IDENTIFYING SERIOUS FARMERS IN THE FORMER CISKEI: IMPLICATIONS FOR SMALL-SCALE FARM RESEARCH AND LAND REFORM

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Rural household survey data from Mgwalana (Eastern Cape) are used to assess the intensity of involvement in agricultural enterprises. This area typifies the expected results of Alan Low's theory regarding disincentives to farming in southern Africa, ie. most households do not actively use their land resources. Statistical stratification methods are developed and tested to provide the means for quickly identifying seriously committed farm households. While the percent of households identified as "serious farmers" is small, they account for a disproportionately large share of the region's agricultural production and farm resource use. They thus constitute an attractive recommendation domain for farming systems research and extension programs. Implications from Mgwalana are drawn for land reform and support programs for emerging farmers.

IDENTIFISERING VAN ERNSTIGE BOERE IN DIE CISKEI : IMPLIKASIES VIR KLEINBOERNAVORSING EN GRONDHERVORMING.
Opnamedata van landelike huishoudings in Mgwalana (Oos-Kaap) word gebruik om die mate van betrokkenheid in landbou-ondernemings te bepaal. Hierdie gebied illustreer die verwagte resultate van Alan Low se ontmoedigingsteorie ten opsigte van boerdery in suidelike Afrika, d.w.s. dat die meeste huishoudings nie hul grondhulpbronne aktief benut nie. Statistiese stratifikasietegnieke word ontwikkel en getoets ten einde 'n metode daar te stel waarvolgens plaashuishoudings wat ernstig tot landbou verbind is vinnig geïdentifiseer kan word. Hoewel die persentasie huishoudings wat as "ernstige landbouers" geïdentifiseer kan word, klein is, is hulle verantwoordelik vir 'n buite verhouding groot gedeelte van die gebied se landbouproduksie en benutting van plaashulpbronne. Hulle verteenwoordig dus 'n aantreklike aanbevelingsterrein vir navorsing oor boerderystelsels en voorligtingsprogramme. Vanuit die studie van Mgwalana word gevolgtrekkings gemaak vir grondhervorming en ondersteuningsprogramme vir opkomende kleinboere.

1. Introduction

In 1988, the authors examined socio-economic data from a sample of African farmers in the former Ciskei. The intent at the time was to develop a method of stratifying farm households to identify those with higher probabilities of responding to and benefitting from a farming systems research/extension project which was then in progress (Williams, et al., 1988). Current movement toward a significant land reform provides additional contexts for this analysis and an urgency for its dissemination. The original issue, identifying high potential, or "serious" farmers and quantifying their characteristics, remains a valid research topic. However, in addition to targeting farm support programs, such analysis should also now be useful in guiding land redistribution toward those households most likely to use agricultural land productively. Further, in the context or emerging farmers, quantifying the characteristics and constraints of high potential farmers is essential to guide research on appropriate technologies for these conditions. Finally, in the policy arena, there is much current optimism about land reform and its possible contributions to various politically endorsed, rural reconstruction objectives. Data reported here offer sobering insights into the existing incentive structures faced by small scale agriculture and their possible impact on farm management and output. The analysis below suggests that at least some of the current optimism may be misplaced.

2. The Research Problem in the Former Ciskei[1]

The former Ciskei is largely rural. Approximately 44 percent of rural residents are land holders with arable holdings averaging some hectares. However, in 1988, 42 percent of these fields lay unploughed, or if ploughed, unplanted (Rose and Williams, 1988). Those that were planted often suffered from lack of related inputs, primarily weeding and fertilizer. To the layman, the overall picture is one of an abandoned or only passively used land resource. In the former Ciskei, the research problem is not so much identifying a group of target farmers with common characteristics from among a diverse farm population but rather one of identifying serious farmers, households for whom farming is a significant enterprise if not a life style, from among the general rural population. A similar problem faces designers of the forthcoming land reform, identifying recipient households that will likely utilize newly acquired farm lands at or near their agricultural potential. Survey data and field observations indicate that the "serious farmer" criterion might limit the selected group to only a small portion of the rural population. Yet there is sound developmental logic for farming systems research projects and other support programs to assist these emerging farmers to develop their farm enterprises and to better utilize the country's limited agricultural potential. This paper develops two methods of identifying serious farmers using survey data from the former Ciskei, quantifies the farm and family resources at their command, and discusses implications of these findings for a possible land reform.

3. Theoretical and Practical Background

Alan Low's household economics model (1986a), developed with southern African data, provides strong logic to explain the relative lack of serious attention to farming in areas such as studied here. He reminds us that economic rationality will allocate household labour to its highest paying opportunity. He then notes that in southern Africa this is frequently off-farm in the

relatively well developed non-agricultural labour market. This off-farm market, Low suggests, dominates household work incentives and labour allocations. He also theorizes that, after migration to off-farm employment, labour remaining in the rural household will be allocated first to production for home consumption which is valued at retail food prices plus transportation costs to the kitchen, and only last to production for sale which is valued at lower farm gate, unprocessed commodity prices minus transport to market.

This theoretical structure has much to say about the difficulties facing small scale farming in the region. Low's model suggests that off-farm employment opportunities seriously deplete the available labour supply of rural households for farming. Workers remaining on the farm are those with the lowest opportunity costs as defined by the external labour market. The off-farm market favours men. Thus many rural households are *de facto* headed by women for whom household and child rearing responsibilities pre-empt extensive field labour in agriculture. Labour intensive farm technologies are probably not appropriate in this setting even though they might be elsewhere in Africa. Second, while the women, children and older

men left at home may grow some crops, they face another rational economic threshold defined by the household's internal food needs. Beyond that quantitative threshold, food production is valued at market rates and these are set by the productive capacity of large, well capitalized, white owned farms. Per kilogram gross margins, when applied to the yield levels of traditional farming, simply do not justify allocating very many scarce resources to small scale agriculture.

In the study area, this situation is particularly accentuated. Nearly half of the household heads are 60 years old or older and thus retired, or nearly so, from wage employment. Furthermore, thirty to forty percent of households are headed by women. Of the younger household heads, two-thirds are employed off-farm. An additional 21 percent of wives are also involved in the off-farm labour force (Rose and Williams, 1988). Household incomes in 1988 averaged R 2 315 per year of which 94.4 percent was non-agricultural. Of the remaining income, an estimated two-thirds is the value of home consumption. Agricultural cash incomes, averaged across this rural population, amounted to only R 42 per year per household (Williams, 1987). These data showing the relative unimportance of farm incomes are captured in Figure 1.
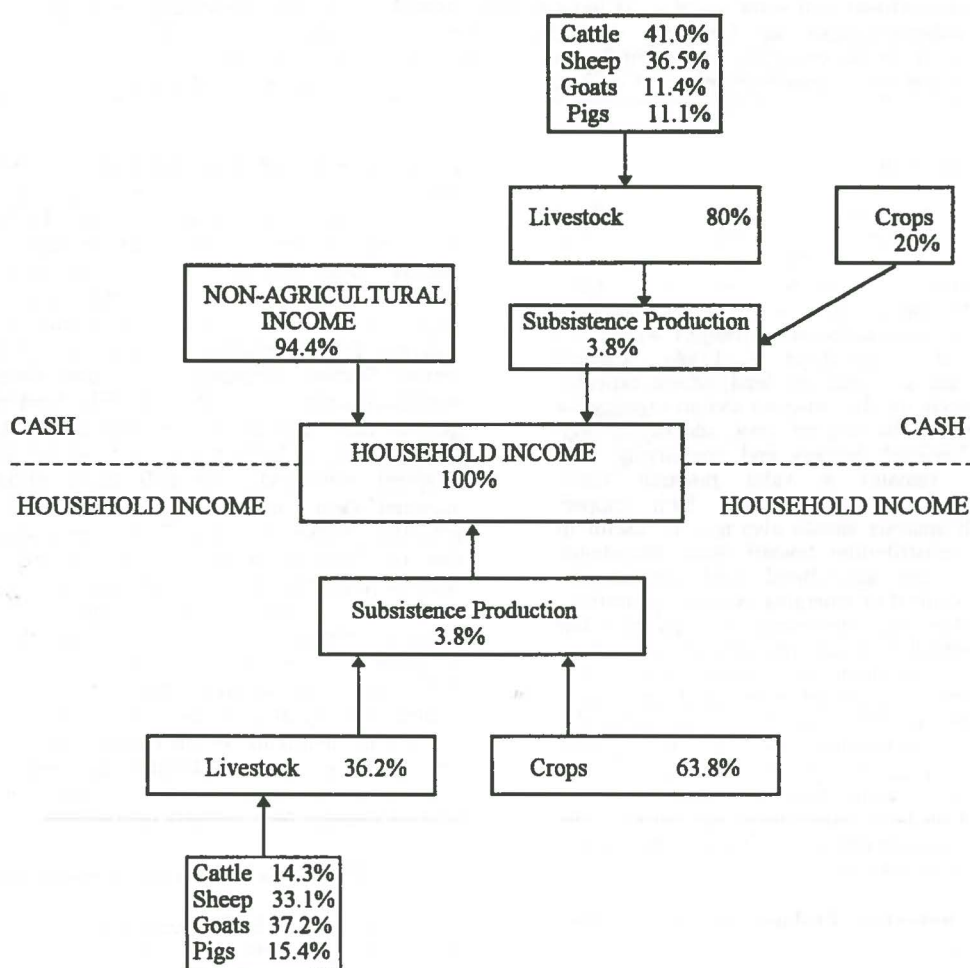
Source: Williams, 1987

Figure 1:   **Sources of income for rural households in Ciskei, Southern Africa**

A common mistake in earlier agricultural development programs was to assume that "small farmers" were an undifferentiated group which could be accurately described with mean or median statistics. Technologies were developed for average or median farmers in an attempt to ensure widespread adoption and to pre-empt a concentration of the benefits of publicly supported research among larger, more affluent farmers. The frequent failure of these programs proved that much greater variability existed among farmers than previously assumed. It became obvious that even micro-variations in the physical, economic and institutional environment for farming can significantly affect technology adoption decisions. The concept of "target farmers" emerged in the late 1960's as a means of gaining further precision in identifying small farmer groups in need of particular program attention and to discover their particular needs and characteristics. Target groups were normally identified by some combination of household characteristics, area cultivated, dominant enterprise and geographic location.

As the on-farm research orientation of the early 1970's became farming systems research (FSR) in the late 1970's and farming systems research and extension (FSR/E) in the mid-1980's, the concept of "recommendation domains" supplanted "target groups". The idea of recommendation domains recognizes that the determinants of farmer decision making include not only household characteristics, arable land holdings and enterprise mix, but also the totality of the physical, biological, social, economic and institutional setting in which the farmer operates. By definition, the term focuses on the technology diffusion component of the research/extension continuum. Low (1986b:82) defines recommendation domain as *"an homogeneous group of farmers who share the same problems and possess similar resources for solving these problems. This group of farmers is expected to adopt (or not adopt) the same recommendation, given equal access to information about it."*

Several authors have suggested recommendation domains for southern Africa. Low (1986b:87) suggests a stratification based on availability of household labour and draft power but does not provide quantitative parameters for the four groupings described. Eckert, et al., (1982) disaggregated rural landholders in Lesotho on the basis of control over farm equipment, animal draft and availability of migrant remittances. The intent was to establish for agricultural planners, who had previously touted the egalitarian nature of Lesotho's agriculture (Lesotho, 1976), that important differentials existed which warranted separate development strategies and policies. Tschabalala and Holland (1986) extended Eckert's work to formally specify the parameters of recommendation domains for farming systems research in Lesotho. Their graphical analysis confirmed that differences do exist based on resource control and access to migrant remittances. Relating these stratifications to cropping parameters, their evidence was suggestive but mixed. Statistical tests of deterministic significance are, unfortunately, not provided in these earlier studies. In the context of this study, and recognizing the impediments to traditional agriculture suggested by Low's observations, we sought a recommendation domain defined as those households seriously interested in farming in order to focus appropriate farmer support interventions. In short, an efficient method of selecting farmers from among rural households was needed.

4.   The Mgwalana Study

4.1   Methods

The Agricultural and Rural Development Research Institute (ARDRI) at the University of Fort Hare undertook several benchmark surveys from 1985-1987 under a Small Farms Systems Research Project sponsored by the Development Bank of Southern Africa. Prior to this time, there were few statistics on farm populations in the region and descriptive information was needed before designing technical improvements for traditional agriculture. The resulting data base provided several village-level samples for analysis. For the present study, a 1987 survey of the Mgwalana Tribal Authority area was chosen. The sample was large enough for statistical analysis of representative patterns. And at the time, it was the most recent of the ARDRI surveys, thus incorporated all methodological refinements arising from previous studies. Mgwalana is a tribal area administered then by Chief Zibi in the Middledrift district. Access to the region and permission for the study were obtained following extensive discussion with Chief Zibi and his advisors. The former Ciskei Department of Rural Development assisted in financing the study and provided enumerators.

Mgwalana contained five residential locations (extended villages) with a total population of 620 households. A 20 percent sample (n = 125) was randomly selected from household lists provided by headmen. Xhosa speaking enumerators were trained and field supervision was detailed, with daily verification of questionnaires by ARDRI supervisors. Data were analyzed at the University of Fort Hare computer centre.

4.2   Simple Correlations

The search for patterns that would cluster into recommendation domains used Pearson correlation coefficients as a starting point. Relationships between selected variables which are significant at the 99 percent level or greater are shown in Table 1. The first ten items in the table are simple measures of agricultural activity. Items 11-16 are social and household characteristics. Items 17-19 are a subset of the household parameters; those dealing with characteristics of the households' labour complement. Table 1 provides the basic analytical point of entry into understanding agriculture in Mgwalana.

4.2.1   Socio-Economic Relationships

Socio-economic relationships in Mgwalana generally follow expected patterns among themselves. Younger household heads tend to have more schooling. Younger individuals are more likely to be involved in off-farm employment which in these data appears as "residential status" with higher numbers reflecting longer periods away from home at work. Residential status and age of the household head correlate as expected with total off-farm income. Schooling is apparently a determinant of access to off-farm work. As expected, off-farm income relates positively to total expenditures and savings.

Conventional practice in small farm research is to assume that various socio-economic household parameters link, in some deterministic way, with farming enterprise. Table 1 suggests that this generalization cannot be uncritically applied to South African traditional agriculture. Perhaps as important as the data in this table are the blank spaces, marked as boxes A and B. The relative absence of entries in these boxes indicates that these specific correlations did not meet the chosen threshold level of statistical significance. As shown by the empty Box A, several standard socio-economic household characteristics bear little relationship to agricultural activities, e.g., schooling, residential status and off-farm income. Age of the household head, often used as a proxy for the stage of the household in household life cycle analyses, Yet in these data, the household head's age correlates well with only a few agricultural activities. Schooling and residential status, while they correlate with off-farm employment and thus the bulk of income, have little relationship to farming.

Those household characteristics that do correlate well with agricultural activity form a distinct subset; the various measures of household labour supply. Total family size also correlates well but was omitted from Table 1 because it did not improve on relationships for household labour force expressed in adult equivalents. Labour:land ratios emerged as particularly strong, being the only labour measure highly correlated with the farm enterprises in which women dominate: eg. pigs, poultry and gardens. In something of a surprise, these labour measures did not correlate well with other household characteristics (Box B).

Of interest in the African context is the pattern observed for savings. Monetary value of savings correlates well with holdings of cattle, sheep and goats but not with pigs and poultry. This is consistent with the widely accepted hypothesis that livestock, especially cattle, are used as a store of wealth under traditional farming conditions (Krige, 1936; Tapson and Rose, 1984). In Table 1, the higher are off-farm income, savings or total expenditure, the higher also are savings and ownership of ruminant animals. Savings are not closely associated with any measure of cropping activity.

4.2.2   Intra-Agricultural Relationships

Many significant correlations were measured between various agricultural enterprises. Most of these relationships support the general picture that active farmers tend to be involved in several crop and livestock enterprises simultaneously. For example, farmers with the larger areas of summer crops also have larger numbers of most stock species, higher cropping intensities and more farm implements. Not shown in Table 1 but also significant, they also have larger areas of winter crops and sell more crops, livestock and livestock products such as milk, eggs and wool. This tightly woven set of interrelationships establishes the fact that serious farmers do exist in Mgwalana and that they tend to be multiple enterprise farmers. This contrasts with the relatively few correlations between socio-economic characteristics and agricultural activities. Methodologically, this suggests that the most effective indicator of overall agricultural involvement is likely to be one or several agricultural measures themselves. This insight is tested more fully in a subsequent section.

Involvement in household gardening is enigmatic in these data. No clear pattern of correlation with either household or farming parameters. A limited number of interviews conducted to supplement the main survey gave impressionistic evidence that an interest in vegetable gardening is passed from mother to daughter and that garden size may be a function of interest more than need. Further, several of the largest gardens were found in female headed households with children but no adult males present. Perhaps a recommendation domain for garden technology must be separately identified.

One of the more interesting observations to emerge from the Mgwalana data is the relative absence of correlations between cattle numbers and other key variables. This contrasts with relationships evident with sheep and goats. Ignoring significance levels of less than 1 percent, cattle numbers are <u>not</u> correlated with household labour units, the labour:land ratio, adult males in the household, summer cropping, cropping intensity or sales of animals and animal products, whereas in each case small stock numbers <u>are</u>. Cattle numbers are correlated with garden size whereas sheep and goat numbers are not. Cattle numbers are positively associated with the level of involvement in other livestock enterprises, with off-farm incomes and savings and with the number if implements present.

The implication of these contrasts is that cattle ownership and management appear to be governed by somewhat different criteria in Mgwalana than is ownership and management of other stock species. While the data do not specifically define the role of cattle, they can be read to suggest that other stock species are managed more as agricultural enterprises than are cattle. This finding would support a "store of wealth" concept for cattle although cultural, social and political attributes could be explanatory as well.

4.3   Comparative Analysis

The above correlations suggest several interrelated factors which might be utilized to stratify rural households and identify active farmers. Table 2 compares selected single dimension descriptors with others combining two or more characteristics. In the latter category are three bi-variate combinations of land, labour and animal ownership. The Mgwalana data also permitted explicit comparisons with the three-way stratification used by Tschabalala and Holland. Several alternative class boundaries were explored for each stratifier and those with the highest discriminatory power were utilized. Figures in the body of Table 2 are estimates of the probability of a larger value than the measured Chi-square.

Perhaps the most striking observation is the robustness of the simplest stratification in the data; the number of livestock species. Five species were enumerated; cattle, sheep, goats, pigs and poultry. Table 1 shows the interrelatedness of numbers of each species owned. Simply tabulating the number of stock species proved highly effective as an indicator of the intensity of other farming activities as well.

At the bottom of Table 2, various stratification methods are compared based on the strength of their relationship with five key indicators: ruminant stock units, chickens and pigs, hectares of summer crops, garden size and implements possessed.

Table 1:　　Selected correlation coefficients among and between agricultural enterprises and household characteristics[a]

Item	Unit	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19
1. Species count	(no.)	1.00																		
2. Small stock units[b]	(no.)	.67	1.00																	
3. Sheep	(no.)	.45	.59	1.00																
4. Goats	(no.)	.61	.70	.31	1.00															
5. Pigs and poultry	(no.)	.54	.29	.31	.26	1.00														
6. Cattle	(no.)	.44	.83	.20	.31	.20	1.00													
7. Garden size	(m²)	.35	.27				.31	1.00												
8. Summer crops	(ha)	.27	.23	.27	.20	.23	.31		1.00											
9. Cropping intensity[b]		.28		.27	.25	.20			.54	1.00										
10. Implements	(yrs.)	.56	.76	.46	.42	.27	.68	.34	.27	.30	1.00									
11. Age of H.H. head	(yrs.)	.29	.21			.23		.22			.30	1.00								
12. Schooling of head	(yrs.)						A					-.30	1.00							
13. Residential status[d]												-.45	.22	1.00						
14. H.H. off-farm income	(R)											-.23		.44	1.00					
15. H.H. expenditures	(R)	.36	.33	.24	.32	.20	.39							.30	.20	1.00				
16. Savings	(R)	.29	.35	.20	.30		.26							.24	.35	.34	1.00			
17. H.H. labour force	(AE)[e]	.43	.33	.31	.38				.30	.21	.32	.23				.20	B	1.00		
18. Labour:land ratio	(AE/ha)[e]	.26	.23	.31	.23	.21		.29	.21	.63	.29							.32	1.00	
19. Males (18-55) present	(no.)	.31	.26	.23	.21				.24		.26							.86		1.00

[a]　The correlation coefficients displayed are significant at the 1% level.　Blank cells indicate non-significatn correlations at this threshold.

[b]　Includes cattle = 5 SSU and sheep and goats at one each.

[c]　Hectares of summer and winter crops divided by hectares of arable land holdings.

[d]　Larger numbers indicate longer periods away from household on wage employment.

[e]　AE = Adult Equivalents:　Persons aged 18-55 = 1, aged 12=18 and > 55 = 0.5, aged < 12 =0.1

Table 2: Significance levels[a] for associations between selected single and multiple dimension stratifications and selected measures of agricultural involvement (Mgwalana, Eastern Cape, 1987)

Agricultural parameter	No. of stock species	Ha. of summer crops	No. of Males (18-25)	Household labour (adult equiv.)	Garden area (m²)	Arable area + working age males	Cattle + working age males	Cattle and arable area	Tschabalala and Holland
Small stock units[bd]	.0000	.0003	.0280	.0012	.1105	.0108	.0000	.0000	.0000
Small stock units[c]	.0000	.0004	.0734	.0485	.2254	.0319	.0055	.0004	.0052
Cattle numbers	.0000	.0770	.0005	.0023	.0065	.0299	.0000	.0000	.0000
Sheep numbers	.0000	.0704	.0104	.0373	.1359	.1228	.0006	.0005	.0000
Goat numbers	.0000	.4403	.1693	.0503	.6561	.0898	.0180	.0255	.0005
Pigs and poultry[d]	.0000	.3660	.3701	.3240	.0097	.3378	.0203	.0023	.0559
Implements[d]		.0000	.0034	.0037	.0006	.0109	.0099	.0000	.0000
Summer crops (ha)[d]	.0084	—	.0322	.0259	.1318	.0002	.1332	.0009	.0150
Garden size (m²)[d]	.0004	.2810	.0213	.4220	—	.2205	.0058	.0054	.2955
Largest	.0084	.3660	.3701	.4220	.1318	.3378	.1332	.0054	.2955
Median	.0000	—	.0280	.0259	.1318	.0108	.0058	.0009	.0150

a Probability of a more extreme value than the observed Chi-square.
b Includes cattle = 5 small stock units.
c Excludes cattle, includes sheep and goats only.
d Used in comparison between stratifications as bottom.
e Persons aged 18-55 = 1, aged 10-18 or > 55 = 0.5, under 10 = 0.1

These five were chosen to provide a relatively balanced distribution of indicators among areas of agricultural endeavour. Significance levels for each indicator can be ranked by their maximum value or by the median value among the five. Two stratifications emerge as notably better than others: number of stock species and a combination of cattle owned and arable area available.

Tschabalala and Holland combined cattle, household labour and implements to derive their recommendation domains. That their measure does not rank well in Mgwalana reflects, in part, differences between Lesotho and Ciskei in the importance of cattle as draft animals. Nearly all ploughing in Ciskei is done by government or privately owned tractors. When Tschabalala and Holland collected their field data in 1980, cattle were still a significant draft resource in Lesotho. Their classification system also suffers in this comparison through its weak association with garden size (a variable not measured in their study) and pigs and poultry, enterprises particularly suited to female-headed households. Both of these associations should have been particularly important in Lesotho where female-headed households are a major factor in rural society.

5.   Conclusions and Recommendations

5.1   Recommendation Domains for Mgwalana

Recommendation domains are used to disaggregate farm populations into sub-groups which might warrant group-specific development strategies. It is common to isolate progressive farmers who receive advanced technology, "median" farmers for less sophisticated and less expensive packages and perhaps other special groups. Most farming systems research programs then concentrate on the median or smaller, limited resource farms, motivated by a desire to impact larger numbers of the rural poor and to avoid appropriation of research results by more affluent farmers.

The task differs conceptually in Mgwalana. Rural residents and landholders are, for the most part, only passively interested in agriculture as a result of the incentive situation discussed above. The need is to identify a group that was active enough in farming to warrant an applied research program. This requires searching for the upper tail on a frequency distribution of agricultural involvement, rather than looking for median or perhaps second quartile farmers. In Mgwalana, "progressive" farmers may well be the only small holder able to respond to new technologies.

Either of the two most effective classification systems identified in Table 2 serve to identify the desired farm group. Active small holder farmers in Mgwalana can be quickly identified as those possessing four or more stock species, or as those possessing cattle. These two groups are not completely overlapping sets. In choosing between the two, we would recommend the species count method for four reasons. First is the better fit with intensity of involvement in predominately female activities of pigs, poultry and vegetable gardening. Second, use of a classification system based on cattle and land might miss farmers who are intensively involved in small stock and other enterprises. Third, as discussed above, there is the question as to whether cattle are truly managed as an agricultural enterprise. Last, the sheer ease of counting stock species managed

lends itself to rapid and unambiguous identification of the more involved farmers.

Table 3 illustrates mean differences in several parameters for subgroups defined by these two classification systems. Originally the cattle x area classification was a 2 x 2 matrix, however, distinguishing between smaller and larger areas within cattle owning farms added little to explanatory power. Because the number of sampled households with cattle was limited, these two subgroups were pooled to obtain an adequate sample size for the combined cell. Within each classification system, all between-group differences are significant at the one percent level except for goat ownership.

Comparing the recommended target group with the middle group in each case leads to the following generalizations. Households seriously involved in farming are larger by some three persons, have at least one additional adult male residing at home, and their family labour force is two full adult equivalents greater. Household heads average 7-8 years older than those of other subgroups. These farms comprise some 17 percent of rural households, but, due to their larger size, account for approximately one-quarter of the rural population.

Active farmers in Mgwalana are characterized by 1-1.5 hectares (40-80 percent) more summer cropping, 200-300 percent larger gardens, and about 400 percent greater holdings of stock. Although less than one-fifth of rural households, they grow one-third of the summer crops, cultivate two-fifths of the total garden area, and raise over half the sheep and nearly all the cattle. Thus agricultural assistance programs can potentially have a major impact on agricultural resource use and commodity output by concentrating on a limited number of carefully selected households.

Present evidence suggests that the farming households identified by either of these two measures would be suitable recommendation domains for an on-farm systems research program in the Mgwalana Tribal Authority area. Following preparation of an early draft of this paper, the research was extended across the former Ciskei using data from previous socio-economic surveys conducted by ARDRI in Gaga, Sheshegu and Khambashe (Williams, et al., 1988). Most of the relationships reported here for Mgwalana and the principal conclusions were sustained from analysis of these other samples.

5.2   Implications for Land Reform and Rural Development

In Mgwalana, off-farm work dominates rural income sources and thus household time allocations. Nevertheless, slightly less than 20 percent of rural households are very active in farming. This subgroup differs significantly from the remaining rural population in many household characteristics as well in as their involvement in cropping and livestock husbandry. These households constitute a group which would probably respond to technologies, infrastructure and institutions developed for their specific needs. The quickest and most effective means of identifying serious farmers in this environment is a simple enumeration of the number of livestock species managed by individual households.

Table 3   **Mean characteristics of recommendation domains identified by two classification system[a]**

Item	Species count			Cattle x arable area		
	0-1	2-3	4-5	No cattle Area ≤ .5 ha	No cattle area ≥ .5 ha	Have cattle
(Household characteristics)						
Family size (persons)	5.7	7.6	10.9	6.3	7.6	10.5
Adult males (no.)	1.0	1.4	2.5	1.2	1.3	2.7
Labour (adult equiv.)	3.3	4.4	6.5	3.6	4.4	6.5
Age of head (years)	56.8	60.2	68.4	57.6	60.7	67.4
% of Rural H.H.	39.2	43.2	17.6	49.6	33.6	16.8
% of Rural Pop.	29.9	44.4	25.7	42.0	34.2	23.8
(Agricultural characteristics)						
Summer crops (ha.)	1.0	1.9	3.4	0.8	2.4	3.4
Garden area (m²)	53.3	119.6	253.4	71.9	84.8	315.6
Small stock units	1.2	10.1	37.2	4.8	7.9	38.0
Cattle (no.)	0	0.3	3.4	0	0	4.3
Sheep (no.)	0	2.1	8.2	0.9	2.2	7.0
Goats (no.)	1.2	6.4	12.2	3.9*	5.7*	9.3*
Implements (no.)	0.1	0.3	1.5	0	0.3	1.7
Animal sales[b] (R/mo)	3.5	9.2	42.8	7.5	14.0	34.8
(Percent of total in sample)						
Summer crops	21	45	34	23	45	32
Garden area	18	44	38	30	24	45
Small stock units	4	38	58	21	23	56
Cattle	0	19	81	0	0	100
Sheep	0	38	62	19	31	50
Goats	9	51	40	36	36	29

a   Within each classification system, all between group differences are highly significant unless marked *.
b   Sales of sheep, goats, pigs, poultry, eggs or milk. No cattle sales were recorded.

Conversely, more than 80 percent of rural households in the sample area use their available land resource very extensively if at all. This contrast suggests important considerations for the design and implementation of a land reform program in South Africa. First, a random selection of current residents in historically black rural areas to become recipients of redistributed land runs the significant risk of cloning the passive resource use patterns found in Mgwalana and elsewhere in the former Ciskei. Purposive efforts to select serious and capable farmers to receive land would seem well advised. *"International experience clearly indicates that the characteristics of those who participate in a land redistribution program (are) a critical factor in determining the success or failure of the program"* (World Bank, 1993:37). This would seem particularly important if, as recently advocated (Cooper and van Zyl, 1994), land reform is to make a significant contribution to increased food security. If land redistributions are to be targeted, the analysis above provides a quick and apparently accurate method of identifying potential recipients.

Second, much of the neglect of agriculture in the former Ciskei can be traced to the fairly complete lack of public investment in the supportive institutions, markets and appropriate technologies that might have made small-scale farming more economically viable. That institutional support is essential is emphasized by a recent observation in the region. Since 1988, and despite growing national and regional unemployment,

the amount of uncultivated land in the former Ciskei has increased from the 42 percent measured in 1987 to perhaps over 60 percent at present. The apparent reason lies in the collapse of the availability of ploughing services provided by the former Ciskei government during the time of political transition (A.O. de Lange, personal communication, 1994).

Government is committed to coupling land redistribution and the emergence of a small-scale farming sector with provision of farmer support services and a network of redirected agricultural institutions (Meyer, 1994). Alan Low's theory taken together with the analysis here strongly suggests that such future public support must concentrate on increasing the returns to labour applied to small-scale farming. Finding small farm options that compete successfully with off-farm employment is not easy in South and southern Africa (Eckert, et al., 1980). However, it can be done, as nearly 20 percent of rural households in Mgwalana have shown. Discovering the right enterprises, developing the appropriate technologies and sustaining them institutionally must become guiding principles of agricultural policy under South Africa's emerging agricultural dispensation.

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Notes:

1. While the authors belief that most of the conclusions offered are generalizeable within South Africa, readers may wish to develop their own views in this regard.

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