

The Farm System of the Rehoboth Basters (Namibia): The Situation in 1999/2000

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Abstract. This paper presents an analysis of data on the Baster farm system, surveyed in 1999/2000. Farm fragmentation is identified as the crucial problem of the system, because of its pernicious effect on the efficiency of farm production. The fragmentation process is seen as the combined effect of four factors: the value orientation of the farm owners, inheritance rules, fast population growth, and land scarcity. However, the survey data show at least a considerable slowdown in this process in recent years that can be attributed to a change in the value orientation of the farm owners.

[pastoral production, value change, farm fragmentation, population growth, Rehoboth Basters]

Introduction

The Basters come from the northern fringe of the former Cape Colony and settled peacefully in Rehoboth in 1870 (Limpricht/Lang 1997). From the beginning they had their own constitution, and, until the independence of Namibia in 1990, they succeeded in retaining their own territory and some political independence (Britz/Limpricht/Lang 1999). "Baster" is the Afrikaans term for bastard or half-caste. The word and name refers to the mixed unions, usually of white men and Khoisan women, from which the Basters descended. Afrikaans is the first language of the Basters.

The farms of the Rehoboth Basters are located in a semi-arid region. The long-term mean annual rainfall is about 250 mm. There is virtually no open water in the area available throughout the year, and the land has been, and still is only used for animal husbandry, the prime herd animals being cattle, sheep and goats. When the Basters arrived with their herds in the area, the ownership of the pastures was communal. Land was abundant. All the herds of the Basters were able to find pasture near the town of Rehoboth.¹ In 1895 the Basters began to adopt a system of private farm ownership. Historical sources are detailed enough to give us a rather good picture of how the farm system worked in the past and of some of the main forces that shaped the

¹ This is implied by a Baster law (III, 6) passed on January 31st 1872 (cf. Britz/Lang/Limpricht 1999: 67).

development of the system. We gave a description of the transition from communal to private land ownership in a separate paper (Lang 1999). Here we will describe the state of the system at the turn of the last century. Our report is centred on the data of a farm survey (based on statistical sampling) we conducted together with officers of the Ministry of Agriculture between November 1999 and April 2000.

Why did we conduct a survey? Many anthropologists, whether consciously or not, use what has been called "ethnographic sampling" (cf. Werner/Bernard 1994). This type of sampling aims at an exhaustive representation of the range of variation in the system under investigation. Statistical sampling, on the other hand, aims at representing the distribution of variations in the system's population. If the population is homogeneous and the properties investigated are not fuzzy, ethnographic sampling is more efficient than statistical sampling, e. g. if all members of a culture share a certain belief, or the young members share one belief and the old ones another. In this case the usual criterion for the discontinuation of ethnographic sampling, i. e. failure to find new variations, can easily be applied. If, however, the population is heterogeneous or its properties are fuzzy this discontinuation criterion does not work. New variations will crop up again and again, and the ethnographer will discern only unstable and blurred patterns. We experienced the latter when studying the Baster farm system. New and totally unexpected farm types kept coming up, and no clear-cut and stable picture of the dominant patterns developed. That is why we conducted a farm survey.

Outline of the Farm System

Before we present the survey data we will provide a short description of the farm system, which will consist primarily of an outline of the components of farm production and the institutions² that have an impact on the production. The former territory of the Rehoboth Basters was 1,464,240 ha in size (Kassier/Harrison 1983: 6), which had been its approximate size since German times. Most of the time it was very difficult for the Basters to get farmland outside the Gebiet (territory) and sometimes it was impossible. The development of their farm system was therefore confined to an area with rather fixed boundaries. In the transition to private farm ownership, every Baster whose application was successful received 7000 ha of farmland. This transition period had ended before the defeat of the Germans in 1915.

For the description of the production system³ we will use the components of the classical production function in economics: the output of a farm is determined by the

² The term "institutions" is used in the sense of the New Institutional Economics. see Ensminger 1992, Richter/Furubotn 1996.

³ The accuracy of the description has been checked by the officers of the Rehoboth bureau of the Ministry of Agriculture (see acknowledgement).

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input of physical capital, labour and land (Mankiw 1998: 384). The output of the Baster farms consists almost exclusively of livestock. The traditional types of livestock are cattle, sheep and goats. More recent types are game such as kudus or springboks. The animals are sold at regularly held auctions, or they are bought by itinerant livestock traders.

The physical capital of the farms consists mainly of water installations, fences and pastures (not described below), i. e. the grass and bushes that feed the herd animals and, of course, also the herd animals themselves. Since, as mentioned above, virtually no farm has year-round access to open water, underground water has to be accessed. Water should be near to the pasture so that the herd animals do not have to walk far, so big farms need to have many watering points. Today, access to water is achieved mainly by means of boreholes and wind or diesel pumps. For safety reasons (in case e. g. a pump breaks down) water is pumped into a reservoir and given to the animals from there. The borehole technique is still rather capricious. Boreholes can dry up. Finding water by drilling boreholes is so unpredictable that people even resort to divining rods. There are cheaper ways to access underground water. Wells (local Afrikaans sing.: *puts*) were once dug in the ground up to 25 m deep. Here, a bucket tied to a rope can be used. Where water is near the surface, as e. g. in the dry rivers, water holes (Afrikaans: *gorra*) can be dug. The farms are fenced, moreover, the modern farm in Namibia is divided up into many fenced camps (Afrikaans: *kamp*), which are used among other things for pasture management (Bähr 1981).

Most farmers have workers living on the farm, and these are usually not Basters. Cattle search out their own grazing, whether the farm has camps or not. But on farms without a camp system small stock is shepherded by a herdsman (Afrikaans: *veewagter*) who leads the animals to the pasture in the morning, stays there with them the whole day and brings them back to the corral (Afrikaans: *kraal*) after watering in the evening.

Since the climate, as mentioned above, is rather arid, the carrying capacity of farmland in the Rehoboth Gebiet is low. About 3.5 ha are needed for one small stock unit (sheep or goat) (Kassier/Harrison 1983: 42).

The economic efficiency of farm production depends decisively on the size of the farm. Let us first consider production efficiency from the perspective of a single-owner farmer with dependents. The Namibian Ministry of Agriculture deems a farm of about 7000 ha in this region as "economically viable", i. e. a farm of (at least) this size can be run in an economically efficient⁴ way and it provides at the same time the maintenance of a decent standard of living for such a farmer. If the farm is smaller, the farmer

⁴ Throughout the paper "efficient" is used in the following ordinal sense: Production of farm A is more efficient than that of farm B, if the output to input ratio of farm A is greater than that of farm B. In the present context the definition must also contain the condition that the output is achieved in a sustainable way, since there are techniques, which achieve a high short-term output, but have ruinous long-term effects on the pasture.

will have to find additional sources of income. This will typically mean work outside the farm sector, and the absence of the farmer during the week or for longer periods. As a consequence the farm will usually be less well managed and production efficiency will, on average, be reduced. There are other negative effects of a farmer's absence from the farm, which affect the farm system of the Basters, e.g. the flow of information within the system is impeded as well as collective actions by the farmers, since the formation of strong farmers' unions with many members is precluded. Part-time farming thus does not only affect aggregate properties of the farm system such as the economic efficiency of production, but also system level properties.

The physical capital of farms cannot be scaled down continuously. A borehole of 50 metres for example, costs the same whether it is drilled on a big or a tiny farm. There is thus a farm size threshold below which the profit of a farm is smaller than the costs of running it. In such cases the farm is removed from the sphere of productive assets and transformed into a luxury good.⁵

There are thus two size thresholds that define three types of farming. Big farms, 7000 ha and more, allow efficient full-time farming. Medium-sized farms produce on average with reduced efficiency. And small farms are treated like luxury goods. As we will now show, this typology is too undifferentiated for a whole range of reasons. First of all and not surprisingly, definitions of a decent standard of living vary among the Basters. One young (part-time) farmer said that one could make a living from 2000 ha. His father disagreed; he felt that 4000 ha were needed. The minimum size of big farms is thus a fuzzy concept. It depends on the aspired standard of living, which varies from farmer to farmer.

Second, farm size is a necessary but not sufficient precondition for efficiency. Annual rainfall is highly variable and also unpredictable. Years of drought can deplete the pastures of a farm completely so that a farm of 7000 ha can have zero-carrying capacity: "The most sophisticated pasture management is no substitute for sufficient rain" (Henner Volkmann, *Personal Communication* 2001).

There are yet more reasons, which require some knowledge about the farmland transaction rules. There are three forms by which the ownership of a farm can be permanently transferred: inheritance, purchase, and as a gift. The purchase of farms by Namibian citizens has been virtually unregulated since independence (in 1990) with one important exception (see below), but in pre-independence days Baster farms could only be bought by Basters. The same applies to the other forms of transfer. Inheritance is governed by a Baster law, which stipulates that every child, male as well as female, receives an equal share. Parents could and still can deviate from this rule by means of a will.

In addition there is a law, introduced in 1981 by the government of Rehoboth, that prohibits farm fragmentation which had predecessors in laws passed by the S.W.A. ad-

⁵ The Namibian tax system provides incentives to run loss-making farms.

ministration in 1970 and later.⁶ The law, which is still in force, stipulates that the heirs of such farms can receive only the so-called undivided shares of the respective farm. In this way the law creates farms with multiple owners. Some of these farms are at least partially divided up informally among the owners. On other farms every owner has the same right to all pastures, which precludes efficient pasture management. The intention of the law, which was to prevent the creation of uneconomic farms, is thus thwarted. Thus we have a fourth farm type: farms with multiple owners. Since the (undivided) parts of a multiple-owner farm are smaller than the single-owner farms, multiple-owner farms are on average less efficient than single-owner farms. If economic interests had prevailed in the past, we should expect big farms with a single owner to be the dominant farm type. We will now investigate some historical data to see whether this is the case.

Figure 1 shows the farm size distribution in 1930. Here most of the farms still have their original size of 7000 ha. The situation had changed radically thereafter as the data for 1980 show (see figure 2). Du Marais and co-authors (1981: 26), who published these data, write that the figures refer to registered farms (*geregistreeerde plase*). The Rehoboth agricultural and deeds office staff have pointed out that the numbers cannot refer solely to professionally surveyed and registered single-owner farms, but rather every of piece of farmland registered by the deeds office, including land owned as an undivided share. This definition of a farm is not useful for our purposes, but the figure demonstrates rather dramatically the process of farm fragmentation. The huge mass of small tracts of farmland shows that values other than economic ones have prevailed in the farm system.

We have identified the following reasons for owning and using a piece of farmland, which lead owners in this situation to cling to their farmland, even if it is uneconomically small:⁷

- (1) a sort of freedom value: a farm owner is his own boss (Afrikaans: *eie baas*);
- (2) emotional attachment to the work on a farm, love for the farm animals (Afrikaans: *liefde vir die diere*);
- (3) social security: if one loses one's job one can retire to the farm;
- (4) lack of an alternative;
- (5) farming as a habit: grown up with farming (Afrikaans: *saam met die boerdery groot geword*).

At first sight these reasons do not all have the character of values that establish order in a set of possible choices. A lack of alternatives (reason 4) seems to imply that choice is not perceived as available. The informant, who mentioned this reason, pointed out

⁶ Gerhard Olivier, head of the deeds office in Rehoboth, made us aware of this law.

⁷ Where appropriate during the survey, which was less often the case than we had wished (for reasons see Appendix), we enquired into the motives for owning and using farmland. Some of the values were identified before the survey (1, 3, 4), and one of the values (3) did not appear during the survey.

that he had virtually no school education. This man was of course aware of other ways of making a living, e. g. as a farm worker, but these alternatives were for him so much inferior that he did not deem them worth considering. Farming as a habit (reason 5) is

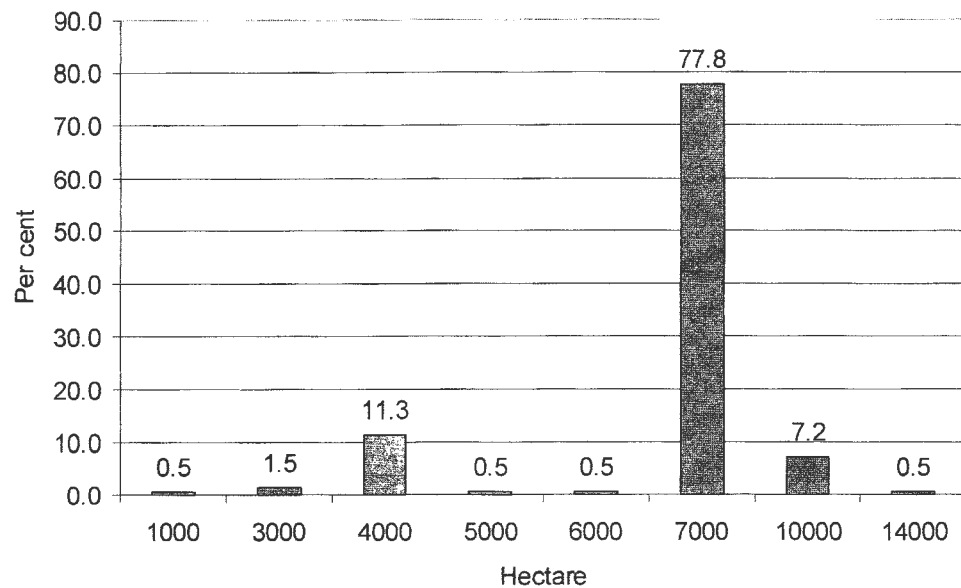


Fig. 1 Farm size distribution in 1930

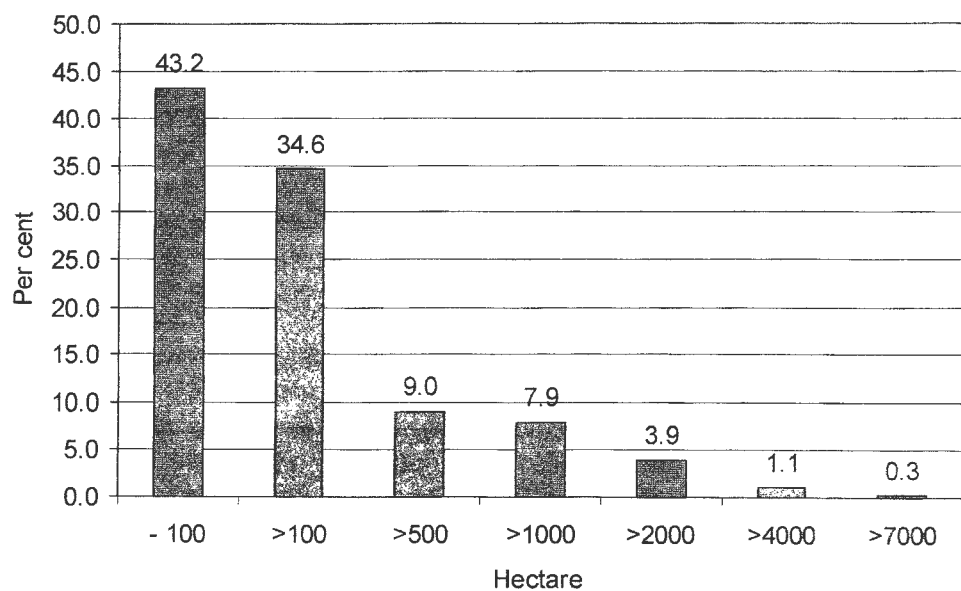


Fig. 2 Farm size distribution in 1980

also only superficially incompatible with the existence of choices. We rather think that all five reasons reveal something about the value orientation. They are not inspired by economic reasoning about owning and using a farm as a productive asset. We will therefore interpret the five reasons as non-economic values. Only value 5 explicitly refers to the habituation of the value in childhood, but the same can arguably be inferred for the other values too.

The data about the value orientations of the farmers are scant, so that we can say nothing about their distribution. But they are very probably not rare exceptions. Some of the informants were well aware of the existence of the non-economic values and judged them sometimes very critically. One farmer for example, said scornfully: "You cannot pay bills with love [for farm animals]".

Farm fragmentation in the Rehoboth Gebiet is the effect of these (at least) five values combined with three other factors. One of these factors is the high annual growth rate of the Baster population of more than 3 % (Lang, 1998: 390). As far back as 1981 this growth rate meant that at most 14 % of the Baster population were able to make a living from a 4000 ha farm (Lang, 1998: 389). This factor is the "engine" of the fragmentation process, whereas the other factors function as the constraints of the process. The second factor is the land inheritance rules described above. The third factor is land scarcity. It should be noted that in a situation where farmland is abundant, the non-economic values could not come into conflict with the economic value of owning a farm. There would be no need to cling to uneconomically small pieces of land. In such a context the non-economic values will have a rather economically neutral or, as we believe, even a positive effect.

Today there (still) exists a fifth farm type, a type with an overall low economic efficiency. On these farms the animals will die during a drought period instead of being sold while it is still possible; they have a low yield stock composition, there is no camp system and the standard of living of the associated households is near the survival level. Not all of these farms combine all these attributes.

A process of continuous farm fragmentation is inherently unstable, since all the non-economic values are not totally independent of the size of farmland owned. Very small pieces of land (say five hectares or less – a size that is easily achieved in a fast-growing population like the Rehoboth Basters) cannot accommodate any of these values. Farm fragmentation has a fundamental impact on how the farm system works. Its main effect is the serious impairment of production efficiency and hence the reduction of the wealth generated by the farm system. Baster farmers are well aware of this effect. One farmer said that having multiple owners on a farm is a "cancer". Another farmer said that only one of his children would get the farm, and the other children would have to be bought out. Parents told us that excluding children from their inheritance was a difficult decision. There is thus an awareness that there are choices, and that farm fragmentation is economically pernicious. This is an additional reason why we have chosen efficiency as a primary criterion for the construction of the farm typology. Before our survey, Basters who knew the farm system well, told us that the farm frag-

mentation process may have come to a halt, or even reversed. But due to the lack of accurate data nobody was sure. A considerable part of the evaluation effort was therefore devoted to the question as to whether the fragmentation process had continued up till the time of the survey or not.

The Survey and its Evaluation

The survey questionnaire contains five groups of questions. The first group addresses farm size, water installations and fencing. The ownership structure is investigated in the second group, which is followed by a group of questions about the users of the farm, who are not always the same as the owners. The two last groups consist of questions about the residents on the farms and about how the farm is used. A space sample of 97 farms was surveyed. Pairs of geographical coordinates were produced by a random number generator, with every farm "hit" by a coordinate pair becoming part of the sample. This procedure does not result in a simple random sample. It is rather a stratified sample and the stratification is probabilistic, since large farms are more likely to be sampled. For the evaluation new estimators had to be found. The new estimators are not needed if the attributes investigated have a zero correlation with farm size. Moreover the sample properties do not affect multivariate techniques such as regression analysis. The new estimators and instructions for creating the space sample have been published elsewhere (see Lang/Challenor/Killworth 2004).

Farm size and total number of farms in the Rehoboth Gebiet

Our farm definition follows in almost all cases that of the deeds office in Rehoboth. According to this definition a farm is a piece of agricultural land, the boundaries of which are officially surveyed and registered in the deeds office. In a few instances we deviate from this definition, because the actual state of affairs differed too much from the state of affairs in the books. In these cases our definition adopted the perception of the owner. The exceptions are farms that are consolidated in the eyes of the owner, but where the consolidation is not registered. We have treated these farms as if they were consolidated entities.

Figure 3 shows the farm size distribution of the farms surveyed. The smallest farm measures 417 ha, the biggest 11,108 ha. As can be seen from the figure the great majority of farms is owned by a single owner (see below). The total size of the farms surveyed is 243,029 ha.

To estimate the number of farms in the Rehoboth Gebiet we need to know the total size of the (privately owned) farmland in the area. The literature gives various figures for the area (Administrasie 1978; De Klerk 1983; Kassier/Harrison 1983), but only Kassier and Harrison address and discuss the discrepancies in these data.

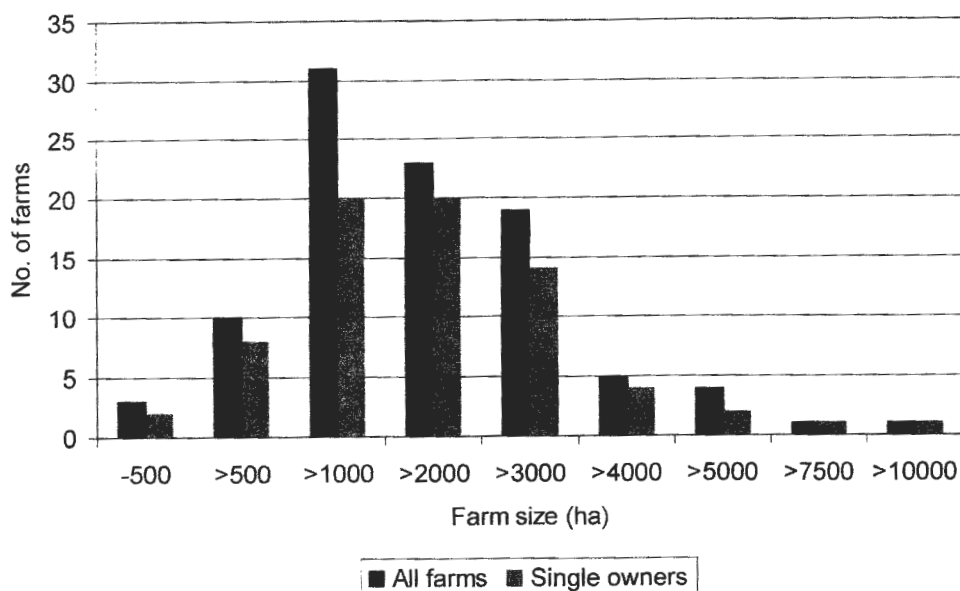


Fig. 3 Farm size distribution in 1999/2000

They argue that 1,223,018 ha is the most convincing figure for the total size of privately owned farmland (op.cit.: 6 f.), a figure provided by the "*Departement van Landbou*". According to the Rehoboth agricultural officers privately owned farmland increased by 80,000 ha to 1,303,000 ha just before independence. From this figure we can derive with our new estimator (see Lang/Challenor/Killworth 2004: 60; 63) the total number of privately owned farms in the Rehoboth area (Gebiet) at 753 farms.

Kassier and Harrison cite two other figures, which are also quite useful for us: A census in 1975 counted 599 farms in Rehoboth, which had a combined size of 976,652 ha (op.cit: 7). The authors argue convincingly that both figures must be too low (incomplete enumeration). But the figures indicate that a farm definition similar to ours had been used and certainly not the definition that includes undivided shares, mentioned above. The mean size of the farms in the census is 1630.4708 ha. This implies 750 farms for the total privately owned farm area in 1975 and an annual fragmentation rate (i. e. exponential annual growth of the number of farms) since 1930 of about 3 %. If that rate had prevailed since 1975, the number would have increased to about 1700 farms in 2000, though the increase would have been masked by the law against farm fragmentation mentioned above, yielding instead a dominance of the multiple-owner farm type. Even if we take a large error margin in our above-mentioned survey-estimate of 753 farms into account, the figures thus indicate that the fragmentation process has slowed since 1975, and perhaps stopped, or even reversed.

Using absolute numbers of farms as an indicator for farm fragmentation is crude and can even be misleading. For a more adequate picture of the fragmentation process

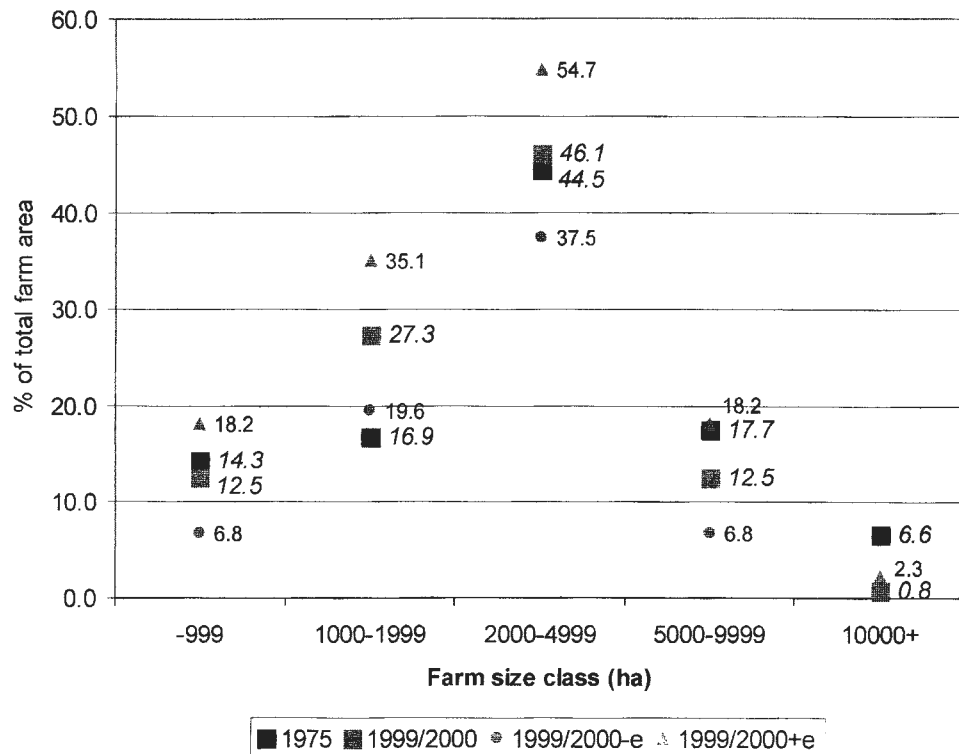


Fig. 4 Farm size class distribution in 1975 and 1999/2000

we can compare the size of the farm size classes. We can calculate with our survey data estimates of the ratios of the farm size classes (see Lang/Challenor/Killworth 2004: 59, 61) to the total farming area, which we can compare with the data of the farm census in 1975. Figure 4 gives the results. The diagram reads like this for the first column of points: In 1975 14.3 % of the total farm area was comprised of farms of less than 1000 ha (black square). The three grey points refer to the situation in 1999/2000. The grey square is the estimate, i. e. farms of less than 1000 ha represented 12.5 % of the total farm area. The census of 1975 covered nearly the whole farming area, but as our survey covered a fraction of the area, we have also calculated the error margin of the estimate. If we had taken many samples of the same size the farms of this size class would have represented, assuming an error probability of 5 %, at most 18.2 % (grey triangle) of the farm area, and at least 6.8 % (grey circle), the confidence interval. There is thus no significant difference for that farm size class between 1975 and 1999/2000. But for the next size class (1000 to 1999 ha) there is such a difference. The value for 1975 (16.9 %, black square) lies below the lower boundary of the confidence interval. The graph also shows where the land for this increase (ultimately) came from. It is from the biggest farms and with a slightly bigger error probability

than 5 % from the farms of the 5000 to 9999 ha size. Small farms thus increased their share of the total farm area, whereas the share of the big farms diminished. The increase of 10 % (or at most 18 %) means that the fragmentation process must have continued after 1975, but cannot have proceeded in the same way as before.

The increase of 10 % in the 1000 to 1999 ha size class translates into an average annual increase of 0.4 % and the increase of 18 % into 0.7 %. We can see only two simple transition models. Either farm fragmentation slowed down rapidly after 1975 (or the slowdown began even before 1975) and then proceeded at a perhaps even slower pace than our estimated averages, or the process proceeded with rather high speed after 1975 and was thereafter compensated for by farm consolidation. Later on we will give reasons why the latter model is more plausible.

For comparative reasons we have used farm size classes that do not match with the diverse standard of living levels cited above. The matching estimates for 1999/2000 are for the low farm size threshold of 2000 ha at which 40 % of the total farmland could not support a full-time farmer; with a threshold of 4000 ha, the percentage amounts to 82 %.

Water installations

Figure 5 shows the distribution of boreholes on the farms. Eight farms have no boreholes at all; half of these use wells, and the rest water holes. The farms surveyed use 187 boreholes altogether, to which we could add a considerable number of boreholes, which have fallen dry or had always been dry. The boreholes of the 83 farms where we have depth data have a combined depth of 12.591 km, which gives an impression of the size of the investment involved. Most of the boreholes have either a wind pump, (this is the majority), or a diesel pump, and sometimes both. In a few cases water is accessed with a hand pump. The latest pump technique uses electrical pumps with solar panels.

There is no strong relation between farm size and number of boreholes, as the graph of the regression analysis shows ($R^2 = 0.44$).⁸ There are several causes for the deviations from the regression line. First, as mentioned above, boreholes can be substituted by wells or water holes. This explains some of the deviations in the small farm sector of the graph. Second, on bigger farms boreholes can also be substituted by pipelines, saving a substantial amount in costs. The biggest farm is a good illustration of this. It has 5 boreholes, but its five pipelines have a combined length of 12 km. Of course, small farms cannot benefit from the gains from substituting pipelines for boreholes. Of the 94 farms with data on this subject 16 farms had pipelines longer than 1000 metres, and 9 had pipelines more than 3000 metres. Seventy-seven per cent of

⁸ A R^2 value of 1 means a perfect match between data and regression line, 0 means no match at all.

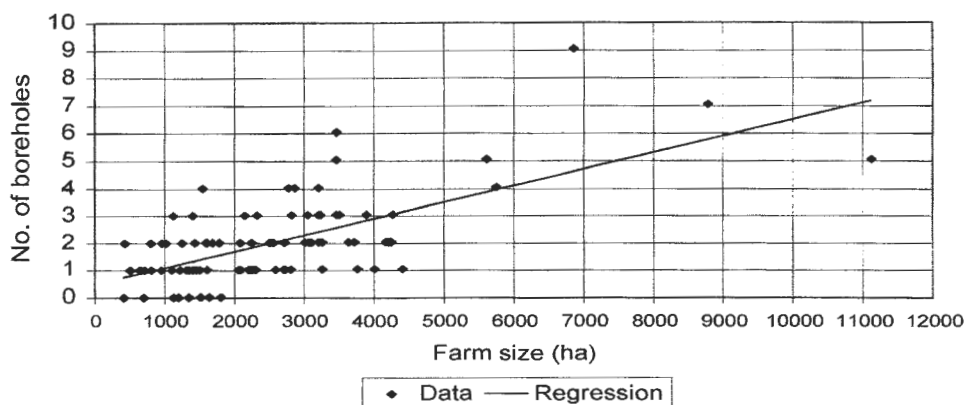


Fig. 5 Regression analysis – boreholes

the farms have no pipelines, (the majority), or pipelines measuring up to 200 metres, which cannot be considered as substitutes for boreholes. We see here the efficiency effects of farm size.

Fencing

Five of the 97 farms for which we have data, are not fenced in the sense that at least part of their boundaries have no fences. One quarter of the 97 farms has no camps at all, and another quarter has more than 7, with up to a maximum of 26 camps. There should be a linear relation between farm size and number of camps. As figure 6 shows the relation is somewhat stronger ($R^2 = 0.53$) than in the case of boreholes. The majority of farms with no camps are, as expected, smaller than 2000 ha. Multiple ownership may perhaps reduce the probability of a farm having camps. A case in point is the (two) farms of 4000 ha and more with no camps which have four or five (main) owners. The two data points below 4000 ha with 14 and 16 camps represent three farms, two of which have single owners, the third has three owners, but these had only very recently inherited the farm from a single owner.

Herd animals

The data on herd animals were sometimes definitely rough estimates or even guesses, and it was our impression that this was also the case with other animal stock data. The data are thus of a rather mixed quality, and can therefore only be used to create a rough sketch of the situation. According to Table 1 the traditional herd animals, cattle, sheep and goats still dominate the Rehoboth farm economy. It is perhaps not a mere

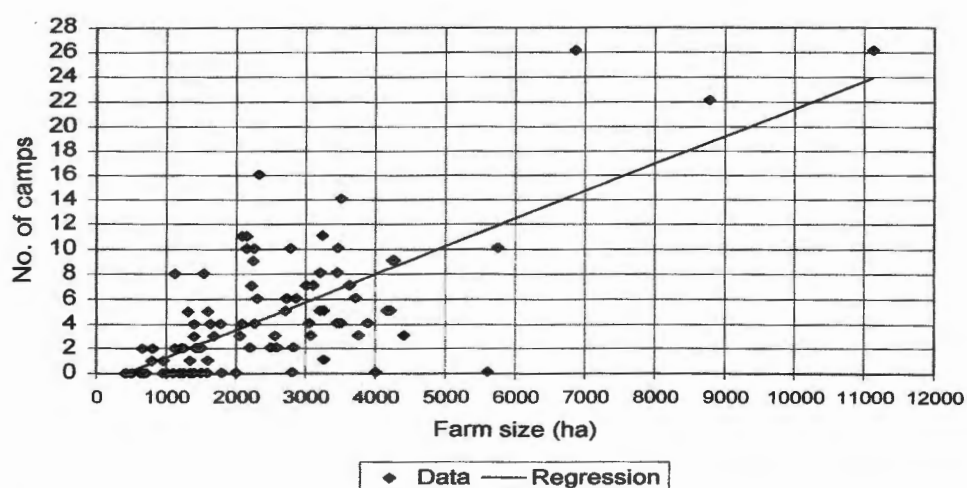


Fig. 6 Regression analysis – fences

Table 1: Livestock on Rehoboth farms (97 farms)

	No. of animals	Farms with ...
Cattle	5 228	68
Goats	8 647	53
Sheep	5 239	30
Small stock*	7 250	20
All small stock	21 136	75
Cattle as small stock**	31 368	—
Chickens	926	4
Springboks	710	8
Ostriches	156	8
Steinboks	25	1
Gemsboks	23	2
Kudus	13	1
Blesboks	10	1
Donkeys	262	43
Horses	259	55
Mules	4	3

* Some informants gave the numbers for goats and sheep separately, some gave numbers for small stock (units), i. e. goats and sheep added together. All small stock is therefore the sum of goats, sheep and small stock numbers.

** Transformation of cattle numbers into small stock units: 1 cow = 6 pieces of small stock units (du Marais, 1981: 29)

coincidence that among the traditional herd animals cattle are dominant if the comparison is based on small stock units, since small stock needs a good deal more labour than cattle. The game and chicken on the farms can be interpreted as the (experimental) beginning of a diversification process in farm production.

Ownership structure

In most cases the owner/s of a farm are simply the person/s who have a registered title of a farm. This definition created difficulties when the actual owners were not registered, even if the registered owner was dead or had sold the farm. The problems of data gathering usually became insurmountable if the farm had multiple owners and some of the entitled owners were dead, because the informants were then unable to enumerate all the people who had a reasonable inheritance claim and whose titles were very small. In those cases we collected only data on those individuals owning large pieces of land measuring hundreds of hectares or more.

As we said above, there are three forms of permanent land transaction: inheritance, purchase and gift. There are no rules that prohibit combinations of these forms. The combinations of the transaction forms create different types of farm acquisition. Table 2 shows that all possible types have been realised except the combination of gift with inheritance. We will evaluate the data with regard to two questions: What do the acquisition types and forms reveal about the values of the actors involved in the transaction, and what can we infer about the process of farm fragmentation? There are two sets of values (see above), which influence the fragmentation process. One set of values, of which we have identified five, favours fragmentation, the complementary set consists of one value, economic interests, which is opposed to fragmentation.

Let us first consider what the consequences would have been if the non-economic values had dominated farm acquisition until the time of the survey. In that case farm fragmentation should have proceeded with full speed and the dominant farm type would be by necessity the multiple-owner farm. This is not the case. Only about one quarter of the farms has multiple owners. Since farm size and ownership type appear to be independent⁹ we can interpret this ratio as if we had a (unstratified) random sample. This means that single-owner farms are dominant in the farm system, and not only in our sample; and this is the opposite of what continued fragmentation would have created.

⁹ Since we do not know the shape of the distribution, nor the type of relation, we have resorted to a rough test. We have dichotomized farm size 'along' the median, thus creating two farm size classes, big and small. The correlation between farm size in this sense and ownership type (single vs multiple) is negligible ($\Phi = 0,077$) and not significant ($p = 0.449$). There is no significant one-sided relation (see Lang 1993).

Table 2 Types of farm acquisition single owners only

Inheritance	Purchase	Gift	No. of farms
	×		36
×			18
×	×		15
		×	2
	×	×	1
×	×	×	1
×		×	0

Interestingly, among farms with multiple owners, there is one farm that is registered as a "close corporation". The corporation is owned by five shareholders and leased by a single farmer who is one of the shareholders. Since the owner of the farm is the corporation the fragmentation-prone effect of the human life cycle is neutralised. Heirs do not inherit land, but get shares in a corporation.¹⁰ This farm type is thus not the result of the fragmentation process, but an innovation, which shields the farm from the pressures leading to fragmentation.

Let us now look at the acquisition forms and types of the single-owner farms (see table 2). The first three types (row 1 to 3) make up 95 % of the cases. They consist of acquisition by purchase alone (more than half of the single-owner cases). Here we can infer dominance of economic considerations for the seller and usually but not necessarily for the buyer if e. g. a luxury type of farm is bought. Acquisition by inheritance alone allows us to infer in most cases economic considerations at least on the part of the testators, i. e. in all cases where there was more than one heir. Cases of farm consolidation, the opposite of fragmentation, are farms acquired by inheritance and purchase.

Even for about half of the farms with multiple owners some land buying was involved. Buying a piece of a farm with multiple owners can make sense as a step towards acquiring the whole farm, which should also be considered as a consolidation process. Since some farmers, including single owners, complained that other owners of farmland refused to sell, there exists some unrealised consolidation potential.

To sum up, the acquisition data also clearly refute that the farm fragmentation process has continued unimpeded until the time of the survey. For the majority of the farm acquisitions we can infer that economic considerations were involved. The data are thus compatible with a considerable slowdown of the fragmentation process or even a reversal of the process. What we cannot infer from these data is whether this is a transient state, the effect of a fragmentation process gone too far. In this case the non-economic values are at present only suppressed, since, as we have argued above, they need a minimum size of farmland, and fragmentation should resume after a per-

¹⁰ Close corporation farms have come under criticism recently in Namibia amid allegations that they circumvent the pre-emptive right of the government to buy farms.

iod of consolidation. A real change in value orientation on the other hand should preclude the resumption of the fragmentation process.

We should mention that some of the single-owner farmers in the sample own more than one farm, or have leased additional farms, or have both. Of the leased farms some had been leased because the drought had exhausted their own pastures, and some of the additional farms were idle for the same reason. As we have shown in the borehole section, there are scale advantages of big farms that cannot be compensated for by owning several small farms.

Who lives on the farms

Quite a number of farms have become lonely places. Eight per cent are completely uninhabited. These are idle farms, laid to rest, to recover from the effects of the drought years. Seven per cent of the farms have only one occupant, 11 % only two occupants. Another quarter of the farms, on the other hand, is home to 7 or more people.

Those who reside on the farms can be divided into three classes: owners or their near relatives, workers and "bywoners"¹¹. Bywoners are allowed by the owner to live on the farm. There is no formal contract involved, and no formalised transfers of money or labour. Bywoners are thus not tenants. There is only one case in the sample where a tenant lives on the leased farm – together with the owner – which we have classed in our tabulation as a farm with resident owner. According to table 3 about one third of the farms surveyed is managed on a day-to-day basis by workers. Moreover nearly half of the farmers do not live on their farms, that is, a substantial number of the potential nodes in the information network of the Baster farm system are missing, and these "nodes" are also potential members of farmers' unions who are not able to actively participate. Even in the case of the biggest farms it is not unusual for the owner not to live on the farm (see below).

Three-quarters of the farms have no children of non-workers living on them. This is related on the one hand to the age distribution of the farm-owners (mean and median age is 63 years) and also to the importance the Basters attach to school education. It is important to remember here that the habituation of the five non-economic values of owning a farm occurs in childhood, and with decreasing probability in later life. The farms without children are thus an indicator for the future of the non-economic value orientations. We expect a diminishing frequency of these orientations in the whole farm system, since the absence of children on farms is independent of farm size.¹²

¹¹ English equivalent unknown.

¹² We use the same dichotomizing procedure here as in the case of the correlation of farm size with single ownership. The correlation is rather weak ($\Phi = -0.168$) and not significant ($p = 0.200$). Farms with children tend to be small ones. The reverse tendency is much weaker.

Table 3 Farm residents

Owners	Bywoners	Workers	No. of farms
×		×	32
		×	30
×			11
			8
×	×		4
×	×	×	3
	×		2
	×	×	2

Workers who had been hired recently make up the majority on the farms. 50 % of the workers had worked for 3 years or less on the farm, whereas only about 20 % had worked on the farm for 10 or more years. These data imply for the sample, that the social ties between employer and employee are generally weak, and only a minority of the workers has strong ties with employers.

Contribution of farms to income

We could get very little reliable information about how much the farms contributed to the income of their users or owners. We have therefore to resort to a qualitative evaluation of the data. There are luxury-type farms, i. e. farms where the total costs regularly exceed total revenues, and we have encountered instances of the fifth (very low efficiency) farm type. A sizeable fraction of the farms, even big ones, is owned by persons who have a substantial source of income besides the farm, such as medical doctors, shop owners, people working in the building sector.

The Namibian state provides every person over 60 with a small pension. Since the median age of the farm owners is 63 the majority of these farmers are pensioners even if the pensions may sometimes only contribute an insignificant fraction to their income. On the other hand, there are farmers who derive 100 % of their income from the farm, but this is certainly an insignificant fraction of the economically active Baster population.

Conclusions

The purpose of this paper is to describe the Baster farm system at the turn of the last century by evaluating a farm survey conducted in 1999/2000. The outline of the farm system provided us with the main focus for evaluating the survey data. The historical data in particular helped us to identify farm fragmentation as a vital problem of the farm system we surveyed. These data show that the farm system in 1930 consisted

overwhelmingly of big farms measuring 7000 ha and more. In the period between 1930 and 1975 farm fragmentation proceeded with an annual fragmentation rate of 3 %, which allowed the number of farms to increase from 194 to about 750. The fragmentation process must have continued in the following period, since the survey data show that the area covered by small farms has increased by about 10 % since 1975. But this result also implies a massive slowdown of the fragmentation process or a trend reversal.

We see farm fragmentation as the combined effect of four factors: rapid population growth of about 3 % per year; inheritance rules that give all children an equal share of the estate; a set of at least five non-economic values that let people cling to small portions of farmland; and scarcity of land.

Farm fragmentation is a cause for concern, because it reduces the efficiency of farm production. Fragmentation limits the range of choices for farm management; it affects the quality of farm output, and increases the relative costs of the input. It thus diminishes the wealth that the farm system can generate. We have evidence that the owners of the farms in the Rehoboth Gebiet are quite aware of the pernicious effect of farm fragmentation. For the analysis of the survey data we therefore developed a farm typology that uses production efficiency as the primary criterion. We discern two basic types: single-owner farms and farms with multiple owners. Multiple-owner farms are the product of a law, the intention of which is to stop farm fragmentation. These farms are owned jointly, and the owners do not have titles to surveyed parts of the farm. The production of these farms can be considered on average as less efficient than that of single-owner farms. The single-owner farms can be subdivided in two types. Big farms allow full-time farming; medium-sized farms can only be managed on a part-time basis, and are on average less efficient than the big farms. These two types relate farm size to an aspired standard of living level. Since the aspired standard of living level varies among the Basters and the carrying capacity of even a large farm can be at zero for a considerable time, there cannot be a single size threshold for defining the types. Instead we use three thresholds in our analysis: 2000 ha, which implies a low standard of living, 4000 ha, which relates to a moderate standard, and 7000 ha, the threshold of the Namibian Ministry of Agriculture.

If we assume that farm fragmentation had continued with full vigour until the time of the survey the majority of the farms in the system would be of the multiple-owner type, and the dominant type of acquisition would only be through inheritance. Yet the survey data show the opposite. The majority of the farms, two thirds, are of the single-owner type, and the dominant type of acquisition is either purchase alone or purchase combined with inheritance. Both results imply the dominance of an economic value orientation over non-economic orientations with regard to owning a farm. The question here is, whether this is the result of a farm fragmentation process gone too far, which means that the non-economic value orientations are only temporarily suppressed, or whether this is a (more) permanent reorientation of the values. We feel that the latter is true because of the "depopulation" of the farms and here especially because

only very few children still grow up on farms. The premise here is that the habituation of non-economic values occurs to a great extent in childhood.

The effect of the fragmentation process is still strongly felt in the farm system. Forty per cent of the farming area is used by farms of 2000 ha in size and less. The figure rises to 80 % for farms of up to 4000 ha. This size distribution has the effect of reducing the efficiency potential of the farming area. We have used regression analysis of borehole numbers and fencing by farm size as an efficiency indicator. The results show that there is quite some room for improvements, though for medium-sized single-owner and multiple-owner farms improvements will be difficult or even (see e. g. boreholes) impossible to achieve. For a substantial increase in the efficiency of the farm system continued farm consolidation would thus be a prerequisite.

The effect of population pressure on an agricultural system, as outlined above, has been experienced by many human groups, past and present, and around the globe. There seem to be quite a number of similarities as to how pastoral producers and cultivators have coped with the situation. Resorting to part-time farming is an example of one of these shared strategies. But in other respects pastoral production in semi-arid areas seems to follow different paths. Pastoral producers, for example, appear to have fewer opportunities for intensification, so that population pressure will build up faster.

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plural "we" used in this text is not only an expression of scientific modesty, but also includes my wife, Dr Cornelia Limpricht, who was, and still is, an active contributor to the whole project.

Appendix: Design and implementation of the survey

The farming area is rather large. The largest diagonal measures about 170 km (south-west corner to north-east corner). Most farms cannot be reached via gravel or better roads but only on rough tracks. Moreover, an intimate knowledge of the location of the farmhouses is absolutely necessary for such a survey. We were therefore very glad that the officers of the Ministry of Agriculture office in Rehoboth were willing to cooperate. Indeed, without the cooperation of these experienced men we would not have been able to conduct the survey. The survey questionnaire was developed jointly. It is a compromise between our research interests and the interests of these officers, and a good one at that.

The sample was constructed in the following way. A number of pairs of geographical coordinates were created using the random number generator of the Excel 97 spreadsheet programme (see Lang/Challenor/Killworth 2004). The points (consisting of a pair of coordinates) were then marked on the 1:100,000 farm maps of the Surveyor General's Office (available in 1996; the maps are not dated). These maps showed only the names of the farms and their boundaries, and did by no means always represent the actual state of affairs. Every farm that was "hit" by such a point became a member of the sample. For practical purposes the farm area was divided in sectors, each of which had a side length of 15 minutes (latitude and longitude). The survey was conducted sector-wise. When we realised that the intended sample size of 200 farms was too ambitious, we chose the sectors in such a way that the ecological diversity of the area was represented by the sample.

In most cases the identification of the farms was no problem, thanks to the knowledge of the officers of the Ministry of Agriculture, the assistance of the deeds office at Rehoboth, and the knowledge of the informants. In a few cases we had to use a GPS monitor to decide the issue. In principle we would have been able to identify every farm in the sample by driving with our GPS monitor to the respective sample coordinates. But this method proved to be extremely time-consuming, because in virtually all cases terrain, plant cover or fences do not allow access to the point in anything even remotely resembling a straight line. We had to use that procedure only twice.

Our intention was to get the survey information from the owners of the farms, but it was extremely difficult to trace the owners in quite a few cases, and sometimes even impossible. In some of these cases the workers on the farm were reasonably well-informed, in other cases we had to resort to other informed persons. On some occasions even farm-owners could not exhaustively answer the questions, some of them because of old age. These are the reasons why the number of farms for which we have valid answers to a question varies considerably.

Sometimes we had to drop a farm from the survey list. In one instance the owner of the farm could not be identified. This was an idle farm. In other cases the farms were not operational in an agricultural sense. One of these farms was in the process of being sold; the animals had already been sold, but the land still remained to be sold. The state of affairs thus represented the selling process and had nothing to do with farm production. Another farm that had been bought by the Agricultural Bank, which intended to auction it off, but had not yet done so, was also dropped.

References

- Administrasie 1978: *Rehoboth-Gebiet Beplanning*. Inligtingsverslag. S.W.A. Administrasie; Afdeling Beplanning.
- Bähr, J. 1981: *Veränderungen in der Farmwirtschaft SWAs/Namibias zwischen 1965 und 1980*. *Erdkunde* 35: 274–289.
- Britz, R. G., Lang, H. and Limpricht, C. 1999: *A Concise History of the Rehoboth Basters until 1990. Appendix: The Laws of the Rehoboth Basters*. Windhoek-Göttigen: Klaus Hess Verlag.
- De Klerk, C. H. 1983: *Landbou-ontwikkelingsplan vir Rehoboth Gebiet*. Pretoria: Universiteit van Pretoria, Suid-Afrikaanse Instituut van Landbouvoorligting.
- Du Marais, I. et al. 1981: *'n Streekstudie van die Rehoboth-Gebiet en aangrensende gebiede*. Windhoek: Eerste Nasionale Ontwikkelingskorporasie.
- Ensminger, J. 1992: *Making a market: the institutional transformation of an African society*. Cambridge: Cambridge University Press.
- Kassier, W. E. and Harrison, J. E. 1983: *n' Ondersoek na die landboubedryf in Rehoboth*. Stellenbosch: Universiteit van Stellenbosch, Landbou-Ekonomiese Instituut.
- Lang, H. 1993: Dowry and female competition: A Boolean Reanalysis. *Current Anthropology* 14: 775–778.
- Lang, H. 1998: The Population Development of the Rehoboth Basters. *Anthropos* 93: 381–391.
- Lang, H. 1999: The transition from communal to private land ownership in Rehoboth, Namibia. *Zeitschrift für Ethnologie* 124: 319–333.
- Lang, H., Challenor, P. and Killworth, P. D. 2004: A new addition to the family of space sampling methods. *Field Methods* 16: 55–69.
- Limpricht, C. and Lang, H. 1997: Der Trek der Rehobother Baster. *Archäologische Informationen* 20/1, 49–59.
- Mankiw, N. G. 1998: *Principles of economics*. Fort Worth: Dryden Press.
- Rehoboth 1981: Act No. 5 of 1981. Agricultural Land Act, 1981. *Official Gazette of Rehoboth* 38 [corrected 37]: 10–25.
- Richter, R. and Furubotn, E. 1996: *Neue Institutionenökonomik. Eine Einführung und kritische Würdigung*. Tübingen: J. C. B. Mohr (Paul Siebeck).
- Werner, O. and Bernard, H. R. 1994: Ethnographic Sampling. *CAM* (June): 7–9.