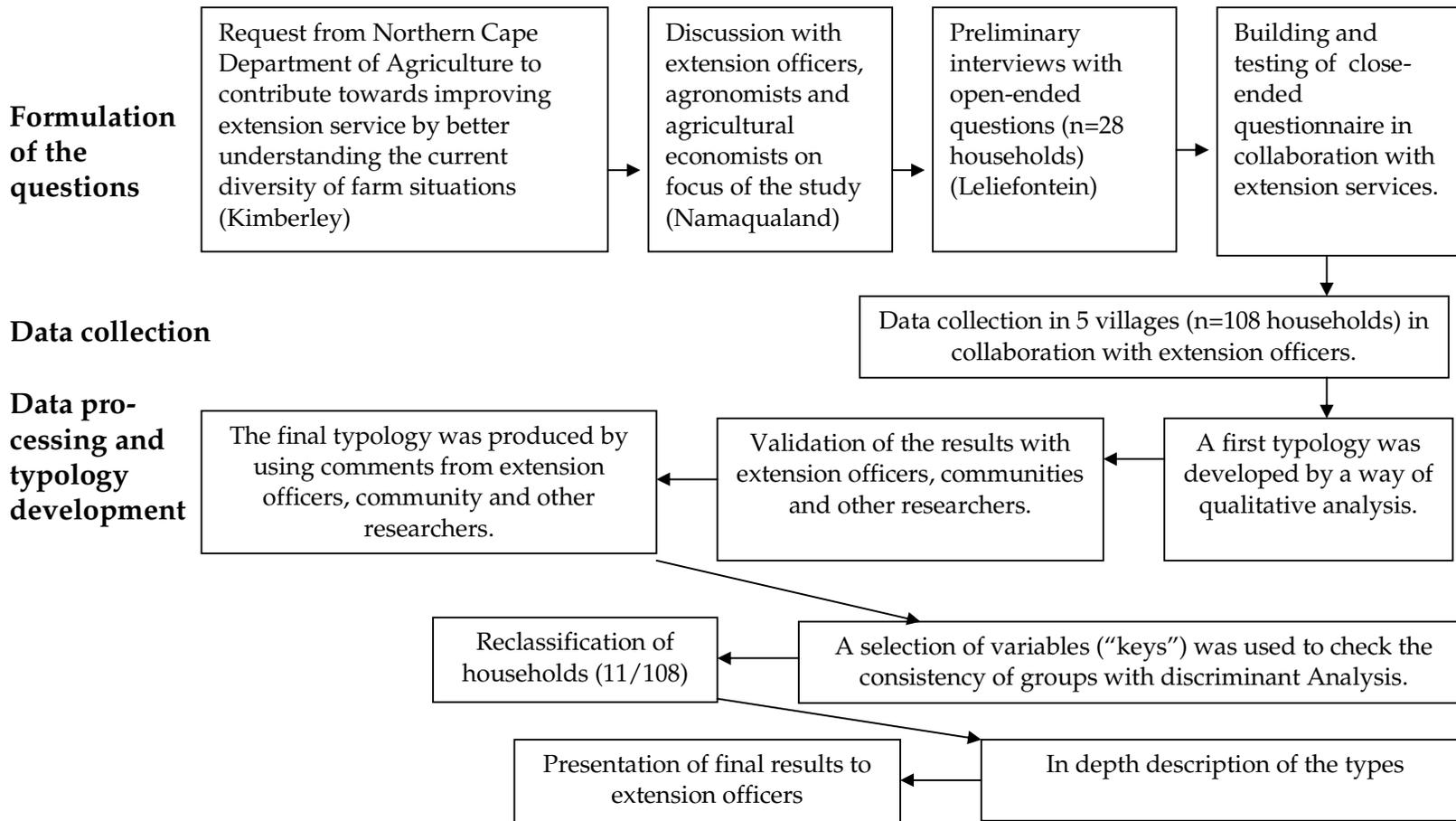
Figure 1:   Methodological sequence of typology development

typology analysis. This resulted in some households being reclassified. The typology was then presented to the agricultural extension officers by way of a seminar. Comments and feedback were accommodated in the final development of the typology for Leliefontein.

3.   DESCRIBING AGRICULTURAL DIVERSITY

3.1   Agricultural functions

Livestock farming was identified as the most important agricultural activity in this semi arid area. But it was not only used as a professional activity: this focus point was used to structure functional dimensions of the farming systems (See table 1).

* On the horizontal axis of table 1: Professional agriculture refers to farming that is practiced in a commercial mode i.e. as a profession. The social system refers to how livestock farming is perceived by the community. Family life refers to how livestock farming is used by the family (household).

* On the vertical axis: Economic function refers to benefits and items that can be associated with economic and commercial value. Social function yields intangible benefits and costs that are real, for example, better health. However such benefits do not lend themselves readily to monetary valuation (Gittinger, 1982). Religious function refers to the particular spiritual motivation of keeping livestock and hedonistic function refers to livestock as an object of pleasure and enjoyment.

Livestock farming in the Leliefontein community can be seen as a business with a profit making objective and be regarded as boosting farmers' status. It enables the process of redistribution of resources and offers social security in the communal system. Livestock keeping can also be for household consumption and offer such household a reduced dependency on family transfers. Some animals (donkeys) are kept for the religious function that they serve while some (e.g. lambs kept as pets by some women) satisfy the hedonistic function.

The above mentioned results support the fact that livestock activity is able to fulfil different objectives of the farming households.

Table 1:   The different functions of livestock farming within the Leliefontein community

	Professional agriculture	**Social system**	**Family life**
Economic function	• Focus on profits in a diversified farming system • To make an economic living	• Redistribution of resources, for an example, a gift of an animal to a visitor and/or a relative.	• Household consumption • Investment (portfolio) • Production
Social function	• livestock boosts the status • Employ people	• It is a tradition to keep livestock. • utilize social security when using common resources.	• Families are less dependent since their needs can partly be served.
Religious function		• donkeys are still honoured by some families because of their biblical connotation. (Matthew21:2)	
Hedonistic function (Hobby)			• In some financially stable families, women keep animals especially, lambs, as pets.

Source: Modiselle, 2001 (adapted from Laurent et al., 1997)

3.2   Typology analysis

Typology analysis is used to describe the observed diversity in the farming environment. The description of different types observed in the study area include the ways in which the households are organised and coping (see table 2). Each type involved in farming will be named with a descriptive title to indicate its main features.

4.   IMPLICATIONS FOR THE DESIGN AND IMPLEMENTATION OF AGRICULTURAL EXTENSION SERVICE

Small scale agriculture should not be defined as a homogenous entity. It is rather fragmented into different levels and systems of farming. This statement is verified by the typology results on farming households in Leliefontein. Extension service has to understand that a single technical advice is not appropriate for all the small scale farmers in the rural communities. In Leliefontein the seven types of farming households each has different resources and coping strategies (Table 1). This knowledge requires that the following factors will be important for extension service to consider before rendering service.

4.1   Labour system considerations

There are farming household types that apply hired labour while other only rely on family labour. The Autonomous type and Regular Income Earners employ shepherds to take care of their livestock on a full time basis. Livestock Holders and Irregular Income Earners take care of livestock themselves. The situation is thus diverse.

As such, it is found that the shepherds can make technical choices such as where to take animals for grazing but the strategic choices like which medicines to buy or when to sell the animals are done by the livestock owners. This implies that for extension officers to ensure that their advises will be carried out they must diffuse information to all levels, i.e. at a farmer and shepherd level. Currently shepherds are not included in any extension and training activity.

Table 2: **Summary of the different types of farming households in the Leliefontein area**

Types	"Autono-mous" (A) (n = 7) 6.5%	"Livestock Holders" (Lk) (n=12) 11.1%	"Irregular Income Earners" (Iw) (n=11) 10.2%	"Regular Income Earners" (S) (n=22) 20.4%	"Family Dependants" (Fd) (n=5) 4.6%	"Social Transfer Dependa nts"(St) (n=44) 40.7%	"Poorest" (P) (n=7) 6.5%
Main attributes of the types	Various sources of income. Highest income group of the area; brick built houses; own transport (for example. bakkies).	Want to make a living out of livestock keeping; entry into livestock farming after a previous job outside agriculture and outside the area.	Temporary jobs and unreliable income; they can be very poor; they are reluctant to seek jobs far from the area.	Regular income from non-agricultural activities include households with migrant workers visiting home regularly; can save money to build the herd.	Receives regular family support (cash and in kind) .Relatives usually interfere in the households' decision making.	House-holds depend-ing on welfare grants. Mainly pension-ers. Few handicapp ed persons getting health allowance	Income per capita is low (AVE=R61 5/year) They cannot afford to plough arable land, even if they have access to land.

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Gender of the household heads	7 males 0 females	9 males 3 females	11 males 0 females	21 males 1 female	2 males 3 females	10 males 34 females	7 males 0 females
Livestock management practices	Salaried shepherd	Individual livestock keeping	Shared livestock keeping	*Family livestock keeping or *Shepherd *Individual livestock keeping			*Reduced livestock activity
Livestock size	Large herd Ave of 50 LSU[7]	Medium size herds Ave of 14 LSU	Medium size herds Ave of 14 LSU	Medium size herds Ave of 11.8 LSU	Medium size herds Ave of 13 LSU	Medium size herds Ave of 11.5 LSU	Small herds Ave=5.5 LSU
Ave total income/year	R43 800	R20 500	R15 500	R26 900	R27 300	R21 800	R2 500
Ave Agric. Income/y	R8 700	R830	R1 800	R2 300	R520	R520	R420
Agric. income as % of total income/y	16.6	3.9	10.8	7.9	1.9	2.4	14.3

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[7] *1 Large livestock = 5 small livestock*

4.2   Decision making systems

Decision making differs within types, for example, in the Family Dependent type decision is made by the relatives or the members of households who are normally not in the village. In the other types, for example the Autonomous type and the Regular income Earners, it is done by the head alone or both the head and the spouse.

Concerning decisions on whether to farm or not, in the case of types where decision making is done by outsiders, decision making is generally slow as it has to be done after several consultations and through long processes. For example, the son who is out of the village will first have to decide whether he will send money home and it is only then that the head will decide on whether he should allocate some of that money to farming. These types are therefore not likely to innovate. This is unlike in the situation of the types that have reliable sources of money, e.g. Social Transfer Dependents, Regular Income Earners and Autonomous types, to which decision making is quicker. Innovations are thus more likely. A regular consequence concerns the missing of the correct planting season for their crops by the types where decision making is influenced by outsiders, unlike the types who can readily decide to plough their arable fields immediately after the first rains and therefore take advantage of the good climatological conditions.

4.3.   Access to resources

4.3.1 Arable lands

The farming system in this study area is done on communal land. The regulation is that a household can own a plot of land and be allowed to fence it only during planting time until 14 days after harvesting. The Poorest type does have access to such plots of land but they do not plough them due to lack of the necessary resources. Family Dependent type may plough late due to the consultation procedure outlined in the previous section, therefore their harvesting time is often likely to coincide with the time when the fields will be opened to everyone's animals. Other types such as the Autonomous and Regular Income Earners do have resources like tractors and/or money to hire and buy such resources to plough their fields timeously. After harvesting they

can use stubble to feed their animals but those who did not plough will not have stubble to supplement their animal feeds. This further emphasizes the fact that the technical advice will have to differ per type.

4.3.2 Livestock

The findings show that out of the seven types identified, six of them keep more goats than sheep. Goats are seen as being hardy animals as they are able to withstand inhospitable environment and are relatively independent.   The Autonomous type however keeps more sheep because they can afford to cope with the risk involved in sheep farming i.e. sheep farming needs full time labour resource especially during lambing season. The Autonomous type together with the Regular Income Earners have access to sufficient funds hence they can afford exploring other alternative types of animals for example, to buy a composite breed rather that using the adaptable breed to improve their livestock production. They are also in a better position to afford to buy livestock medicines.

4.3.3 Transport resources

Households belonging to Livestock Holders, Autonomous and Regular Income Earners do have vehicles such as bakkies to move around. Such types can also move their animals and stock posts to good pastures in far away places. Access to such places however will be impossible for the types like Irregular Income Earner and Family Dependent types who do not have own transport means.

The Land Reform programme has bought land for the community to farm. The types with the transport facilities will move easier to such land than those who do not have; hence this lack should not be ignored as it can deprive types from achieving an improved farming opportunity.

Farming households with transport facilities are also in a better situation since they can bargain and trade their small stock at auctions in neighbouring towns. Those without transport are relying entirely on the middlemen who come into villages with their transport and buy the animals at low prices and later sell them to the auctioneers. Households

without transport are therefore "price takers" when selling their animals.

4.4   Gender issue

The knowledge about gender of the household heads needs to be considered as being important to design and implement extension programmes. For extension officers to formulate any practical training, a clear knowledge about the responsibilities of the family members can be very important, for example, in types Family Dependent and Social transfer Dependent, women who are the heads of the households are the ones who take care of the animals themselves and often also take care of the children. Therefore a training session should be scheduled to coincide with the time that they will be available to attend.

4.5.   Power struggles in the community

The above mentioned discussion tried to show that the extension officers need to adjust their planned interventions according to the knowledge of diversity within the Leliefontein community. Nevertheless the point that such intervention may cause conflict within the community should not be overlooked since there will be some types dominating other types. There is a possibility that conflict may arise due to this stratification, extending hardship that is already existing; hence a full explanation about an intended plan of action should be made clear to all levels of the community. A work programme that identifies specific farmers to be targeted for particular agricultural extension will give the extension agents a feeling that a realistic target can be achieved and the frustration that they must be all things to all people will be avoided.

5.   CONCLUSIONS

The way agricultural households respond to the outward stimuli, such as, the availability of land, labour and capital is different. The way they combine resources to maximize utility differs. Such utility is not of economic nature only; it can be non-economic too. The results of the study give clear evidence that major diversity exists in farming households in the Leliefontein area. The hypothesis researched in this study argues that the diversity reflected in farming society calls for a

holistic but refocused rural planning and development strategy with different types as the major focus for extension service i.e. a more tailor-made extension focus to accommodate different types and target groups.

Diversity could be viewed as a hindrance to technology transfer (Perret, 1999). However agricultural innovations and extension advice is often observed to be incompatible with existing production methods and also ignored specific constraints met by small scale farmer. Such extension service is likely to render conflict in a larger community. Extension planners and practitioners should however rather use methods that recognise diversity. Typology surveys and analysis will describe this diversity. The results of such analysis make it possible for a developer to choose the target group and to design a focussed support programme. Knowledge of the diversity in farming situation should thus drive the appropriateness of agricultural development and extension programmes in a particular setting.

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