

ANIMAL HUSBANDRY AND THE HOUSEHOLD ECONOMY

IN TWO EGYPTIAN VILLAGES

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**Report of the Rural Sociology Segment of the Project
on "Improved Utilization of Feed Resources for the
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TABLE OF CONTENTS

	Page
Acknowledgments	
I. INTRODUCTION	
Purpose and Problem	4
Methodology	6
Data Analysis	12
II. THE RESEARCH SITES	
Musha (Assiut)	15
Zawiet Ghazal (Beheira)	23
III. SURVEY RESULTS	
General Comments: Introduction	30
Quantitative Results: Households	33
Quantitative Results: Animals	46
IV. SOCIOCULTURAL PATTERNS	
Feeding Practices	57
Livestock and the Market	66
Women's Role in Animal Care	78
V. SUMMARY AND RECOMMENDATIONS	
Summary of Findings	86
Commentary	88
Concluding Recommendations	96
APPENDICES	
A. Variations on Landholdings	A1
B. Additional Data on Animals & Households	B1
C. Case Studies	C1
D. Bibliography	D1

LIST OF TABLES

1. Land cultivated, by crop, Zawiet Ghazal	(28)
2. Household size distribution, Musha and Zawiet Ghazal	(34)
3. Percentages of large, medium and small households, Musha and Zawiet Ghazal	(35)
4. Household type in Musha and Zawiet Ghazal	(36)
5. Household types in Musha and Zawiet Ghazal, combined and correlated	(37)
6. Educational achievements in two village sites	(38)
7. Occupation by household, Musha and Zawiet Ghazal	(39)
8. Differences in proportion of farming families	(40)
9. Primary source of income, Musha and Zawiet Ghazal	(41)
10. Landholdings (hiyaza) in Musha and Zawiet Ghazal (according to informants)	(44)
11. Total and average landholdings in Musha and Zawiet Ghazal	(45)
12. Animal census overall results for Musha and Zawiet Ghazal	(46)
13. Cattle and buffalo by household, Musha and Zawiet Ghazal	(49)
14. Sheep and goats by household, Musha and Zawiet Ghazal	(50)
15. Age and sex breakdown for buffalo and cattle, Musha	(51)
16. Correlation of household type and large ruminants, Musha	(53)
17. Correlation coefficients between land, people and animals, Musha and Zawiet Ghazal	(54)
18. Are you satisfied with your present way of feeding your animals? (Musha and Zawiet Ghazal)	(60)
19. Have your animals always been eating in the present way? (Musha and Zawiet Ghazal)	(61)
20. Would you like to feed your animals something else? (Musha and Zawiet Ghazal)	(62)

LIST OF TABLES (Cont.)

- | | | |
|-----|--|------|
| 21. | What and why? (Musha and Zawiet Ghazal) | (63) |
| 22. | Would you borrow money to buy an animal?
(Zawiet Ghazal) | (72) |
| 23. | What do you do if an animal falls sick?
(Musha and Zawiet Ghazal) | (75) |
| 24. | Do you want another animal? Which?
(Musha and Zawiet Ghazal) | (76) |
| 25. | Whose advice would you seek for a new feed?
(Musha and Zawiet Ghazal) | (78) |

- A1. Musha landholding according to the cooperative (A1)
- A2. Zawiet Ghazal holdings including shared land (A1)
- A3. Landholding in Musha and Zawiet Ghazal, using the same counting method as Winrock (i.e., from 1.1 to 2 instead of from 1 to less than 2) (A2)
- A4. Land distribution by size of farm, all Egypt (A2)
- A5. Distribution of farmers by farm size, Musha and Zawiet Ghazal, 1979 (total sample, from Winrock draft report) (A3)

- B1. Average number of large ruminants per household, by amount of land farmed, Musha and Zawiet Ghazal (B1)
- B2. Average number of large ruminants per household, by amount of land farmed, for households having large ruminants, Musha and Zawiet Ghazal (B1)
- B3. Number of animals per household by household size, Musha and Zawiet Ghazal (B2)
- B4. Percentages of households and animals in small, medium, and large households, Musha and Zawiet Ghazal (B2)
- B5. Animal density per household farm, Musha and Zawiet Ghazal (B3)
- B6. Poultry in Musha and Zawiet Ghazal (B3)

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I. INTRODUCTION

Purpose and Problem

This research was designed to ascertain the role of animals (especially buffalo, cattle, sheep and goats) in the domestic household economy and the farming system of two village sites, one in Upper Egypt and the other in the Delta. One of its purposes was to determine current animal feeding practices as well as other practices and attitudes concerning animal care and use, and to inquire into ways in which a modification of animal feeding practices might improve the position of the small farmer.

The target population was composed of those recorded by the village cooperatives as holding (owning and renting officially) five feddans or less of land. Our basic unit of analysis was the household, defined operationally as those who ate together. But if the household is the basic unit for economic and other kinds of activity, the arena for this activity is the village. In a full-scale social analysis, these two levels of organization would have to be fully treated. A household, of course, usually coincides with a "family", but the terms of "household" is to be preferred as that is the basic unit for living and working together, and it makes no prior assumptions about the individuals who belong or are to be excluded. The analytical concept of "household" should also be distinguished from that of "farm", which is one of the enterprises or economic activities that a household can carry out.

We began the research with the idea that since women were particularly involved in animal care, any changes in animal feeding practices and the role of animals in the domestic economy would affect the role and status of women. Figures compiled by Hansen in the 1960's, for instance, show that women carry out the bulk of the chores related to animals, and that that is the major share of women's contribution to agriculture (Hansen 1969). This observation is corroborated by other accounts of the importance of livestock for rural women (Saunders 1977; Critchfield 1978). Iliya Harik (1979) suggested that income from domestic animals might represent a substantial part of the income of the small farmer families. He also argued that the intensification of agriculture which is suggested by the population figures was only made possible by the shifting of some resources into animal husbandry. However, because much of the benefit of the animals is either consumed at home, or marketed in a way that escapes government surveillance, national figures do not take this aspect of the small holder economy adequately into account. The present report can be seen in part as a contribution to these debates; it falls short, however, of resolving them.

We sought to establish the role of animals in the household economy -- the relationship between animal husbandry and people -- and to get some sense of the different kinds of households in the village sites. Our goal here was to suggest what the impact of different proposals for change would be, either on the distribution of goods and income between households, or on the internal division of labor in the household. We sought information on past changes

in animal feeding practices and information relating to the readiness of farmers to change should new alternatives be offered. We hope that the information provided here will prove helpful to anyone who wants to improve the lot of Egyptian small farmers, and especially to those who are concerned with improving animal husbandry in Egypt.

Methodology

In June-July and in September, 1979, some 421 usable interviews were conducted among small farmer households in two village sites: Musha near Assiut in Upper Egypt, and Zawiet Ghazal near Damenhour in Lower Egypt. The latter site actually consists of two adjacent villages, Zawiet Ghazal and Ezeb Qabil.

The basic technique used to gather information was a short interview schedule generally taking about one half-hour to administer. The interviewers were also encouraged to take note of related information and to include this in a narrative statement which some of them prepared after return from the field. Additional information was gathered by the project director through interviews or is deduced from written and documentary material.

It was essential to work out a division of labor and a pattern of cooperation with the team from Winrock International that was surveying the agricultural economics and the animal nutritional aspects of the problem. They attempted to administer a more complicated schedule to a smaller number of people; they also spent somewhat more time in the field than we did and collected much useful information which is analyzed in their report. We tried to interview at least

some of the same people so as to enhance the likelihood of comparability; we used essentially the same list in Zawiet Ghazal while our selection of interviewees in Musha was on a different basis. However, circumstances have not yet made this comparison possible.

Our approach to the two villages sites was different and itself reveals something about the villages. We "entered" Musha through the omda and his cousin who was head of the cooperative and the elected local council; the context was largely "traditional". In Zawiet Ghazal, our approach was through an official from the governorate office, Mr. Badawy. He called the head of the village council and the head of the cooperative to his office to meet our group when we first arrived, and then went with us to the village combined unit. Thus our contact was more "administrative". It was not until we had to move into the second of the two villages in this site that we found ourselves paying a formal call on the omda so that he would "authorize" us to interview in his village.

In Musha we developed our own list of interviewees. The Musha cooperative had made out a list of 1252 individuals who had a hiyaza (holding of owned and rented land) of five feddans or less. This list was apparently derived from a list of 1435 landholders in the village, so that 183 could be considered as holding more than five feddans as far as official records are concerned. We took a sample of slightly more than one out of every five (one out of 4.4 names) by selecting every name whose number ended in "0" or "5". When this number was missing because the owner held more than five feddans, we chose the next name on the list. This gave us a list of 285 names.

We eventually interviewed 216 people from this list, plus an additional 20, for a total of 236. Some of the additional ones were interviewed when we decided to take some names from an earlier list of 300 names that had also been compiled by the Musha cooperative and which gave the number of cattle and buffalo. We took the names of the eight individuals with the largest number of cattle and buffalo to see whether there were any differences between families owning a large number of these animals and the ones from the larger sample. As it turned out, two of these eight had already been interviewed as their names had appeared on our list of 285, and none of the eight was noticeably different from the pattern we had already discovered (in other words, they turned out to claim to our interviewers fewer animals than they had registered at the cooperative). The other 14 names appear to have come in by error -- error as far as we were concerned, at any rate. Of the original 285 names, 40 were said to be living outside the village, either in farming hamlets, in adjacent villages, or outside the area altogether. We decided that there was no reason to go to the extra trouble to contact these people. There were an additional 29 individuals on our original list whom we failed to contact; the reason why they were not interviewed in most cases is surely that they were less well known to those who were assisting us in locating our respondents. It is probable that as a group they were somewhat less well off than the ones we did interview. Our group is thus a statistically valid sample only in a very limited sense. It does, however, represent a wide range of different cases; by the end of our stay the interviewers had reached the impression that the cases were repeating themselves.

We worked in Zawiet Ghazal after the Winrock International team. They had developed a list of respondents chosen from cooperative lists on a random basis with the help of the Damenhour statistical service. This apparently represented a random sampling of the landholders ("hayazin") in the two villages of Zawiet Ghazal and Ezeb Qabil. As we received it the list included 201 names of which we ultimately contacted 193. Because of duplications (names repeated, or two people belonging to the same household) we eventually produced 185 usable questionnaires. There was a lot more duplication (cases where two brothers sharing a household, or husband and wife, or father and son were both listed) in Zawiet Ghazal than in Musha.

In each village we recruited local help. This help was principally in the form of six local people who paired up with the six interviewers from A.U.C. Each interviewer circulated in the village with his or her counterpart locating households whose names had been given to them each morning. The role of the counterpart was to accompany the interviewer so that strange young women and men would not be roaming around the village alone, to help locate the house of the interviewee being sought, to explain to the interviewee the goals of the project, and to help clarify for the interviewer any obscure points in the response. This system worked fairly well in Musha, and not so well in Zawiet Ghazal. The principal reason for this appears to be the geographical layout of the villages. Our area in the north included two adjacent villages instead of one, and furthermore, each village was divided into a number of hamlets ("ezba-s" or "ezeb"), making a total of around 25 ezeb. Most people it appeared only know

their own ezba at all well, and so when we entered a new ezba we had to find a new person from that ezba who would take a few minutes -- or more -- to show us how to find the people whose names we had. Moreover, all our local assistants were from one of the villages -- Ezeb Qabil -- and this meant that they did not really know the other one, Zawiet Ghazal, very well. It also helped in Musha that the women we recruited were somewhat older and had a better knowledge of the village.

In almost every case both in the north and the south the interview took place in the home of the person being interviewed. The exceptions were interviewed in neighbors' houses or in the street. In Musha the two men interviewers interviewed only men, while in the north the men interviewers also interviewed some women. The four women interviewers interviewed mostly women, but also a fair number of men. In about 20% of the cases in Musha, for instance, they found a man at home, and when they did, he usually became the chief respondent. The women interviewers generally reported that they found it easier to interview male than female respondents because the answers were more easily understood. No attempt was made to interview the household head per se although of course he was the natural respondent when he was around. Many of the interviews were carried out in group situations, and this undoubtedly affected the answers in some cases where opinions were sought. Given our lack of ambition with regard to mathematical validity, this was of minor concern for it did not affect the number of people whose voice was heard nor the variety of opinion.

The people of Musha were receptive to the interviews, as were those of Zawiet Ghazal. Four people, including one or two with implausible excuses, refused to be interviewed in Musha, and the figure in Zawiet Ghazal was even lower. The accuracy of the answers, of course, is another matter. It would be foolish to pretend that the information, particularly about figures, is literally accurate. We can only hope that the relatively large number of households interviewed will produce overall figures that are more accurate than the individual ones, and that common sense and information gleaned from other sources will act as a corrective on extreme divergences.

People in both villages of course were curious to figure out why they and their village had been chosen for this project. Certainly the typicality of the village was not the most obvious reason for the choice. Probably Zawiet Ghazal is more typical of its area than Musha is of its, but both villages were selected by officials in the governorates of Assiut and Beheira for reasons of their convenience rather than for their scientific quality. It is necessary to say this, and yet we do not know enough about villages to judge their representivity. Thus it makes about as much sense to start with these two as with any others.

One story that went around in Musha was that the village and another one in Beheira had been selected by a computer for this project, a touching bit of faith in the scientific quality of the enterprise. However, a number of people in Musha expressed the opinion that all this study was well and good, but the real point

was to have a project that would benefit the people of the village. Perhaps our interviewers, visiting people in the relatively informal setting of their homes, elicited this response more frequently than did the Winrock interviewers working in a formal, public context of the duwwar ("guest house"). In Beheira both government and local officials had developed the habit by the time we were there (after the Winrock team) of telling people that they should cooperate in our research because a fodder factory was going to be built in the area. Our efforts to get them to use the conditional tense went to no avail. The omda of Zawiet Ghazal justified the cooperation of his village on the grounds that they had to make a case for locating the factory in that village rather than in its neighbor, Ezeb Qabil. Needless to say, research under these conditions raises expectations which no one may in fact be preparing to meet.

Data Analysis

The basic job of data analysis was carried out in the fall of 1979 by some of the people who had assisted in collecting it. This is the point at which a translation from Arabic to English was made. The core technique was the establishment of a set of "scratch cards" on which summaries of the information gleaned from the interview schedules were entered. These scratch cards could then be shuffled and classified in order to produce cross-tabulations. Material handled in this way was basically that which lent itself to quantitative analysis. Further descriptive analysis (of the feeding system, for instance) was built up both from particularly complete answers

on the interview schedules, and from the narrative reports produced by the interview team.

The assumption that guided the analysis is that the goal was to develop a sense of the household and the village as arenas for action, as systems of action. To that end, some understanding of the basic logic of these systems is necessary. Some of this logic takes the form of correlations established between variables that have been isolated in the course of the research; more of it must remain qualitative. Ultimately our purpose here is to develop a sense of the impact on the household and village systems that certain interventions concerning animal feeding practices might have.

The presentation of results is here broken down into three parts. In the next part we give an overview of the two communities where the research was carried out, making use of census information, data from the cooperatives, and other information collected on the site. In the following section the survey results are presented, first those relating to the population and then those concerning the number and distribution of animals. Following this, a number of sociocultural patterns are treated including some of the attitudes reported by respondents in the survey on feeding practices, market relations, animal health, and especially the role of women in matters relating to animals. The concluding section sums up the findings with an appropriate commentary and gives recommendations based on the results of this study. The findings and recommendations are grounded both in the quantitative material and in the qualitative results and findings.

The principal appendix is Appendix C which contains some 22 case studies derived from our questionnaires and which purport to show the range of variation from the poorer to the richer cases in each research site. Two other appendixes give additional tabular material to supplement that in the text, and the final one gives a few bibliographic items.

II. THE RESEARCH SITES

1. Musha (Assiut)

Musha is located about 15 km south of Assiut city in the midst of a broad open expanse called on some maps the Hod al-Zinnar. It is reached by a dirt road that branches off the main Cairo-Aswan road near Shutb; this is essentially the only entrance into the village for vehicles. To the east and north of Musha lie river-front villages. Some of these are more scattered hamlets and have names (such as Awlad Ali) which suggest more of a tribal than a village background. To the west of Musha rises the escarpment at the western edge of the Nile valley. The villages strung out along the base of this escarpment are associated with the series of tombs, cemeteries and shrines, and vary in size from large agglomerations like Doronka and Zawiya to collections of hamlets. The old course of the Sohagiyya canal ran along the base of the escarpment until the construction of the Aswan dam. The present course of this canal parallels the main Cairo to Aswan road and railroad, which pass within a few kilometers of Musha, between the village and the Nile. Musha appears to be the largest of the agglomerated villages in this area stretching from Assiut to Abu Tig (the others include Shutb, important in Pharaonic and Christian times, Rifa, Baqur, Qirqaris, and Muti'a). The name of the village is apparently of Pharaonic origin, although the village is the only one in this zone not to appear on the French map of 1799. Unlike Shutb and Rifa, at least, it is not built on a pronounced tell. Musha is part of the central

markaz in Assiut governorate and has, at least in practice, both an omda and a police station. Musha has no market nor of course a market day; though there is a small concentration of retail shops in the center of the village.

Musha is by any standards a large village. The population is of the order of 35,000 people, and the secretary of the village council mentioned that there were 7000 families. The figures represent an average of 5 persons per family, slightly less than the national average and also less than the average household size turned up in our investigations. There were also 7000 voters in the last election. The bulk of the population lives in the nucleated core of the village and it is said that the movement out of the village to hamlets or isolated houses in the fields is fairly recent. It is not clear, however, whether there are really as many as 35,000 people actually resident. There are said to be large colonies of people from Musha in Suez and in Alexandria (more than in Cairo), and there is a regular movement of seasonal agricultural laborers to Tanta. People from Musha have recently begun to migrate to Saudi Arabia and Kuwait, and our sample turned up one person working as a technician in Spain.

Assuming that the figure of 7000 families is correct, one can make the following calculation. There are 1435 families listed as cooperative members because they hold land. There are 700 families (or 10% compared with a national average of 5%, reported by Harik 1979:90) considered officially as destitute and which receive help from the local office of the Ministry of Social Affairs. This makes

a total of 2135 families. The remaining families -- not quite 5000 -- are presumably in between, i.e., neither landholding nor destitute. This represents about 2/3 of the households of the village.

Alternatively, one could assume that the average of 7.3 members per household that results from our sample can be extended to the body of landholding households. This gives a total of around 10,475 people who are members of such families out of a total population of around 35,000. Again, the proportion is about the same. When asked who these people were, the head of the village cooperative did not seem very sure but suggested that while some were merchants or civil servants of one kind or another, the others were workers. In fact, many of those who are merchants, shopkeepers or civil servants are also landholders.

If these figures are approximately correct, they suggest that there is a large body of landless households in Musha which must subsist from wage labor of one kind or another for the most part. While some of this wage labor takes place in the village -- even owners of quite small plots of land sometimes hire others to work the land for them -- some of it also takes the form of labor migration, historically to the cities of Egypt and especially Suez, more recently perhaps abroad as well. Perceptions of the labor situation in Musha vary from the landholders who argue that there is a shortage of labor, that it is too costly, and that people will only work short hours, to the perception of the workers that it is hard to find work and even harder to live on the income from farm labor. This debate is an unresolved question in the political economy of rural Egypt. The best

available explanation in the absence of serious field research on this question is that which starts from the contrast between a busy season in agriculture during the hot summer months and a slow season during the cool winter months. Thus if it were not for migration there would be a constant supply of labor available but a highly fluctuating demand. Those who seek to hire labor are struck by the difficulty of finding the labor they want at peak periods while those who seek work are struck by the absence of regular work for the several months of the winter season. The slow season for work encourages seasonal labor migration which eventually becomes permanent or semi-permanent as people find a way to make a living in the city or abroad.

Another calculation can be made from the list supplied to us by the cooperative. According to this list, there were 1252 individuals operating farms of 5 feddans or less, and by implication 183 operating more. Thus those who are farming more than 5 feddans represent 12.75% of landholders. The figures supplied by the cooperative further suggest that those holding 5 feddans or less farm about 3000 feddans altogether, or about 60% of the zimam of Musha. So 87.25% farm 60% of the land, and 12.75% farm 40% of the land. According to this reasoning, the average size of the smaller farms is 2.4 feddans (confirmed by the figures for our sample, see below), and the average size of the larger ones is 10.9 feddans.

A number of families in Musha have apparently gained great wealth from agriculture. Thus one man is said to own 70 feddans in the village, but he also owns the tallest building in Assiut and 14 buildings

in Tanta. In the previous generation, a landowner named Shaker Bey Khayyat owned several hundred feddans in Musha and vicinity, and had a large "borj" (colonial-type estate) just south of the village; he was apparently a member of Parliament and lived in Alexandria. After 1961 he was land-reformed down to 50 feddans, and his family now live in the U.S. Another big landowner lives in Cairo and Alexandria, and has "wakil-s" to look after his property in the village. Ahmed Nessir is said to "own" several hundred feddans, and he also owns the smaller of the two mills, with three grindstones. The dominant family in the village is the "Abdin" family, that of the omda, Abdelmaguid Tammam. His father was also a member of Parliament. (There was a lot of rotation in and out of Parliament in the period from 1922 to 1952 as the fortunes of the Wafd party rose and fell.) The omda himself is said to own three hundred feddans, independently of his family members, although this of course is legally impossible. Certainly there are people in Musha who perceive the dominant hold on the land of the Abdin family and resent it. The omda also is said to own a substantial amount of agricultural machinery, including 11 of the 107 pumps in zimam Musha, and the larger of the two mills, with eight grindstones. Undoubtedly he has other assets as well in the village, and is said to have urban property as well.

Musha's zimam is around 5000 feddans. This is considered relatively large, as Shubt, for instance, has 2000 feddans for 15,000 to 20,000 people and thus does not have as much land per person. The land was flooded annually until the High Dam (ca. 1965) to a

depth of about one meter. At that time it was divided into 70 or so hodh-s (basins), averaging less than 100 feddans each but with considerable variation. The basic landmap of Musha in the cooperative society still uses the hodh as its unit, and people still remember where the boundaries are, even though they are less meaningful now. Each hodh has a name. The 1952 survey map of the area shows no canals reaching into the zimam of Musha, a reflection of the fact that the land was irrigated by the annual flood and by pumps in wells tapping the watertable during other parts of the year. Currently, the land is irrigated from a canal that passes to the east of the town (not present in 1952) through a network of ter'a, irrigation canals. The water is then pumped up from these canals mechanically into another network of canals laid down by the owners of the land. The difference in the level of the water did not appear to exceed one meter, and technically there is no reason why waterwheels could not be used. Many of the pumps visibly go back to the pre-1952 period, and were originally installed to pump water from wells during the dry season. Some of the larger pumps can irrigate around 100 feddans, though the average is probably less. Currently the government is digging a new drainage ditch to alleviate the problem of waterlogging and rising watertable which has appeared since 1965. This drain will cross the omda's land.

The main crops in Musha are cotton, wheat, beans, lentils. People also grow fruits and vegetables -- grapes and okra were much in evidence at this time of year. Sunflowers, chickpeas, sorghum and corn are among the other crops. The omda grows "elephant grass", an African

plant intended for animal fodder. The cycle of the major crops is determined by the cooperative, presumably responding to quotas sent to them from the center. But the precise decisions as to who shall plant the required crops, and the decisions to excuse people from growing them, are made by local cooperative officials.

The cooperative, the village bank, and other official institutions mostly cover both Musha and Shutb. The real change in agriculture seems to have come with land reform in 1961, and with the end of the flood in 1965. The village bank has only been around since 1977, when it began to take over the functions of the cooperative that had to do with money and advances to farmers. As elsewhere, people regard the village bank as less flexible. Certainly the office of the village bank appears to be larger and busier than the rather sleepy cooperative office.

Agriculture in Musha is fairly heavily mechanized. As mentioned, no animals work to raise water; that is all done by pumps. All tillage and land preparation is said to be done by tractor, even if some of the tractors are old. Threshing of wheat and bersim is done with a drum thresher. This leaves the time-consuming job of winnowing to be done by hand, and for wheat the job of threshing and winnowing must be done twice. Many other agricultural jobs are also done by hand -- for instance, harvesting sorghum and doubtless other crops as well. Much transport is done by animal -- donkey and camel. There are some families that specialize in transport by camel. Tractors are also used to haul crops in from the fields, but are less flexible than camels and donkeys because they must in the main stick to roads

along the banks of canals. The first pumps in the village date back to 1905, we were told, and tractors also have a long history in the village. The cooperative head argues that the main need of the village is for complete mechanization of agriculture, in part because of the high cost of labor and its scarcity.

Most of the government offices are concentrated in the "combined unit", the wahda, on the eastern edge of town. They are supervised in general by the rais majlis al-garya, the head of the village council, who is a native of Musha and a graduate of al-Azhar University. There is a poorly furnished hospital, a somewhat better equipped veterinary section (the contrast was remarked upon by the people themselves), a bee-keeping area and a machine for making honey, a youth club, a three-story building meant to house chicks being raised until big enough to sell to villagers, and a middle (preparatory) school. Elsewhere in the village are five primary schools, a police station, and a storage area belonging to the village bank. There are 28 mosques and three churches including one Catholic. The counterpart of the majlis al-garya is the majlis mehalli, whose head is also head of the village cooperative; also a native of Musha, he is a cousin of the omda and attended law school in Cairo. The majlis mehalli (before the elections of November, 1979) had eleven members from Musha and five from Shubt. The elected members appear to be chosen from the village's leading citizens. One of the key relationships in the village is thus that between the head of the majlis mehalli and the head of the majlis al-garya, the former representing the population and the latter the administration. They are scheduled to meet every

Monday morning with various subordinates and elected members to discuss local affairs.

2. Zawiet Ghazal (Beheira)

The second research site is referred to here as Zawiet Ghazal, in the Delta Governorate of Beheira. Actually it consists of two adjacent villages in the village council area of Zawiet Ghazal; one of these villages is that of Zawiet Ghazal and the other is Ezeb Qabil. These villages themselves are more administrative units than social ones. Each village consists of 12 to 14 hamlets (ezeb, sing. ezba) making a total of perhaps 25 for the two combined. The hamlet is the more important social unit for many purposes as was apparent from the lack of knowledge that people had of hamlets other than their own. There appeared to be substantial differences from one ezba to the next reflecting the social history of each. Some were formed by large (mostly absentee) landowners in the pre-1952 period who set up villages to house their workers, while others were settled by groups of independent farmers and still others perhaps were mixed. The two villages stretch along the north bank of the Mahmoudiyya canal about 6 km north of Damenhour. The Mahmoudiyya canal is the main navigation link between Alexandria and the Nile, and during the mid-19th century it was the path followed by all travellers between Alexandria and Cairo. It splits now just at Zawiet Ghazal into a branch that heads south past Damenhour to al-Khatatba, and a branch that continues east to join the Nile at al-Mahmoudiyya town. The principal hamlets are located on or near the canal, but other hamlets are scattered further

north, some of them as much as 2 km from the canal and as much as 5 km from the village center. The villages are at the northern limit of the land that was cultivated in 1798, and the land to the north of them as well as some land in the village areas was undoubtedly brought under cultivation during the 19th or 20th century by capitalist landowners. Zawiet Ghazal appears on the 1799 French map.

The focal point for these two villages is the combined unit (wahda) which is located on the north side of the canal at its branching point. Across the canal to the south is a large electricity generating plant (serving Damenhour and the region) that is visible for miles in every direction. The village council area of Zawiet Ghazal has altogether about 60,000 people in 14 villages on both sides of the canal. The village center includes the combined unit (school, hospital, poultry barn, village bank, rural craft center, offices of the rais majlis al-qarya, etc.) and also a collection of shops selling meat, vegetables, fruits, drinks, etc. Around this area is a very lively Saturday market which is particularly heavily frequented by women. Merchants and peddlers come here from outside the village as well. Also in this market is a mill where wheat, corn and rice can be shucked and ground. The family that owns this mill (the motor was purchased second-hand from Upper Egypt) also provides the omda of Ezeb Qabil and the head of the Ezeb Qabil cooperative. The latter was a candidate for the majlis mehalli in the November 4, 1979, elections.

Although the village council combined unit bears the name of

Zawiet Ghazal it is in fact located in the territory of Ezeb Qabil; this constitutes a sore point in any discussion in the village of Zawiet Ghazal. It appears that the original center of this little country used to be the hamlet known as Zawiet Ghazal Beled. This is where the market used to be, for instance, and there is still a fine mosque there. But at some point -- presumably when the wahda was built -- the center was moved to its present location, just over a bridge from the paved road linking Damenhour to Abu Hommos. The centralization of all activities in the wahda wreaks a certain hardship on the people of Zawiet Ghazal, and perhaps on other outlying areas as well. There is no school in Zawiet Ghazal, for instance, so that children from this village must walk up to 5 km to attend school. The consequence is that many do not attend school.

According to official figures, Zawiet Ghazal has a zimam of 1461 feddans of which 169 is reformed land under government control, and Ezeb Qabil has 1185 feddans of which 201 is reformed land (the percentages are 12% for Zawiet Ghazal and 17% for Ezeb Qabil). The total land area of the village council is given as 12,480 feddans for ten villages, so these two villages are average in land area. Zawiet Ghazal has 545 landholders (hayazin) while Ezeb Qabil has 500. This gives an average of 2.68 feddans per holder in Zawiet Ghazal and 2.37 in Ezeb Qabil. The largest owner in Ezeb Qabil has 12 feddans, while in Zawiet Ghazal the largest holder has 42 feddans followed by one with 28 feddans. Twenty-six people hold more than 5 feddans in Zawiet Ghazal, and nine of these hold more than 12 feddans. Thirty-one people in Ezeb Qabil hold between 5 and 12 feddans, but no one

owns more. These figures correspond, though not strongly, to the local impression that Zawiet Ghazal is more "feudal" with bigger landowners historically and at present than Ezeb Qabil. This opinion is put forth by people from Ezeb Qabil to explain why people in Zawiet Ghazal appear to be worse off than them. In fact, of course, the reliability of these figures should not be over-emphasized. Particularly in Zawiet Ghazal large or fairly large estates seem to have survived. One estate, for instance, belonged to a large landowner, and is now divided among various children of the last "feudal" owner. However, all these parcels are administered for their absentee owners by the same man, as a single unit of 150 feddans. Somewhat impressionistically, one can observe that while the families of the omda-s in each village are clearly better off than their fellow villagers, in Ezeb Qabil the omda appears as the first among equals, and in Zawiet Ghazal the omda represents a kind of village oligarchy.

The population of Ezeb Qabil is given as about 6500 and that of Zawiet Ghazal as about 5000. This means that the total population of these two villages is about 1/3 that of Musha. If we assume that the average size household in our sample (8.8) can be extended to the other households, then around 4800 of the 5000 people in Zawiet Ghazal and around 4400 of the 6500 people in Ezeb Qabil are members of landholding families. In fact, the number is probably somewhat less because of the tendency for more than one member of a household to be listed as a landholder; we can guess that the figure should be reduced by around 5% to 10%. These figures would seem to indicate that the number of landless is somewhat smaller proportionately, here

than in Musha, even if the figure for Zawiet Ghazal appears improbable. The access-to-land situation is different here than in Musha also because hiring labor is seldom used as a technique for working the land; instead land is given out on shares creating a more fluid and perhaps more equitable situation between landowner and worker. The sharing is typically 50:50, and the sharecroppers then hire additional labor if needed. One absentee landlord in Ezeb Qabil argued that the wage-earners are now those who are best off because they just take home all their money and are free from any of the expenses involved in farming; furthermore, he argued, such families often have several income earners. Nonetheless, one man said that if offered the choice he would rather sharecrop than work for wages because he would retain more of his freedom (he owns 1 1/4 feddans).

The main agricultural crops in the two villages are cotton, wheat, rice and bersim, cultivated in about equal portions and about equally in each village. Table 1 gives the official figures from the coop/village bank. Notice the importance of gardens/orchards and of vegetable growing, both probably in part a function of the proximity of urban markets in Damenhour and Alexandria as well as the village's own market. Rice, cotton and wheat are the crops regulated by the government.

Table 1: Land cultivated, by crop, Zawiet Ghazal

	<u>Land</u>	<u>Rice</u>	<u>Cotton</u>	<u>Wheat</u>	<u>Bersim</u>	<u>Gardens</u>	<u>Vegetables</u>	<u>Other</u>
Zawiet Chazal	1461	355	396	405	394	100	143	23
Ezab Qabil	1185	350	410	282	346	86	51	85

Agriculture is partially mechanized. There are said to be about 12 tractors belonging to the government and attached to the village council, and perhaps 30 others in the two villages. Most of the private ones are said to belong to those with 20-30 feddans, and they are conspicuously in evidence in prosperous ezba-s such as Ezbat Shaqban, the home of the omda of Zawiet Ghazal. A few belong to men who earned money abroad or outside the village and who have invested in a tractor. Tractors are used for plowing, for running threshers, and for pumping water, about in that order. The only work we saw them doing was transport, and we did see some portable motor-pumps. Several times when we asked people how a newly planted field of bersim had been tilled we were told that it had been done with animal power. Tractors rent for 1.50 to 2 pounds an hour, and it may be that they are not used on small fields, or for bersim since it is not a cash crop. Local transport relies heavily on the donkey, along with animal-drawn and tractor-drawn wagons and the occasional camel. As in Musha, transport is limited by the width of access paths into hamlets and fields.

The houses of Zawiet Ghazal appear more airy and light than the high and dark houses of Musha. They often have windows opening directly to the outside, and frequently out onto fields since the hamlets are small. Many have porches, typically facing north, away from the sun and towards the breeze, whereas the houses of Musha frequently face into narrow streets, have no windows at ground floor level and only in some cases are built around a very small, partially covered courtyard. In a sense the whole society in the north appeared more open. Women are more visible in the hamlet streets and in the Saturday market than in the south. There is joking and banter between men and women in public, and more women claimed to be playing a decisive role in family affairs.

III. SURVEY RESULTS

General Comments: Introduction

The most striking difference between the two research sites is that in the north almost all buffalo and cattle are expected to work, while in Musha none of them are. In Musha the principal role of these animals in the village is as providers of milk and dairy products for the household, and this is reflected in the finding that few households have more cattle and buffalo than they need to supply their own needs. The animals are part of a subsistence strategy (low risk-low gain) on the part of the small farmers. Hence, the prosperity of a family does not depend on its animal wealth, but rather the number of animals reflects the prosperity and size of the household. A few very wealthy families are exceptions to this rule inasmuch as they, like the omda of Musha, keep animals as part of a profit-oriented strategy. But these families were not part of our sample.

In Zawiet Ghazal the animals are used to work, and that modifies the equation of usefulness of the animals. Both cattle and buffalo are used to turn the saqia (waterwheel) and thus to provide irrigation water for the fields, and for various field tasks. But people also expect to get milk and offspring from their animals. As in Musha, water buffalo are preferred for their milk and cows for the frequency of their calving. The calculation of the animals people need in their household economy must take account of two purposes, the provision of dairy products and work. Those with only one or

no animals often find that they have a hard time getting the work done; and owners must balance off the value provided by the work of the animal with the value of its milk and dairy products, for farmers believe that the more an animal works the less milk it produces. Animals are kept for their direct contribution to the household economy, not because farmers are speculating on them as producers of meat and milk for the market.

A second important difference between Musha and Zawiet Ghazal is that ownership of animals is often shared in the latter village. The most common patterns are joint ownership among neighbors and relatives, and an arrangement between households according to which a rich man or woman buys an animal which he entrusts to someone poorer in exchange for part of the economic return from the animal, usually a share in the proceeds from the sale of offspring. In the meantime, the small farmer must feed and care for the animal, and has the benefit of its work and milk production. Ultimate control over the animal rests with the absent owner, who can, for instance, sell it if he wishes. The most frequent disputes that emerge from these sharing arrangements occur when one owner wants to sell at a time not agreeable to his partner.

In both villages among small farmers the role of cattle, buffalo and other animals is essentially a subsistence one. One implication of this is that an improvement in feeding practices would in the first instance probably result in an improved standard of living (more milk, cheese and ghee for the family) and not in an increased market orientation (growing more animals for the market or marketing

milk). Only subsequently would an improvement in feeding practices lead to a market orientation among small farmers. Some larger farmers, like the Musha cooperative head, are thinking along these lines and so talk about improving the breed of cattle to find one more productive (e.g., the Friesian) under local conditions. But most of the small farmers have not yet reached the point of shifting away from the low risk-low gain strategy of the subsistence farmer to the risk-taking stance of the market-oriented farmer.

Another factor that should be kept in mind is the importance of off-farm income, whether derived from migrant labor within Egypt or increasingly abroad, or from other sources of income in the rural area itself. This factor is less obvious in the quantitative analysis than in some of the case studies. To the extent that a household relies on off-farm income, its agricultural options change as well. Purchasing additional animals may be one form of investment of such income. Again, the first effect would probably be to improve the standard of living and only subsequently would the consequence be to shift to a market orientation. However, even then this may not happen if the goal is to provide the womenfolk and children at home with milk and a useful job to do while the menfolk are away. Our study probably did not clarify this problem as much as it should have, and more information is needed here.

The situation of the small farmer in Musha and in Zawiet Ghazal is in some respects similar and in some different. From the available evidence of other village-level studies, it appears that Zawiet Ghazal is probably reasonably typical of Delta villages in such

matters as the importance of putting-out of animals, the role of women, and the degree of farm mechanization. However, our knowledge of Upper Egyptian villages is a good deal less, and there appears to be more variation among them anyway (Lozach and Hug 1930). For this reason it is hard to judge whether Musha is typical or not, although it appears to be something of a special case. This is particularly true with regard to the absence of work for large ruminants. Musha is probably less typical of Upper Egypt than Zawiet Ghazal is of Lower Egypt.

Quantitative Results: Households

In this section we look at the characteristics of the households included in our sample, with regard to size, type, level of education, source of income, and especially landholding. Our basic unit was the household, which we assumed was in some sense both a production and a consumption unit.

An obvious first operation therefore was to calculate the distribution of household sizes and averages. The households we interviewed in Musha contained 1723 individuals, for an average household size of 7.3 individuals. In Zawiet Ghazal, the households contained 1634 individuals, giving an average household size of 8.8 individuals. The difference between Upper and Lower Egypt is striking and we have no easy way to account for it. Perhaps the southerners were sharper in their definition of who was in or out of the household than the northerners; in Zawiet Ghazal it was sometimes difficult as a practical matter to determine household boundaries since members did not

agree. Again, our findings contrast with those of the 1976 census (it gave the average family size of a rural Upper Egyptian family as 5.0 and that of a rural Lower Egyptian family as 5.6 persons), perhaps again because of varying definitions of the family and/or household. Table 2 gives the breakdown for the two villages.

Table 2: Household size distribution, Musha and Zawiet Ghazal

<u>Number of people</u>	<u>Number of cases</u>		<u>Total</u>
	<u>Musha</u>	<u>Zawiet Ghazal</u>	
1	8	1	9
2	10	3	13
3	11	7	18
4	16	12	28
5	24	16	40
6	29	28	57
7	37	27	64
8	31	14	45
9	29	13	42
10	19	11	30
11	3	10	13
12	2	6	8
13	5	7	12
14	2	7	9
15 & +	10	23	33
	<u>236</u>	<u>185</u>	<u>421</u>

The difference in the size profile can also be expressed in percentage terms, grouping together the households in three strata: those with one to four members, those with five to eight members, and those with nine and above. The percentage of medium-sized households is nearly the same in the two villages, but Musha appears to have relatively more small ones than Zawiet Ghazal which in turn has relatively more large ones.

Table 3: Percentages of large, medium and small households, Musha and Zawiet Ghazal

<u>Size</u>	<u>Musha</u>	<u>Zawiet Ghazal</u>	<u>Total</u>
Small (1-4 members)	19.1%	12.4%	16.2%
Medium (5-8 members)	51.3%	45.9%	48.6%
Large (9+ members)	29.7%	41.6%	34.9%

Similar results are apparent from an effort to classify the households by type. Four types were recognized for our purposes: 1) nuclear family, including occasional additional relatives; 2) three-generation family; 3) fraternal extended family; and 4) one-generation family, i.e., single individuals and couples. Table 4 gives the breakdown for the two villages by number and percentage. In both cases the overwhelming majority of households are based on either a nuclear family (parents and children, with occasional extra relatives) or a three-generation extended family. These two family types represent of course two stages in the evolution of the family cycle. If there is a difference between the

northern and the southern village it lies in the greater proportion of extended families in the north. This is compatible with the larger average family size and the larger number of large families. Overall, Musha has 70% of its households either nuclear or one-generation, while Zawiet Ghazal has 54% of its households in these two categories.

Table 4: Household type in Musha and Zawiet Ghazal

	<u>Musha</u>		<u>Zawiet Ghazal</u>		<u>Total</u>	
	<u>Number</u>	<u>%</u>	<u>Number</u>	<u>%</u>	<u>Number</u>	<u>%</u>
One-generation	16	6.7	3	1.6	19	4.5
Nuclear	149	63.1	97	52.4	246	58.4
Three-generation	64	27.1	70	37.8	134	31.8
Fraternal extended	2	.8	15	8.1	17	4.0
Unclear	5	2.1	-	-	5	1.2

Combining lines one and two, and comparing them with lines three and four from Table 4 gives Table 5 for which a correlation coefficient was calculated. This shows that there are significantly more extended families in Zawiet Ghazal than in Musha. One can perhaps conclude from this that the larger average household size in Zawiet Ghazal is not due to greater fertility but to a somewhat different sense of social organization which leads people to remain together in extended family situations more often than in Musha.

Table 5: Household types in Musha and Zawiet Ghazal,
combined and correlated

	<u>Musha</u>	<u>Zawiet Ghazal</u>	<u>Total</u>
Non-extended	165	100	265
Extended	66	85	151
Total	231	185	416

$$\chi^2 = 13.41$$

$$df = 1$$

$$p < .001$$

In order to get some idea of the educational attainment of the households in the two villages we calculated a figure based on the level of education attained by the most educated person in the household. Simpler than constructing an index of the total educational achievements of household members, it is also more realistic than simply looking at the educational standard of the household head since in many cases it is one of the children or grandchildren who has attained the highest level. The variable is potentially an important one for the project in that it indicates the likelihood that a household is able to make use of written instructions or appeals to follow certain animal feeding practices. In a more general way it also indicates the degree of openness in the household to new ideas.

Table 6: Educational achievements in two village sites

<u>School level reached by household's most educated member</u>	<u>Musha</u>		<u>Zawiet Ghazal</u>	
	<u>Number</u>	<u>%</u>	<u>Number</u>	<u>%</u>
None	39	16.6	51	27.6
Primary school	52	22.1	58	31.4
Intermediate school	39	16.6	36	19.5
Secondary school	79	33.6	26	14.1
University	26	11	9	4.8
Other & unknown	--	--	5	2.7

The figures show a much higher level of educational attainment for Musha than for Zawiet Ghazal. On the basis of data at hand it is impossible to explain this, unless the easier access to schools in the nucleated village of Musha plays a role. It is certainly consistent with the remarks made by people in Musha who are conscious of their relative enthusiasm for education and pointed out that Musha has produced a lot of teachers (we heard the figure of 300 of whom all but around 60 teach outside Musha). As a bit of observational data, the Cairo morning newspapers appear in the omda's duwwar in Musha by around 11 o'clock each morning and are read.

The data on occupation among our sample show the same trend: Musha is more open to non-farming occupations than Zawiet Ghazal. Table 7 breaks down the occupations by household into 1) households that cite only farming (including wage labor in farming) as an occupation; 2) households that cite farming as the main occupation

but where other occupations are present; 3) households where the household head is not a farmer but someone else in the household is, taken to imply that farming is not the principal occupation; 4) households where no one claims to be a farmer; and 5) other cases, including ones that were unclear and ones where the only adults present were women who claimed no occupation.

Table 7: Occupation by household, Musha and Zawiet Ghazal

	<u>Musha</u>		<u>Zawiet Ghazal</u>	
	<u>Number</u>	<u>%</u>	<u>Number</u>	<u>%</u>
Only farming	115	48.7	123	66.5
Farming primary	50	21.2	29	15.7
Farming secondary	12	5.0	13	7.0
No farming	44	18.6	14	7.6
Other	15	6.4	6	3.2

According to their declarations, Musha households are significantly less likely to rely on agriculture as their only or primary occupation than Zawiet Ghazal ones -- and remember that the basis for our sample is smallholders, those holding some land but five feddans or less. Table 8 shows the figures for this correlation. A Zawiet Ghazal household is about 40% more likely to have only farmers among its active members than a Musha household. Conversely, there are nearly three times as high a proportion of Musha smallholding households that have no active farmer among their members than of Zawiet Ghazal ones. Still, the fundamental fact shared by

both sites is that most households have a farmer as head of household. This is true of 69.9% of Musha households, and 82.2% of Zawiet Ghazal ones.

Table 8: Differences in proportion of farming families

	<u>Musha</u>	<u>Zawiet Ghazal</u>	<u>Total</u>
Farming primary occupation	165	152	317
Farming not primary occupation	56	27	83
Total	221	179	400

$$x^2 = 6.325$$

$$df = 1$$

$$P < .02$$

The largest category of occupations of those other than the household head in Musha is white collar occupations -- principally teachers and muwazzef (clerks). There were 51 of these including one woman teacher. In addition, five men were described as "waiting for a job" which sounds like they are future clerks. Ten people are involved in trade, two in crafts, four are drivers, eight are migrant workers in Egypt or beyond, seven are workers in Musha, and seven more could not be easily classified. In Zawiet Ghazal, only 63 of the 185 households reported an occupation other than agriculture. This involved 98 individuals of whom 31 were in the army. The remaining 67 individuals included 14 clerks, 14 in skilled crafts, 7 in factory work (mostly in the nearby electrical generating

plant), 7 drivers, 8 farm workers, 4 workers with no further specification, and 3 workers abroad, two boatmen and two in trade. Six were "absent" or miscellaneous. Thus in a general way the information on occupation and education is consistent for the two villages. One cannot help but be struck, however, at the low incidence of non-farming occupations in Zawiet Ghazal, only 6 kilometers from Damenhour by a good road and a regular taxi service.

Households were also asked to state their sources of income in the order of their importance. The information from this source confirms the information on occupation and educational achievements, for Zawiet Ghazal has a higher proportion of its households which claim agriculture (including livestock) as the main source of income (see Table 9). Musha, on the other hand, has a somewhat more varied range of sources of income; even in this sample of smallholders, 13% of the households claim salary and pension (mostly from government white collar jobs) as the major source of income.

Table 9: Primary source of income, Musha and Zawiet Ghazal

	<u>Musha</u>		<u>Zawiet Ghazal</u>	
	<u>Number</u>	<u>%</u>	<u>Number</u>	<u>%</u>
Agriculture	178	75.4	161	87
Salary and pension	31	13.1	2	1.1
Trade and craft	11	4.7	2	1.1
Worker	-	-	14	7.6
Help from relatives	4	1.7	-	-
Other/No answer/??	12	5.1	6	3.2
	<u>236</u>		<u>185</u>	

The basis for the selection of the population from which our samples are drawn is that the households were identified by one of their number who was registered with the cooperative as holding five feddans or less of land. Our sample thus represents a category intermediate between the medium and large landowners who hold more than five feddans on the one side, and the landless on the other. At this point, we can look at the landholding patterns for our sample. For Musha we have systematic data from both the cooperative and the household on the amount of land held, while for Zawiet Ghazal we have individual data only from the households themselves, not from the cooperative.

When we compare the answers given by Musha households with the information received from the cooperative, we find that the answers are substantially the same (within six qirats) in 78 cases of the 203 for which we have both kinds of information in numeral form. In 63 cases the informant gave a figure higher than that of the cooperative, and in 62 cases the figure was lower. Impressionistically it seems that the gap is greater in cases where the informant figure was higher, so that it would not be entirely accurate to say that the differences cancel each other out. What these differences say about the accuracy of either set of figures is of course a relevant question. One could suppose that the number of people who deliberately understated their property in land was probably fairly small, for the tendency would appear to be, if anything, in the opposite direction. In addition to misstatement of holdings, through caution or ignorance, other factors that might account for variation

in the two figures include the following: 1) Some people residing in Musha may own land in adjacent villages which they include in their oral statements although the land would be registered in a different cooperative (about 5% of our original sample lived in neighboring villages but had land registered in Musha); 2) informants may have been giving us information reflecting unrecorded changes of one kind or another, such as unregistered rentals or sales, which could either increase or decrease their holdings; or 3) people might perceive land owned by different family members as one unit, although the cooperative distinguishes between them.

In comparisons between Musha and Zawiet Ghazal, we have used the figures cited by the respondents themselves since these figures, whatever their biases, are common between the two sites. We have generally used a single figure to include land both owned and rented on the assumption that from the point of view of the household economy the situation is much the same, differing only in that a small rental must be paid in one case but not the other. Some respondents in Musha remarked that they also rented out land, and some in Zawiet Ghazal remarked that they "shared" land in an arrangement not reflected by the official records. Where information of this kind made the calculation of a single figure for landholding problematic, we have put the case aside for quantitative purposes, although of course such cases are interesting from other points of view. Our respondents did not mention another practice which is otherwise reported from the Egyptian countryside -- the rental of land for one crop only so as to avoid the law which makes it difficult:

for an owner to recuperate land from a tenant to whom he has once rented the land for an entire year. Since we did not probe for this practice, the absence of information may simply reflect the fact that it never came up rather than that the practice itself is absent.

Table 10: Landholdings (hiyaza) in Musha and Zawiet Ghazal
(according to informants)

<u>Hiyaza of</u>	<u>Musha</u>		<u>Zawiet Ghazal</u>	
	<u>Number</u>	<u>%</u>	<u>Number</u>	<u>%</u>
0 feddans	10	4.2	11	5.9
Less than 1 feddan	38	16.1	20	10.8
1 to less than 2	47	19.9	51	27.6
2 to less than 3	47	19.9	47	25.4
3 to less than 4	26	11.0	29	15.7
4 to less than 5	12	5.1	11	5.9
5 to less than 6	15	6.4	6	3.2
6 or more	15	6.4	10	5.4
Uncertain	26	11.0	-	-
	<u>236</u>		<u>185</u>	

Table 10 gives the landholding figures for the two research sites. (Additional computations are included in Appendix A.) The profile of the two sites is essentially the same, with the middle half of all cases falling in the area between one and three feddans. If one assumes that there is an amount of land which indicates ability to live from agriculture alone, and if one assumes that

that amount is 3 feddans, then one could note that 60.1% of the Musha households are below that figure, as are 69.7% of the Zawiet Ghazal ones. Table 11, however, gives averages and totals, which show that Zawiet Ghazal is marginally "better" than Musha.

Table 11: Total and average landholdings
in Musha and Zawiet Ghazal

	<u>Musha</u>	<u>Zawiet Ghazal</u>
Total qirats (sample)	12,837	11,647
Total feddans (sample)	534.88	485.29
All holders	210	185
Average holding in feddans	2.55	2.62
Holders of 5 feddans or less	181	168
Feddans held by them	357.33	372.29
Average holding in feddans of these	1.97	2.22

The figures in Table 11 for Musha are close to those deduced on the basis of the overall cooperative figures, which give an average per listed member of 2.4 feddans.

Tables 10 and 11 indicate that there are thus a considerable number of people who, according to their own statements, should not have been in the sample. Some of these hold no land, and some hold more than the five feddans cut-off point. The reasons for this are similar to those given above to account for the differences between the official figure and the respondent answer. Those with six or more feddans, or with none, amount to 10.8% of the group from Musha

and to 11.3% of the group from Zawiet Ghazal. The additional 11% from Musha that were uncertain were mostly women responding in the absence of their husbands and who would not or could not give the figure. This group of non-declarers held an average of 2.45 feddans according to cooperative records, suggesting that they are not a skewed part of the sample.

Quantitative Results: Animals

We also attempted to carry out a census of the animals present in the household. We paid special attention to buffalo and cattle, some attention to sheep and goats, and tried to record the presence of other animals such as camels, donkeys, mules and horses. The overall results are given in Table 12 (except that the number of sheep and goats would be slightly larger if we had the exact number of goats in two households).

Table 12: Animal census overall results for Musha and Zawiet Ghazal

	<u>Musha</u>				<u>Zawiet Ghazal</u>			
	<u>Number</u>	<u>%</u>	<u>Animal Units</u>	<u>%</u>	<u>Number</u>	<u>%</u>	<u>Animal Units</u>	<u>%</u>
Buffalo (1)	237	21.5	237	46.6	159	31.4	159	40.6
Cattle (.8)	95	8.6	76	14.9	205	40.4	164	41.9
Sheep (.1)	270	24.5	27	5.3	42	8.3	4	1.1
Goats (.1)	337	30.6	34	6.6	24	4.7	2	0.6
Donkeys (.8)	139	12.6	111	21.9	76	15.0	61	15.5
Camels (1.1)	17	1.5	19	3.7	1	.1	1.1	.2
Horses & Mules (1)	5	.5	5	1.0	-	-	-	-
TOTAL	1100		509		507		391	

The results of the animal census reveal a contrast between the two sites in the importance of different kinds of animals. Buffalo are more important in Musha, while cattle are somewhat more important in Zawiet Ghazal; sheep and goats are common in Musha and scarce in Zawiet Ghazal. The reversal of importance of buffalo and cattle could be due to the fact that animals are expected to work in the north and that owners therefore have more cattle (they are considered slightly better workers), or it could result from a different pattern of response to the economic incentives of milk and dairy products versus offspring. The pattern of shared ownership in the Delta could be a factor, as could the fact that buffalo are generally more costly than cattle by about 50%-70%. The information at hand does lead to a definite choice among these alternatives. We also have no information which would account for the different importance of sheep and goats.

We can construct an average animal population per household by using the formula of animal units, utilizing the following factors: camels = 1.1; buffalo, horses and mules = 1; cattle and donkeys = 0.8; and sheep and goats = 0.1. The values given here are slightly overstated since they do not allow for the fact that some animals are young. For 193 households in Musha that have one or more animals, this gives a total of 508.6 animal units and an average of 2.64 per household. The average animal units per household is practically equal to the average feddans per household (2.55). For 171 households in Zawiet Ghazal that have one or more animals, this gives a total of 391.5 animal units and an average of 2.29 per household.

This is less than the average holding size per household of 2.62. However, if we include in the calculations the households without any animals, the average number of animal units per household becomes 2.16 in Musha and 2.12 in Zawiet Ghazal. This gives an average load per feddan, therefore, of a little less than one animal unit per feddan. The final averages bring the two communities closer together and suggest that the differences between them reflect choices within a range of possibilities rather than a different range of possibilities.

Neither the animals nor the animal units are evenly distributed among the households. Of the 236 households we surveyed in Musha, 43 had no animals at all, and 43 had only small ruminants and/or donkeys, leaving 150 that had at least one buffalo or cow. For households in Musha that have large stock, the average number is 2.21, and the range is from one to nine. Of the 185 households surveyed in Zawiet Ghazal, only 14 did not have a buffalo or a cow; of these, thirteen had no animals at all and one had a goat. The proportion of households with a large animal is thus higher in Zawiet Ghazal, undoubtedly reflecting the double use of the animals for dairy products and for work. The average number of animals for the 171 households that have large ruminants is 2.13, and the range is from one to seven. Whereas the households possessing two large animals represent 48% of all animal-owning households in Musha, they represent only 35% of such households in Zawiet Ghazal. Table 13 gives the details of the distribution.

Table 13: Cattle and Buffalo by household,
Musha and Zawiet Ghazal

<u>Number of Animals</u>	<u>Households</u>					
	<u>Musha</u>			<u>Zawiet Ghazal</u>		
	<u>Buffalo</u>	<u>Cattle</u>	<u>Both</u>	<u>Buffalo</u>	<u>Cattle</u>	<u>Both</u>
0	11	102	0	60	50	0
1	66	21	45	67	56	56
2	57	15	72	37	48	59
3	10	7	14	6	16	38
4	4	4	9	0	0	14
5	1	0	3	0	1	3
6	1	0	3	0	0	0
7	0	1	2	0	0	1
8	0	0	0	0	0	0
9	0	0	2	0	0	0
	<u>139</u>	<u>48</u>	<u>150</u>	<u>110</u>	<u>121</u>	<u>171</u>

Table 14 gives the same kind of information for sheep and goats for the two research sites. The majority of families that have sheep and goats in Musha, and all of them in Zawiet Ghazal, have from one to four animals, but there are in Musha a few large flocks, reaching up to 100 sheep, or to 125 sheep and goats combined, in an extreme case. Two households in Musha owned more than ten each of sheep and goats, and one owned exactly ten of each. The largest flocks are all owned by households that also own buffalo and cattle. The average

flock size for those households owning sheep and goats is 5.5, but if we eliminate from the calculation the few flocks of more than ten animals (eight cases) we are left with an average of 3.6, closer to the mode of 2. Overall, 112 households in Musha have small ruminants, giving a percentage of 47.5% of the total 236. In Zawiet Ghazal, 18.9% of our households have small ruminants, and they own an average of 1.9 such animals.

Table 14: Sheep and Goats by household,
Musha and Zawiet Ghazal

<u>Number of Animals</u>	<u>Households</u>					
	<u>Musha</u>			<u>Zawiet Ghazal</u>		
	<u>Sheep</u>	<u>Goats</u>	<u>Both</u>	<u>Sheep</u>	<u>Goats</u>	<u>Both</u>
1	9	24	17	16	6	17
2	8	33	28	10	2	11
3	6	16	18	2	2	3
4	10	16	15	0	2	3
5	0	9	8	0	0	0
5+	10	8	24	0	0	1
Some	0	2	2	0	0	0
	<u>43</u>	<u>108</u>	<u>112</u>	<u>28</u>	<u>12</u>	<u>35</u>

The majority of the animals, especially the adults, are females, all four species being valuable for their dairy products. As an example, here are the data for buffalo and cattle in Musha.

Table 15: Age and sex breakdown for Buffalo and Cattle, Musha

	<u>Buffalo</u> (N = 230)		<u>Cattle</u> (N = 94)	
	<u>Male</u>	<u>Female</u>	<u>Male</u>	<u>Female</u>
Young	26	21	20	8
Adult	1	133	5	59
Incomplete data	49		2	

The figures are consistent with a pattern whereby keeping the adult females for their dairy products and their offspring is the main goal. Consequently only enough adult males are kept to service the females, and the young remaining in the household are either those destined for sale that have not yet been sold, or in some cases replacement females. A common household strategy is to seek a replacement female for an aging cow or buffalo; in part this is what accounts for the frequency of two-animal households.

Households in Musha break down into four main categories of animal ownership (not taking donkeys and camels into account). First, there are 74 households (31.4%) that own both large and small ruminants. There there are 76 households (32.2%) that own large animals but not small ones. Third, there are 39 households (16.5%) that own small ruminants but not large ones. Finally, there are 47 households (19.9%) that own no producing animals at all, although four of them own donkeys. There is a correlation between households that own a large number of buffalo and cattle, and those that own sheep and goats. For instance, the households that own sheep and goats own

an average of 2.43 cattle and buffalo, while those that own no small ruminants own an average of 1.89 cattle and buffalo. Conversely, the 65% of small ruminant owners that also own a large animal own 76.4% of all sheep and goats we recorded, or slightly more than their share. This runs counter to the logic that suggests that a ewe or doe goat is a poor man's replacement for a cow or a buffalo cow. Perhaps the replacement logic runs the other way. While those with small ruminants who have a pair or more large ones are 30% of all small ruminant owners, 55% of those with no small ruminants have at least a pair of large ones, suggesting that here the importance of a continuous milk supply begins to be noticed. In other words, a cow is replacing a ewe or a doe goat. It does not seem meaningful to provide comparable figures for Zawiet Ghazal since almost all households there have at least one cow or buffalo, and so few have sheep or goats.

For Musha it is also possible to make a correlation between household type and the presence or absence of large ruminants. Table 16 presents the figures that show that extended families are significantly more likely to have large ruminants than are nuclear families. Also pointing in the same direction is that fact that the average size of Musha households without any animals is 5.3 persons, as compared with 7.3 overall.

Table 16: Correlation of household type and large ruminants,
Musha

	<u>Household Type</u>		
	<u>Nuclear and One-generation</u>	<u>Extended</u>	<u>Total</u>
Large ruminants present	95	52	147
Large ruminants absent	70	14	84
Total	165	66	231

$$\chi^2 = 9.167$$

$$df = 1$$

$$p < .005$$

The number of buffalo and cattle, treated as an aggregate, also correlates with both the amount of land held and with household size. In other words, there is a tendency for these three factors to increase together. While many people have suggested that there is a link between the size of the holding and the number of animals, it is interesting to note that both these also correlate with the number of people in the household. Table 17 sums up the correlation coefficients for these three factors, and the supporting tables are included in Appendix B. These results appear contradictory to Harik's, based on national figures, that poor families are larger than rich ones (Harik 1979: 86, 98), though it is still likely that smaller farms have a higher human density than larger ones (p.71).

Table 17: Correlation coefficients between land, people and animals,
Musha and Zawiet Ghazal

Musha

between land and people	r = .2635	df = 208	p < .001
between land and animals	r = .4137	df = 208	p < .001
between people and animals	r = .3394	df = 208	p < .001

Zawiet Ghazal

between land and people	r = .2479	df = 183	p < .001
between land and animals	r = .3668	df = 183	p < .001
between people and animals	r = .3457	df = 183	p < .001

Two research sites combined

between land and people	r = .2493	df = 393	p < .001
between land and animals	r = .4956	df = 393	p < .001
between people and animals	r = .4730	df = 393	p < .001

These figures suggest a modest but significant correlation between each pair of the three factors. As might have been expected, the highest correlation is between land and animals. In general, the next highest is between people and animals, with that between land and people least. There must be a complicated set of factors behind the finding that the number of large animals increases both with the amount of land farmed per household and with the number of household members. The increase in the number of animals per area of land farmed may reflect the greater availability of land to grow feed for animals. Or again it may reflect (for Zawiet Ghazal, at least) the

need for more work from animals. Or yet again, it may simply reflect the overall wealth of the household. The increase in the number of large animals as household size increases may reflect the increase in the amount of labor available to care for the animals, or it may reflect the greater number of people who must share in the dairy produce. The larger size family is also more likely to be extended; in this case it may be that more people in an extended family work separately and so that more animals are accumulated. There are clearly many factors linked here together and the present data are not adequate to disentangle them.

Drawing on data from Zawiet Ghazal, it also appears that the ownership of irrigation pumps (the most common kind of machinery owned by households in our sample) correlates both with the amount of land held and with the number of large animals owned or kept at home. For instance, while all animal-owning households of Zawiet Ghazal own an average of 2.13 large ruminants, those sharing the ownership of an irrigation pump own an average of 2.67 such animals, and those owning one outright possess an average of 2.84 (there are 12 of the former and 19 of the latter in our sample). Similarly, those sharing a pump hold an average of 3.08 feddans, and those owning one fully hold an average of 4.38 feddans, compared with the overall average of 2.62 feddans.

Thus in general one can note that there is a tendency for all factors to be associated -- the more machines, the more land; the more small ruminants, the more large ones; the more land, the more people, and so on. This suggests that all the farmers in our sample

tend to aim for the same kind of balance between different resources. There are no trade-offs, only associations at, above, or below the subsistence level. A partial exception to this statement is the finding that animal density per feddan in a household unit tends to be highest at the lower farm sizes. But the slope is not very steep, and this reflects not so much different choices as rather the compression of activity on the smaller units.

IV. SOCIOCULTURAL PATTERNS

Feeding Practices

Between the two village sites studied there was a broad similarity in feeding pattern, accompanied by differences in detail. In both villages people rely on bersim (clover) as much as they can and as long as they can in the winter, and in the summer make use of a number of substitute feeds. In Musha these additional feeds include straw (tibin abiad or wheat straw, tibin akhdar or bean plant remains), the leaves and stalks of lentils and beans (ful), bran (nokhala or radda) whether it results from home activities or is purchased in the market, the leaves of young sorghum and maize plants as well as some entire plants that are pulled out when the crop is thinned out to allow the remainder to grow fully, certain cereals but probably mainly sorghum itself, and above all cotton seed cake (kusb). Of these the kusb is theoretically available from the cooperative, but much of the rest represents by-products of family farming, or crops grown especially for animal fodder. In Zawiet Ghazal the list includes straw, yellow corn, beans, bran, green corn leaves stripped from the plant (darawya), some green parts of the rice plant (dereiba), the weeds on which the animals graze, and cotton seed cakes. As in Musha, most of these products apart from kusb are essentially by-products of family farming, even if in individual cases they may be bought rather than produced at home. The precise choices that an individual will make thus reflect his mix of crops and the amount

of them he has, and the amount of money he has to spend on animal fodder, more than his judgment about the needs of the animal -- though of course need for animal fodder is one factor influencing the crop mix.

People hold theories about the relative usefulness of these different feeds. We did our surveys in the summer when bersim was not available, but people generally considered it to be the animal feed par excellence. Linguistically it is called 'aki (food) rather than 'alaf (fodder, which includes straw, corn, cotton seed cake and bran). Animals are considered to give more and better milk in the winter when they eat bersim than in the summer. Kush is desired because it helps the animals grow quickly, but it is not thought to aid milk production. Bran and grains are preferred for that in the absence of bersim. Straw is not particularly regarded as a nutritious food at all, simply as a kind of filler. In the summer, farmers try to keep some straw in front of the animals at all times, and then add bran, grains or kush for a regular meal. In Zawiet Ghazal where the animals must work, their diet also has to take that into consideration. Beans are regarded as the best food for a working animal.

In winter when the animals eat bersim they are generally taken to the fields to eat there during the day; in addition they may be given food at night. This means that more of the work of feeding the animals in the winter falls on the men, for they alone go to the fields in Musha, whereas in the summer when the animals stay in stables usually built into the house itself

the bulk of the work load falls on women and sometimes children. In Zawiet Ghazal the animals are likely to go to the fields in summer for work, but of course there is no bersim at that time; in the winter they may go for both work and food. But the sexual division of labor is a little less strict in the north so that women are sometimes the ones who take the animal to the field. In Musha in summer the animals must be taken to a public fountain and trough if there is no water supply at home (some houses have piped water), and in the winter they have access to the canals (though there are no large canals near Musha). Only in winter do the buffalo wallow; no effort is made in summer to allow this although apparently some people douse or sprinkle their buffalo. In Zawiet Ghazal taking the buffalo to wallow is a recognized chore, one that is frequently assigned to children. Most people live fairly near a canal suitable for drinking and wallowing.

We were unable to collect any systematic information on amounts of food provided to the animals, or on frequency distributions of different kinds of practices. In Musha in particular answers on this subject tended to be stereotyped and in both places observation of a careful kind would be needed to clarify this question.

On the other hand, we did collect information on certain attitudes towards feeding. Table 18 sums up the answers to the question, "Are you satisfied with your present way of feeding your animals?" In both villages more people were dissatisfied

than satisfied (but then the context of the question may have encouraged some to answer in that way), and in both shortage of feed appeared a more obvious problem than its cost. Because of multiple responses, the answers do not equal the number of cases in each village.

Table 18: Are you satisfied with your present way of feeding your animals?

	<u>Musha</u>	<u>Zawiet Ghazal</u>
Satisfied	61	19
Dissatisfied	101	172
Satisfied but would like more	7	7
Feed is too expensive	28	50
Feed is too scarce	66	115
No animals	46	14
Only sheep & goats	13	2
Other	-	14

Significantly more people responded that they were dissatisfied in Zawiet Ghazal than in Musha, though they were in the majority both places. This could reflect the general impression that in fact animals are adequately fed in the south but not in the northern village. If this turns out to be true, there is still a need to explain the discrepancy between the apparently adequate feed and the level of dissatisfaction.

Table 19 approaches the same question from a different perspective, for it asks people "Have your animals always been eating in the present way?" The question was originally designed to find out whether the animal feed situation is a stable one, and to be a preliminary to a series of questions aimed at finding out why changes occurred. But it proved also to be a useful barometer of feeling about the problems of the present, since most people who saw changes felt they were changes for the worse. Again, this feeling comes across sharper for Zawiet Ghazal than for Musha. In the southern village, the dominant impression is indeed one of conservatism on this score, whereas in the north the impression is one of deterioration.

Table 19: Have your animals always been eating
in the present way?

	<u>Musha</u>		<u>Zawiet Ghazal</u>	
No change	102	43.2%	41	22.2%
Improvement	-		4	2.2%
Decline	46	19.5%	104	56.2%
Food more expensive	20		10	
Scarcer	20		11	
Scarcer & dearer	-		9	
Lack of kusb	6		23	
Lack of beans	-		25	
Lack of both	-		19	
Other reasons	-		7	
No answer	36	15.3%	35	18.9%
No animals	44	18.6%	-	
Don't know	2		1	
Other responses	6		-	

Yet another way of tapping the same information or the same problem is expressed in Table 20, derived from answers to the question, "Would you like to feed your animals something else? What and why?" Table 21 attempts to tabulate the responses to the "what and why" part of the question; here there is no question of totals.

At this point the dissatisfaction of Musha, which was not apparent in Tables 18 and 19 emerges. If we take the three answers, "There is nothing else", "More of same", and "Would like something specific", together, and calculate them as percentages of all valid answers (i.e. minus the last two lines of the table, thus giving N=138 for Musha and N=163 for Zawiet Ghazal), we find that 81.1% of such respondents in Musha were dissatisfied and that 82.2% of them in Zawiet Ghazal were. The reasons for the dissatisfaction, as far as we could determine them, are worth mentioning.

Table 20: Would you like to feed your animals something else?

	<u>Musha</u>	<u>Zawiet Ghazal</u>
Satisfied now	26	29
There is nothing else	18	12
More of same	10	3
Something specific	84	119
Don't know/no response	49	6
No animals/only small ones	49	16

Table 21: What and why?

Kusb	34 (fattens 11; milk 6; ghee 3)	77 (nutritious 30; meat 2; milk 32; work 6)
Grains (cereals)	21 (dairy products 15)	
Bran	18 (milk 5; ghee 1; fattens 3; saves other feed 1)	
Maize	10 (milk 3; fattens 1)	33 (milk 11; work 3; meat 3; nutritious 7)
Beans	12 (milk 6; fattens 6)	33 (work 21; milk 8; meat 1; nutritious 15)
Sorghum greens	14 (milk 7; fattens 3; saves other feed 3)	
Bersim	3	7
Elephant grass	2	
"alaf"	-	18
Woods	-	5
Straw	-	2

Cotton seed cake (kusb) is the subject of the largest number of complaints. This food is appreciated mostly because it helps fatten the animal; in other words, its absence implies either a delay in marketing a young animal or a money loss because the animal is of small size. Some people, particularly in Zawiet Ghazal mentioned its effect on milk production, which is mainly important for household consumption. It is believed in Zawiet Ghazal to have a negative effect on the animal's ability to work;

for Musha this concern is of course irrelevant. Kusb stands out in the list of foods as the main fodder that does not come from the farming economy directly, since it is manufactured in factories in different parts of Egypt from a formula based on cotton seeds. It has traditionally been supplied to farmers through commercial or administrative networks. However, farmers in Zawiet Ghazal frequently repeated to us that starting about two years before (i.e., around 1977) the government took a decision to restrict distribution of kusb to those farmers whose animals were insured. Since only farmers with more than four animals could insure their animals, this meant that the overwhelming majority of farmers were excluded from the distribution of cotton seed cakes. (Only 11.5% of our total sample owned four or more cattle or buffalo combined: 10.5% in Zawiet Ghazal and 12.7% in Musha.) In Musha, kusb appears to be distributed to all registered animal owners through the cooperative, but in amounts that fall far short of what people would like. For this reason they buy additional amounts of kusb on the black market (sometimes referred to as the "free market") for higher prices, perhaps two to three times as much. In short, the problem in Musha was cost and in Zawiet Ghazal was availability; but in both cases the cause of the problem appears to be primarily political and secondarily technical (i.e., having to do with the factory and the formula).

In Zawiet Ghazal concern about a shortage of beans (ful) ran second to concern about kusb. Respondents said that in the past

they used to grow more beans for themselves, and they appreciate this food especially because of the extra energy it gives to animals who work. But agricultural changes in recent years, and in particular perhaps the construction of the High Dam, have modified local conditions so that there is no longer enough "mud" to grow beans. Furthermore, beans have been left out of the agricultural cycle. For most people this means that beans have to be purchased on the market if they want them at all. Whereas more people in Zawiet Ghazal said they wanted kusb than beans, by a ratio of more than 2:1, about equal numbers of people noted the lack of kusb and of beans as the main change in animal feeding practices. This suggests a changing sense of what it is important for animals to be able to do; it may reflect the gradual displacement of animals by machines in various types of farm work. People recognize that a working animal gives less milk, and they thus value machines that allow them to retire their animals.

There is some difference in the patterning of reasons for preferring one feed over another between the northern and southern villages. The most common answer in both was that a food was preferred because then the animal gave more milk. In both villages, the percentage of reasons that cited milk and dairy products was 60%. However, the balance of reasons in Zawiet Ghazal was largely connected with giving the animal strength to work, whereas the remainder in Musha was largely related to fattening the animal for sale. The preference for milk and work links the animal presence in Zawiet Ghazal closely to the domestic

household economy, whereas the reasoning preferring fattening for sale links the animal presence to the market economy as well. This argument, however, should not be taken as implying that farmers in Zawiet Ghazal do not sell their surplus young and old animals, for they do. It is consistent, however, with the relatively more equal distribution of cattle and buffalo among households in Zawiet Ghazal inasmuch as it implies less speculation in animals.

In Zawiet Ghazal we also asked some households whether, if they had more feed, they would feed their present animals better or purchase additional animals. Of the 109 answers to this question: 83 (76%) would feed their present animals better while 24 (22%) would acquire more animals. The remaining two said they would sell the feed and use the money to finish family construction projects. Some of those who said they would feed their present animals better went on to add that once that was done they would seek to acquire more animals.

Livestock and the Market

With respect to the market there is a similar pattern in both sites, despite some differences of detail between them. In both areas, the chief reason why small farmers want and keep an animal is to produce milk and dairy products. In addition the animals are used for work in the north, and there is a slightly greater likelihood that households will raise animals especially for sale in the south. The occasional sale of a calf is a kind

of bonus for most of these households.

Musha appears to have slightly more of a market orientation concerning animal husbandry than Zawiet Ghazal. But one should remember that we are dealing with a sample of small farmers. Any large-scale speculation occurs among farmers too large for our sample; indeed, the most obvious cases of speculation in animals appear in those cases that were probably included in the sample by error as the households held more than five feddans of land. For Zawiet Ghazal it is probable that if anyone held a market orientation with respect to animals, it was the absent 'capitalist' who financed the purchase of the animal rather than the keeper in the village whom we interviewed.

The most frequent way to acquire an animal is to buy one. Taking information on 1391 animals in both villages on which we have some data, 67% of them were purchased; the bulk of the remainder were bred at home and a few were inherited. Most people said they principally made use of their animals by consuming their products at home (and of course in the Delta by having the animal work). For Zawiet Ghazal, 66% of the answers concerning the use of the products of large ruminants referred to home use rather than to sale; for Musha the proportion was 55%. For small ruminants the pattern was a little different. In Musha, 67% of the answers stressed home use for the products of sheep and goats, while for Zawiet Ghazal (with its much smaller number of sheep and goats), only 32% did.

The most common pattern of use of animal products is to use the dairy products at home (milk, ghee, butter, cheese, etc.) and to earn money by selling the offspring. Of the total references to milk products or the offspring, for all four animals in Musha, 50.3% were to milk, whereas the comparable figure for Zawiet Ghazal was 68.7%. The figures for large ruminants alone were a little closer -- 52.3% for Musha and 67.4% for Zawiet Ghazal. In other words, in terms of actual use, milk products loom larger in the Delta village. There are some people in both villages who sell dairy products, mostly in the winter. In Zawiet Ghazal dairy products are collected at the government combined unit for sale in dairy stores in Damenhour (one of which is partially owned by the head of the Zawiet Ghazal village council). Some milk from Musha is sold in Assiut. In both cases, it is probably the larger farmers who are more active. In Musha there were a few cases reported where families bought milk and dairy products from their neighbors, apparently in response to an idea that there is a link between high family status and not having the women of the household milk.

It is mostly the young animals that are sold, although over-age animals are also sold to the butcher. People are likely to sell buffalo calves at a fairly young age, say about 45 days, while keeping beef calves for as long as a year or two. The reason appears to be that beef calves grow faster than buffalo ones, so there is a quicker return on the investment. According to the analysis of the Winrock team, small farmers are inclined

to sell their animals young because of the risk of a disease which might kill them and the relative difficulty of providing proper fodder. The purchasers of these calves are the large landowners, merchants, and so on, who have more means to feed and care for them properly and who can, in any case, accept a higher risk. Then when a small farmer needs a replacement animal, he buys one back from a large farmer or merchant, who presumably makes a profit on the transaction.

In Musha we encountered occasional people who bought young animals in order to fatten them for sale. These of course were mostly beef. Again, the practice is probably more widespread among larger owners. Although people in Zawiet Ghazal were aware of this possibility, it did not appear so definitely. However, about half the animals in Zawiet Ghazal are owned on a sharing system. According to this system, the person caring for the animal (the person whom we interviewed) owns say one-third or one-half the animal, the remainder being owned by another person, usually richer and who is unwilling or unable to care for animals himself or herself or wants to invest money in more animals than he/she can care for. It is usually the dominant partner who determines when the animal or the offspring is to be sold, and the most frequent type of quarrel between owner and caretaker concerns the timing of the sale. In other words, if anyone in Zawiet Ghazal is speculating on animals, it is the putters-out whom we did not interview. From the point of view of the people we did interview, milk products and work are the

most obvious advantage of the animal, and sale of offspring is relatively less important because the choice may be made by another and because the money is divided. This putting-out system undoubtedly is part of the reason why a higher proportion of households in Zawiet Ghazal than in Musha manage to have large animals, and why there is a more even distribution of animals among households; but it also removes part of the power to make decisions concerning the animals from the household economy to a more or less distant "owner".

Since the major income from animals comes from the sale of young or overage animals, it is irregular. When asked their income from animals, respondents gave their answers in different forms that are hard to measure against one another, some referring to the sale price of the animal, others to the sale price minus the cost of feeding, others to a generalized average figure per unit of time. What we can say is that most households regard the occasional sale of a young animal as a very important source of income, all the more because it comes in a large lump sum. In a certain sense, it represents a form of saving: the money that is gradually put into raising the animal is recovered all at once when the animal is sold, with perhaps a profit. There are some households (a minority) in both villages that acquire young animals with the intention of fattening them for sale. However, the effort to earn money by fattening animals for sale relies heavily on the availability of kush (cotton seed cake) whose chief advantage in farmers' eyes is that it helps the young animal grow faster. This perhaps helps account for the concern

about the shortage of kusb in both village sites.

Income from the sale of animals is generally under the control of the household head who makes all the arrangements -- including in most cases taking responsibility for purchasing whatever animal feed is available. Most households did not seem to have a particular goal in mind for the use of the money. Some mentioned using the money to buy more animal feed, others mentioned schooling and clothing for children and the like, but most mentioned simply that the money went into the general family budget. Some farmers sell an animal to help them accomplish a goal, such as completing construction, hoping to acquire a new one later on. It may be that our information is inadequate here, for one would think that the occasional availability of a large lump sum of money would lead people to think about using it for particular purposes, thus in a sense justifying the savings process. Milk and dairy products are rarely sold outside the circle of neighbors and relatives, and no special mention was made of the control over this income; presumably it too falls under the control of the household head. In a sense control over the dairy products remains with the women since they milk the cows and buffalo and perform whatever work is needed to transform the milk into other products. But then these products are mostly used at home. If sale of milk and dairy products were to become more widespread, would control remain with the women or would it pass to the men? Or would it become simply a question of women's contribution to the household budget? We have no information

that really bears on this question.

We asked the respondents in Zawiet Ghazal if they would borrow money to acquire an animal. Table 22 gives the responses to this question.

Table 22: Would you borrow money to buy an animal?
(Zawiet Ghazal)

No	102	
No, nobody lends any	4	
No, no feed for animals	2	
No, but would share	11	
Total negative	119	64.3%
Yes	23	
Yes, only from coop/bank	15	
Yes, if a person would lend	10	
Yes, or share	3	
Sometimes	4	
Total positive	55	29.7%
No answer	11	5.9%

The reluctance to borrow money seems principally to be related to the fear of not being able to pay back the loan in case something should happen to the animal and the investment be lost. Some of the respondents were also convinced that nobody would lend any money to someone as poor as themselves -- note the

responses grouped as "No, nobody lends any money" and "Yes, if someone would lend me some". Although we did not ask people to express a preference for borrowing from the village bank or from an individual, some did express a preference. Of those a majority favored the village bank as being a fairer system although there was also some feeling that it would end up being more expensive. On the other hand, a certain number of people qualified their answer by reference to sharing ownership in an animal on the putting-out system; judging by its frequency, this is certainly the preferred way of acquiring an animal if one doesn't have the resources oneself, but as already pointed out the chief investor in this case is the absent owner who supplies the capital and ultimately makes the decision whether and when to sell.

In Musha the only animals that work are camels and donkeys which are used for transport. In general, households try to own their own donkeys, but camels are owned by fewer households most of which try to earn income by renting out their camels. In that case, a household member or a hired hand takes charge of the camels. Practically all the cattle and buffalo in Zawiet Ghazal work. Eliminating 14 cases where the household did not have such animals, and 5 cases where there was no answer, 92.2% of the remaining households put their animals to work at least some of the time. (153 out of 166, including in the 153 three who said "rarely" and four whose present animal was too young to work.) Looking at the present situation, 80% of all households in Zawiet Ghazal expect to use the labor of a buffalo or cow in their farm work.

The amount of work varies a good deal. There is more work in summer than in winter, and the amount also varies with the amount of land, the number of animals, and the access to machinery. People are conscious that work reduces the flow of milk production and most try to minimize animals' work for that reason. The period of time cited by respondents varied from "half an hour a day" to "six or seven hours" to "all day". Young or pregnant animals are excused from work. The most common job is raising water for irrigation through a sagia or a kabbas, the latter being a somewhat larger variety of sagia. Other jobs include dry levelling of land in preparation for planting, making furrows for those crops that are planted in rows, or working in flooded rice paddies. A high proportion of the plowing is done by tractor, but there seems still to be a lot of work for animals to do. In fact, a number of farmers in our sample in Zawiet Ghazal own some machinery themselves. Two own tractors, 18 own water pumps, and 14 others are partners in water pumps (17.3% of households own at least part of a pump). Some families reported that they rented tractors and pumps, but we did not attempt to collect information systematically in this area.

We asked respondents what they would do if an animal fell sick. The majority in both village sites said they would take such an animal to the veterinarian. Table 23 gives the results. Very likely in reality the response is a good deal more differentiated, with people reacting to different animal diseases in different ways. A few respondents in Musha, for instance,

distinguished between failure to give milk and illness. The former is attributed to the evil eye and a magical cure is sought. A lot of the home remedies for illness involve special items of diet. Another, in Musha, require the animal to be bled. However, practically everybody in Zawiet Ghazal and almost as many in Musha envisage recourse to the veterinarian. However, in Musha these visits to the veterinarian are much less common for sheep and goats than for the more valuable larger animals, and people usually try home remedies (such as special diet) first. An animal that appears likely to die will be slaughtered so as to make its flesh edible in the eyes of Islam.

Table 23: What do you do if an animal falls sick?

	<u>Musha</u>		<u>Zawiet Ghazal</u>	
Go to the veterinarian	106	44.9%	93	50%
Vet and home treatment	34	14.4%	75	40.3%
Home treatment	24	10.2%	-	-
Other	15		2	
No animals; only small	52		13	
No answer	5		3	

We asked what animal people would prefer to have if they could have an additional animal. Our respondents generally preferred a buffalo to a cow, and almost invariably because of their dairy products -- 89% of those in Zawiet Ghazal who preferred a buffalo mentioned dairy products as the reason or one

of the reasons for this choice. Their ability to work was the next most frequent advantage cited, by 18% of the 91. On the other hand, those who preferred a cow overwhelmingly referred to the fact that they mature and grow faster, and that they calve more often. This was mentioned by 34 of the 45 who preferred cows in Musha, and by 47 of the 65 who did so in Zawiet Ghazal. The second most common reason for preferring cows in Musha was their milk (11 of 45), and in Zawiet Ghazal it was their ability to work (10 of 65). These answers coincide with and confirm those given above on the economic value of the animals. Table 24 presents the preferences in tabular form.

Table 24: Do you want another animal? Which?

	<u>Musha</u>			<u>Zawiet Ghazal</u>		
	<u>No.</u>	<u>% of whole</u>	<u>% of yesses</u>	<u>No.</u>	<u>% of whole</u>	<u>% of yesses</u>
No	70	30%	-	14	8%	-
Yes, no preference cited	18	8%	12%	1	-	-
Yes, a buffalo	67	28%	45%	91	49%	54%
Yes, a cow	45	19%	30%	66	36%	40%
Yes, either cow or buff.	18	8%	12%	8	4%	5%
Yes, sheep or goats	2	-	-	1	-	-
No answer	16	7%	-	4	2%	-

Nine of the 14 people in the Delta who said they did not want an animal did not give a reason; four referred to the

shortage of feed and one said they had no one at home to care for an animal. In Musha, 18 people did not explain their negative choice. The most popular reason (23 people) was that there was no one to look after the animals and/or that they were too tiring to raise. Eight people said they had no room for animals at home, though otherwise they might like more, and eleven said animals cost too much to raise. Ten families felt they had enough animals as is. Half the families in Zawiet Ghazal (7/14) who did not have an animal mentioned a preference for having one. Most of the reasons given in both villages for not wanting an animal imply a degree of regret that it was not possible to have one, rather than a positive choice not to be bothered or to seek dairy products and income in other ways by preference.

Finally, we asked people from whom they would seek advice if they were considering a new animal feed. The most striking fact is the Saidi pride that made the largest number of people say they would seek no advice at all. However, the people of Zawiet Ghazal appear more likely to seek advice from relatives and neighbors, from agricultural experts, or from important men in the village, than the people of Musha. A few mentioned the media. A few also mentioned more than one possibility which accounts for the slightly larger figures.

Table 25: Whose advice would you seek for a new feed?

	<u>Musha</u>		<u>Zawiet Ghazal</u>	
Myself	64	26%	32	17%
Household head	21	9%	37	19%
Other household members	17	7%	9	5%
Relatives & neighbors	12	5%	27	14%
Those who have tried it	17	7%	13	7%
Agricultural experts	20	8%	25	13%
Coöperative officials	10	4%	18	9%
Big men in village	3	1%	14	7%
Feed and animal merchants	7	3%	4	2%
Media	5	2%	3	2%
Other/no animals/don't know	66	27%	9	5%
	<u>242</u>		<u>191</u>	

Women's Role in Animal Care^x

A subselection of 37 questionnaires from Musha and 44 from Zawiet Ghazal was examined to clarify the role of women in the domestic economy, and especially with regard to animal care. The principal topics on which information was sought include 1) the role of women in field work and animal care, 2) the role of women as owners of animals, 3) the role of women in decision-making about animals and their feeding, and 4) the degree of

^x This section was originally drafted by Maha Adly Guindi.

education of the women. The information should be regarded as suggestive rather than conclusive because of the difficulty in collecting accurate information on this topic through an interview technique. Even with women interviewing women, the cultural screen was apparently thick enough to distort many of the answers. With male respondents the problem was compounded.

Of the 44 questionnaires examined for Zawiet Ghazal, 24 were filled out on the basis of female respondents.

In half the cases (22/44) women said they worked in the fields, or sometimes helped in them. Four of these cases were widows, two were young girls, and one woman was reluctant to mention that she worked in the fields. Apart from farming, one woman sews but she refused to admit this, although it was obvious to the interviewer, while another sells vegetables in Damenhour. In the remainder of the 22 cases where women help in farming, the husband was present. In a few of these cases, the husbands do not work as farmers, but as employees in the government, as tradesmen or drivers.

The percentage of women who owned animals was 18.2% (8/44). Three of these were widows and a fourth shared her husband with a second wife (it is implied that the husband spent more time with the other wife). But all the women except one played a role in animal care whether inside or outside their homes. Eight of them (including the three widows) take their buffalo to the canal to wallow. Nineteen women were responsible for taking the animals to drink either at home, from the tap, or

from the canal, while 24 were responsible for cleaning the stables, milking and feeding the animals.

Eight women, including four widows, made many decisions and were the ones who decided the kind of feed the animals should eat. The only women who took decisions concerning times when the animal should work in the fields was a widow.

In sixteen of the cases, at least one woman could read and write, and some of the daughters are in secondary school, while others left school after completing primary education.

From this information we can deduce that the women in the Delta are active. They share their husbands' lives and help them in farming. This is also clear in the fields where anyone visiting a village could see the women standing beside the men, helping them in various tasks. On market day in Zawiet Ghazal, women go to buy what they need for their households, and do not wait for their husbands to buy things for them. They also sell many fruits, vegetables, poultry, etc. If a woman is left a widow, she proves her independence through making decisions about money, buying animal food, and even in some cases managing to act as household head of an extended family.

Some of those who answered the questionnaire, especially the men, refused to say that the women work. The farmers consider the fact that their wives work a disgrace, and even if they do work they dislike admitting it before strangers such as the interview team. One of the reasons for this reluctance is the idea that a husband should make life easy for his wife at

home. If she works this implies that he is not able to support her or make her happy, and this is an impression that no one likes to give. One conclusion might be that women, therefore, only work when household needs require it, but more information is needed before this can be asserted.

Another hypothesis would be that there is a negative correlation between the size of the family and women's work in agriculture. Women tend to have more children because they believe this is an insurance against divorce. This increases the size of the household, especially when every son adds his wife and children so that the household is built around an extended family. In an extended family there are more men who can do the field work and take the animals to wallow in the canal or graze in the fields in the winter. At the same time, an extended family has more members in the household whose home needs must be cared for. Thus in such a household, women are kept busy at home and have no time to share in the work outside the home. As the family size decreases, a woman's duties decrease, and hence working outside the home becomes materially possible, even necessary.

Therefore, home duties come first. This is why a girl first learns how to cook and how to carry the water jar on her head as she fetches water before she learns how to read and write. Still the tendency towards girls' education has greatly increased. This reflects the fact that the village is going through a state of transition from a traditional village which

does not accept the idea that girls should work to a semi-modern one which tries to adjust itself to the necessities of life. Since life is becoming more expensive, therefore, the girls have to help cope with this by working outside their homes to earn money.

The most striking difference between Zawiet Ghazal and Musna is that in the latter village, no women participate in farm work outside the home. Of the 37 cases studied in detail, three did not have any animals. None of the cases involved women working in the fields, but 24 of them concerned women who played a role in animal care. The women fed the animals at home, usually, in the summer, while during the winter the men are supposed to take the animals out to be fed on bersim in the fields. Some of the families hired workers to clean out the stables, feed the animals and take them to drink (wallowing is very rare in Musha). Not a single woman took the animals to the canal or to the public tap, but nine women were responsible for taking the animals to drink from a tap inside the house. Only one 15-year-old girl took her animal to the canal. As for other tasks, 25 women milked the animals, they were also the ones who decided what to do with the milk. Other products were taken care of by the men.

Women animal owners were somewhat rarer in Musha than in the Delta. There were four (about 11%): a widow, a woman whose 75-year-old husband no longer works; a woman whose husband is a saqqa (water carrier, a low-status occupation); and one

whose husband is absent working in Saudi Arabia. Although few of them owned animals, 20 women owned poultry and were responsible for looking after the birds. In other cases, the animals and poultry were said to belong either to the man or to the whole family; in either case the woman was responsible for feeding them at home.

Five women made money decisions, but these were special cases. Two of them were widows, the husbands of two more were absent in Saudi Arabia, and one had a very elderly husband. These same five were the only ones who decided the kind of feed the animal would receive. In a few other cases, it was reported that the husband consulted his wife about these matters. This included one case where the woman was the owner of the animals and another in which the husband worked as a clerk.

In 21 of the 37 cases at least one woman in the household could read and write. Some of them had gone to school until they finished the secondary school exam, but few of them continued their education beyond this point to earn a diploma.

By comparison with the Delta, the people of Upper Egypt are stricter. No matter what the circumstances are, women are not supposed to leave their houses for work, even that connected with animal care. As much as possible, feeding and watering the animals takes place in the home, so that it can remain women's work. Only young girls up to the age of 15 or so are free to go in or out. The exception to this pattern is that

the tendency towards female education is more pronounced in Musha than in Damenhour, so certain exceptions have to be made for schoolgirls.

Taking these two cases, one can see a relationship between the standard of living and women's labor. The general level of wealth appears to be somewhat higher in Musha than in Zawiet Ghazal, and this is correlated with a more restrictive attitude towards a role for women outside the house. One of the reasons for the relatively higher living standard among our sample in Musha is that the proportion of off-farm income (migrant labor, government jobs, trade, etc.) appears to be higher there. This pattern both allows families to have the material resources to sustain traditional Upper Egyptian values concerning the division of labor between the sexes, and paradoxically creates an incentive to augment the off-farm income through having women-folk who contribute to its flow. When men have the money, they prefer not to have their women work outside or even inside the home. Thus they would prefer to hire workers to clean the stables, and feed the animals, rather than have their women do these chores. Similarly, a certain logic suggests that women should not sell their milk since this suggests need; home use is best.

One probably cannot draw too many conclusions from the comparison of the two cases since there are so many variables involved. The Musha sample appears slightly more prosperous than the Zawiet Ghazal sample; certainly it has more off-farm

income. But Upper Egyptian values are also more rigid on the subject of relations between the sexes than are those of the Delta. More than 60 years ago, Winifred Blackman wrote: "The women are not allowed to speak freely to the men, and, with the exception of the elderly mother, none of the females are allowed to enter a room in which male visitors may be seated, and even the mother does not appear unless there is something which renders her presence necessary ... seclusion is partly a sign of respect among Egyptians, and indicates the value that the men put upon their womenfolk" (in The Fellahin of Upper Egypt, 1927, pp. 36-37). Still within both villages there appear to be tendencies to suggest that relatively more prosperous households limit the role of women outside the house more than poor ones do -- unless that role results from success in education and a government job or its equivalent.

V. SUMMARY AND RECOMMENDATIONS

A. Summary of Findings

1. The major economic use of the animals we have been considering is to provide products (milk and dairy products) for home use. Secondary uses include farm work, and the sale of offspring and certain other products to earn money. From another point of view, animals can be seen as a form of investment and saving.

2. There is a correlation between land, animals and household size. These three factors are mutually reinforcing. At least within the range this study deals with, there is something like a constant balance between them rather than a tendency to reduce one in order to increase another.

3. The mix of animals that any particular household maintains reflects two factors: preferences for certain animals because of their products, and economic circumstances. Any argument should be based on both these factors, not just the second.

4. Smallholders in both research sites are dissatisfied with the animal fodder situation. This dissatisfaction is greater in Zawiet Ghazal which also apparently has an objectively worse fodder situation. To some extent the shortage of fodder felt by smallholders is a distribution problem (various

systems ensuring that large farmers have more access to a given supply of centrally distributed fodder than do small farmers).

5. There are significant differences between the two samples from Musha and Zawiet Ghazal. Generally, Musha is more open to market forces, outside employment, off-farm income, technological change, etc., than is Zawiet Ghazal. There also appears to be a greater gap between the relatively rich and the relatively poor in Musha. Our study did not attempt to determine the typicality of either research site, and the contrast between the two must be further documented and argued before this case is extended.

6. Any intervention would probably result in modifying the subsistence orientation currently found in both villages towards a market orientation. This would be especially true if one accepts the goal of the government to produce more meat and dairy products for urban consumers. Such a trend would upset the balance we have shown in the smallholder household, particularly as regards the division of labor between men and women. Probable effects of this trend should be carefully considered.

7. Various patterns of exploitation of small farmers by large farmers, cooperatives, traders, and the government exist, and they are likely to be exacerbated by an increased market orientation. Thus any intervention should be carefully designed to bring maximum advantage to the smallholder. One way in which this goal could be reached would be to design the program so that the small farmer can exercise individual control over it.

B. Commentary

It is important to remember the economic uses of animals. They are used for dairy products and for their offspring in both villages, and for work in Zawiet Ghazal. In addition, animal ownership is a form of savings, since animals can be bought young when there is enough money, raised largely from household resources, and sold when fully grown if there is a need for cash. If there is not, they continue to provide revenue. Many households meet an exceptionally large expense by selling an animal in the hopes of being able to buy a younger one within a brief period (see Case 17, Appendix C). Animals are also not a limited good like land -- the amount of land in a village is fixed, but the number of animals is theoretically limited without being absolutely fixed. If one household begins to acquire extra animals, it is not directly at the expense of some other household, since in theory all households could acquire extra animals at the same time. This is the logic that underlies the argument made by Harik (1979:72) that current intensification of agriculture in Egypt is mostly taking place through adding to the number of animals.

On the other hand, the analysis of the reasons for the dissatisfaction with the fodder situation shows that there is a limited good, and that is the availability of processed animal feed like cotton seed cake (kush) which is essential to get animals through the summer when there is no bersim. This is not

in fact distributed to animal owners through the cooperative in sufficient quantities. In Musha, it appears that the supply is pushed out into the black ("free") market where the price rises because of the supply-demand relationship. In Zawiet Ghazal, administrative regulations restrict the distribution of kusb to those with more animals than most small farmers have, thus effectively cutting them out of the supply. Some farmers, in fact, argued that since there was not enough feed, it was pointless to try to raise additional animals. Thus it appears that the shortage of feed places certain limits on the number of animals present in the village. These limits are perceived at the household level. They are mediated through the differential access of individual households to the scarce goods. In other words, the absolute amount of kusb and other processed foods, is less of a factor in the perception of shortage than the ability of the household to get what it wants from an apparently inadequate supply. Prosperous and well-connected households appear to have a better chance in this competition.

One way to increase the standard of living in the rural areas, and particularly among small farmers and the landless, might be through developing a set of incentives that would encourage each household to keep, for instance, one additional cow or buffalo. A variant of this for Zawiet Ghazal would be to make it possible for those farmers currently sharing animal ownership to become full owners; in Musha the problem would be to increase the proportion of households having a cow or buffalo

from its current level of 64% of our sample. The first impact of such a program would be on the standard of living of the rural not-quite-poor, but it might contribute eventually to the urban supply situation.

Such a change might not strike the big farmers as threatening, for all could share in it equally, and so it might not be opposed by them. On the other hand, such a scheme would run up against the shortage of fodder, or the maldistribution of it. Thus one suggestion for any intervention would be to concentrate on the techniques and fodders that any farmer can handle. The best solution is one that could be organized at the household level, with the farmer taking charge himself. Elephant grass has as one of its attractive features the fact that once planted, as we understand it, it would be fully under the control of the individual household and would not involve the poorer households in a relation of dependency either on larger farmers or on the government. Any new feeds that required centralized distribution because of their source or because of sophisticated technology required for their preparation would be likely to fall into the same pattern as kusb. One should note, however, that even that situation is probably an improvement over the pre-1952 situation where much of the distribution of seed grains and other goods was controlled by the large landowners; at least now there is some flexibility.

We have talked in this report of the household as our unit of analysis. This highlights the way in which people organize

themselves to get the work done (the link between household and farm enterprise, one might say). A focus on the household raises the question of the relationship between certain kinds of labor availability pattern in the household and the kind of farm enterprise strategy that is adopted. For instance, taking the household as a unit should not obscure the fact that they go through cycles. Starting for convenience's sake with a young couple with small children, the family-based household can grow to a three-generation family if it hold together while the children marry and produce children in their turn. Such a three-generation family could either split into its component nuclear families (this seems to be more common in Musha than in Zawiet Ghazal), or hold together even after the death of the parents. This would produce a fraternal extended family. (Examples of these different household/family types are given in the case studies, Appendix C.) When calculating the capacity of a household to acquire or absorb extra animals, the amount of labor needed for animal care is a factor to consider. So also is the demand for dairy products inside the household. Thus the household should not be conceived of in terms of its average size alone, for composition and position along the domestic cycle are also key variables.

An equally important factor is the extent to which a household has diversified its sources of income. Our figures, especially for Musha, show that off-farm income is considerable: a substantial number of households in our sample did not have

farming as the main source of income, and even our nondirected questioning revealed a lot of off-farm income. Most of it appeared to be from government employment; some was from labor migration abroad, and some from trade and crafts. The question of off-farm income is more than just a bookkeeping matter. If the adult males in the household elect to rely on government work or labor migration for their basic income, then their attitude towards farming and animal husbandry changes accordingly. They may be less interested in maximizing returns from their enterprise and more interested in maintaining a steady state (against the day of return) in the meantime relying on the family farm to supplement cash income by producing those items that cannot be so easily purchased. One could guess that there will be a preference for animal husbandry that occupies the women and provides milk and other dairy products for the children, and on the other hand a tendency to shy away from activities that lean heavily on male labor in the fields. Some of our case studies, especially from Musha, illustrate this (Case 9).

People will become especially reluctant to rely on agriculture for their basic income as it gets more difficult to live from it. A number of writers have suggested a floor below which agriculture is no longer adequate to support a household. An ILO report in 1969 ("Rural Employment Problems in the United Arab Republic", Geneva, ILO, 1969) suggested that this floor was 3 feddans while economists like Radwan have fixed the figure at 5 feddans (Harik 1979:115). Farmers in both villages felt the

correct figure was 5 feddans -- although it would be less for those growing fruits and vegetables. These figures all suggest that a very high proportion of our sample cannot (in theory) make a living from agriculture. The figures in the Winrock draft report on the profitability of different crops suggest the same (maybe all the more so because they built their "model" farm around a figure of 2.1 feddans, lower than any of the floors). Yet people try to, or at least some do. But how many have switched, and no longer consider agriculture their primary source of income?

A related question derives from the assumption that as farms mechanize, less animal labor will be needed, so people will keep fewer animals and hence need less land to grow bersim and other fodder crops. The information presented in this report tends to argue against this assumption. In the first place, those with pumps in Zawiet Ghazal have both more land and more animals than average. The presence of pumps simply indicates a relatively more prosperous kind of farmer who keeps more animals because he can afford to do so. Hence, the spread of pumps does not necessarily mean reduction in the number of animals. People are still more interested in milk than in work, and pumps simply release the animals from work, which people feel reduces milk production and hence makes the latter more effective. Indeed, in such a situation it may even become tempting to have more animals (or perhaps a different animal mix). The amount of land given over to fodder crops, given the present manner of feeding

the animals, will remain constant or might even increase if the density of animals does. This kind of conclusion is also suggested by a comparison between Zawiet Ghazal where most owners expect their animals to work (including those that have machines) and Musha where cattle and buffalo never work.

Although animals are a form of savings, by and large the farmers in our sample do not have a fullblown market orientation towards animal husbandry. They must buy at least part of what they feed their animals in the summer, but they all revert to eating bersim as soon in the fall as possible; and the bersim is normally grown on their own land in these two villages. Everyone sells extra calves, and counts on the income, but the only farmers in our sample who invested in cattle to insure a regular flow of income through "growing out" and sale were a couple of the larger farmers in Musha (see Cases 8 and 11). Occasional farmers sell the milk and other dairy products, but none appears to have cows or buffalo expressly for this purpose. Thus animal husbandry in our two areas is on the margins of a market economy and a domestic household economy. Any intervention would have to take into account the possibility that integration into the market economy might have an impact in two areas: 1) it might favor richer families more than poorer ones and so increase the gap between them, and 2) it might have an impact on the division of labor between men and women within the household.

Let us look at the social consequences of integrating the household into the market economy. Under present circumstances, much of the work and many of the decisions concerning cattle, buffalo, sheep and goats are the province of women. But not all work and decisions, because the link between the household economy and the rest of the system is the responsibility of men. Thus men deal with the cooperative and the market. If this sphere of activity were increased because of greater market involvement, then the significance of men's roles would also increase, at least in the first instance. The extra money generated in this way might be controlled by men who at the moment are content to let the petty cash income derived from casual sales of milk and other dairy products remain with the women. However, it is at least possible that an increased market involvement would augment the work role assigned to women -- more animals means more time spent milking, cleaning out stables, feeding and watering animals. If animals are kept in stables at times when they are now in the fields (for instance, because bersim might be replaced by a processed fodder or one that, like elephant grass, must be harvested for the animal), this also increases the burden on women. Thus in a "worst possible case" scenario, the work of women will increase while their identification with the final product and the benefits from their work will decrease.

C. Concluding Recommendations

1. Any intervention should be aimed at helping the small farmer. This means making sure he has the fodder he needs, and in such a way that he cannot be exploited by those providing the fodder. Something he can do himself is best.

2. Another way to help is to increase the density of animals on the small farms -- assuming they can tolerate it, and a processed fodder would facilitate that. At the moment, the total number of animals is determined less by village and country carrying capacity than by household ability to manage the resources needed. If more animals are possible, one should make sure they go to small farmers.

3. From the point of view of the urban consumer, this policy has a drawback -- the small farmer will first of all satisfy his own consumption needs before seeking to market any products. But also before he can market any surplus over household needs, there should probably be a better marketing system than at present.

4. The small semi-subsistence farmer should be treated as a small semi-subsistence farmer. Policies that assume that he is already integrated into the market fully and consciously will bypass him.

5. Upgrading the small farmer involvement in animal husbandry is an excellent opportunity to devise programs that

benefit women; it should not be missed. It should not be missed for lack of trying even though the value system and habit are loaded against it.

6. There is a malaise about the present feeding system, but not much imagination about possible alternatives. Any innovation should be thoroughly explored and discussed and explained with the small farmers -- and their womenfolk.

APPENDIX A: Variations on LandholdingsTable A1: Musha landholding according to the cooperative

<u>Hiyaza</u>	<u>Number of hayazin</u>	<u>%</u>
Less than 1 feddan	30	12.7%
1 to less than 2	84	35.6%
2 to less than 3	55	23.3%
3 to less than 4	29	12.3%
4 to 5	30	12.7%
Not on coop list	8	3.4%

Table A2: Zawiet Ghazal holdings including shared land

<u>Amount of land</u>	<u>Number of cases</u>	<u>%</u>
No land	4	2.2%
Less than 1 feddan	20	10.8%
1 to less than 2	47	25.4%
2 to less than 3	50	27.0%
3 to less than 4	30	16.2%
4 to less than 5	13	7.0%
5 to less than 6	9	4.9%
6 and more	12	6.5%

Table A3: Landholding in Musha and Zawiet Ghazal, using the Winrock counting method (1.1 to 2 instead of 1 to less than 2)

<u>Amount of land</u>	<u>Musha</u>		<u>Zawiet Ghazal</u>	
	<u>Number of cases</u>	<u>%</u>	<u>Number of cases</u>	<u>%</u>
0	9	4.3	4	2.2
0.1 / 1	63	30.0	37	20.0
1.1 / 2	53	25.2	64	34.6
2.1 / 3	32	15.2	35	18.9
3.1 / 4	17	8.1	18	9.7
4.1 / 5	16	7.6	14	7.6
5.1 / 6	-	2.9	5	2.7
6.1 +	14	6.7	8	4.3
	<u>210</u>		<u>185</u>	

Table A4: Land distribution by size of farm in 1975, all Egypt

<u>Area in feddans</u>	<u>Percentage of farm operators</u>
Less than 1	39.40%
1 to less than 3	40.67%
3 to less than 5	12.44%
5 to less than 10	5.20%
10 to less than 50	2.28%
More than 50	.004%

Source: The Arab Republic of Egypt, Ministry of Agriculture (Harik 1979:25).

Table A5: Distribution of Farmers by farm size, Musha and Zawiet Ghazal, 1979 (total sample)

<u>Area cultivated</u>	<u>Percentage of farmers</u>	
	<u>Musha</u>	<u>Zawiet Ghazal</u>
0-1 feddan	25.2%	25.0%
1.1-2	30.5%	34.3%
2.1-3	12.9%	21.8%
3.1-4	9.4%	7.1%
4.1-5	8.0%	1.3%
5.1-10	9.3%	4.7%
10.1-20	3.8%	2.9%
20.1 and up	.9%	2.9%

Source: Winrock Draft Report, pp. 30 and 65, Tables V.1 and V.16

APPENDIX B: Additional Data on Animals and HouseholdsTable B1: Average number of large ruminants per household, by amount of land farmed, Musha and Zawiet Ghazal

<u>Feddans farmed</u>	<u>Musha</u>			<u>Zawiet Ghazal</u>		
	<u>Cases</u>	<u>Animals</u>	<u>Average</u>	<u>Cases</u>	<u>Animals</u>	<u>Average</u>
0	9	1	.11	1	0	0
Less than 1	35	31	.89	20	20	1
1+	45	60	1.33	48	75	1.56
2+	45	58	1.29	49	100	2.04
3+	20	31	1.55	29	62	2.14
4+	12	19	1.58	14	33	2.36
5+	15	25	1.67	9	28	3.11
6+	14	38	2.71	12	40	3.33

Table B2: Average number of large ruminants per household, by amount of land farmed, for households having large ruminants, Musha and Zawiet Ghazal

<u>Feddans farmed</u>	<u>Musha</u>			<u>Zawiet Ghazal</u>		
	<u>Cases</u>	<u>Animals</u>	<u>Average</u>	<u>Cases</u>	<u>Animals</u>	<u>Average</u>
0	1	1	1	0	0	0
Less than 1	18	30	1.60	14	20	1.42
1+	32	57	1.78	46	75	1.63
2+	33	57	1.72	48	100	2.08
3+	14	31	2.21	26	62	2.38
4+	8	19	2.37	13	33	2.54
5+	9	25	2.78	9	28	3.11
6 and up	12	35	3.40	12	40	3.33

Table B3: Number of animals per household by household size,
Musha and Zawiet Ghazal

<u>Musha</u>					
<u>A</u>	<u>B</u>	<u>C</u>	<u>D</u>	<u>D/B</u>	<u>D/C</u>
<u>Household size</u>	<u>Number of cases</u>	<u>Number with large animals</u>	<u>Number of animals</u>		
1-4	44	18	28	.64	1.56
5-8	121	80	152	1.26	1.90
9 up	70	52	150	2.14	2.88
<u>Zawiet Ghazal</u>					
1-4	23	20	34	1.48	1.70
5-8	86	79	152	1.77	1.92
9 up	76	72	178	2.34	2.47

Table B4: Percentages of households and animals in small, medium,
and large households, Musha and Zawiet Ghazal

	<u>Musha</u>		<u>Zawiet Ghazal</u>	
	<u>Households</u>	<u>Animals</u>	<u>Households</u>	<u>Animals</u>
Small	19.1%	8.5%	12.4%	9.3%
Medium	51.3%	46.1%	46.5%	45.9%
Large	29.7%	45.9%	41.1%	48.9%

Table B5: Animal density per household farm,
Musha and Zawiet Ghazal

<u>Land farmed</u>	<u>Musha</u>		<u>Zawiet Ghazal</u>	
	<u>Animal average</u>	<u>Density</u>	<u>Animal average</u>	<u>Density</u>
0.5	1.60	.32	1.42	2.84
1.5	1.78	1.19	1.63	1.09
2.5	1.72	.69	2.08	.83
3.5	2.21	.63	2.38	.68
4.5	2.37	.52	2.54	.56
5.5	2.78	.51	3.11	.57

Table B6: Poultry in Musha and Zawiet Ghazal

<u>Type</u>	<u>Musha</u>				<u>Zawiet Ghazal</u>			
	<u>Households Holding</u>							
	<u>1-5</u>	<u>5 up</u>	<u>Total</u>	<u>%</u>	<u>1-5</u>	<u>5 up</u>	<u>Total</u>	<u>%</u>
Chickens	63	82	145	81%	22	57	79	71%
Ducks	75	23	98	53%	60	21	81	73%
Geese	47	17	64	36%	57	6	63	57%
Turkeys	71	9	80	45%	4	1	5	5%
Pigeons	60	61	121	68%	4	4	8	7%
Rabbits	28	11	39	22%	6	4	10	9%
Nothing			56	24%			6/111	5%
No answer			1				68	

Percentages for Musha are calculated against an N=179 and for Zawiet Ghazal against an N=111, this representing in both cases the total number of households that have some poultry. Thus 81% of Musha households with some poultry have chickens, etc. On the other hand the figure for "no poultry" for Musha is calculated against the full N=236.

APPENDIX C: Case Studies

In order to give some idea of individual cases and of how the various factors fit together in particular households, we include here eleven case studies from each of the two village sites, 22 in all. They are chosen to represent a fair range of the variation found in each place. The cases, first from Musha and then from Zawiet Ghazal, are presented roughly in order from poorest or those with the least animals, to richest or those with the most. Ideally, we would have wanted to develop a typology of these cases, indeed, one that would encompass all 421 cases analyzed here. The typology developed by Iliya Harik (1979: 105-116) might have served as a model. However, it appeared that the factors one would have to take into consideration were too numerous and too contradictory, once one started taking a limited set of real cases, to make classification easy. These factors include:

- 1) Landholdings, and also the use that is made of the land (most if not all farmers considered here stick pretty close to the government rotation, so for these purposes that is not a variable);
- 2) Household size and composition, in other words, a kind of labor variable;
- 3) The animals owned by or associated with the household, and also perhaps the reasons for their presence there (work, milk, speculation, etc.); and

4) Outside sources of income, from labor migration within and beyond Egypt, government jobs or trade.

All these factors add up to income one way or another, but even if one could reach such a single figure it might well disguise interesting variants. Future studies in this area should aim for a classification, but in this case it appears to be too early. For the moment these case studies should be read as an example of the "raw data" on which the study is based.

Misha

1. This is an example of a poor family owning no animals. The household consists of the head, a 41-year-old farmer with a primary school education, his wife, their five children of whom all but the youngest are in school (ages 8 to 14), his mother, and a younger brother with a diploma in crafts who earns his living trading sheep. They rent one feddan on which they grow cotton, beans and wheat. The household head helps other people farm their land in return for their help to him. In addition to the income from the land, the head works as a wage laborer at one pound a day. They own no animals, but if they could they would prefer a buffalo because its milk is good for making semna (ghee). The wife owns and cares for ten chickens, four ducks and eight pigeons (male respondent).

2. This example is similar, except that the sons are older and may soon be making a contribution to the family welfare. The

household includes the head, a 65-year-old farmer with some primary school education, his wife, also with some primary school education, two sons (age 25 and 21) and three daughters (aged 16, 14, and 11) of whom only the youngest is still in primary school. The older son is a teacher and sometimes helps with the land; the younger son is illiterate and is now in the army. The head's wages as a wage laborer are the primary source of income, and the return from the half feddan he owns is secondary. One of the daughters owns and cares for two chickens, four ducks, two rabbits, and six pigeons. They own no animals, but would like a buffalo because its milk is rich in semna (male respondent).

3. This family also appears relatively poor; it is a nuclear family with young children, and they have a pair of goats. The household consists of five people: the head, an illiterate farmer of 41 years, his wife, a son of 11 in primary school and two pre-school age sons. Their principal income is from agriculture; they own 10 qirats and rent six more (= 2/3 feddan). They own two nine-year-old female goats which they bought. There is some profit from the goats when the kids are sold for about 15 pounds each. Both husband and wife decide what to do about the animals, but the head decides what to do with the money. It is mainly used to buy feed. The goats' milk is used by the wife. She also looks after three chickens and a turkey who belong to the household head. The goats are kept at home, and are fed bersim in the winter and "alaf" in the summer. This includes straw, lentils and bran. The husband gives them water to drink, feeds them and

cleans the stable, while the wife milks them. This takes about one hour a day. They are aware of no change in the system of feeding, and they are satisfied with it because the goats don't each much feed. On the other hand, they would like to feed them beans or green sorghum or maize because it helps fatten the animals. They would use home remedies in case of sickness. They would prefer to have cows because they grow faster and don't cost so much in the first place (male respondent).

4. This is also a relatively poor family, although with a little more land it also includes a buffalo. The household consists of nine people: the head, an illiterate farmer of 51, his mother, his wife, and six children between 6 and 17 years of age. Only the second son, and the youngest daughter, both age 9, are in school. They own 1½ feddans on which they grow wheat, lentils, maize and bersim. Land is the major source of income, but the household head also works for wages. They own a buffalo and a donkey. The buffalo is 6 years old and was bought. It is kept at home and is looked after by the husband and wife. The calves are sold, and the husband makes the decisions; the milk is used at home and the wife makes the decisions. They do not intend to sell their buffalo, and they make about 20 pounds a year from her, the money going into the general household budget. In the winter the buffalo is taken to the fields to eat bersim, but eats a meal at home before leaving and one or two meals on returning in the evening. In the summer, she is always at home, and eats straw, bran and cereals. The husband takes her to the public tap to

drink two or three times a day, each time for about 15 minutes. The wife milks the buffalo which gives about 3 kilos of milk and this is used to prepare cheese. The stable is cleaned twice a day and the dung is used for fuel and as manure. The buffalo wallows in the canal only when it goes to the fields. In the old days feed was cheaper and they used to feed her only grains and bran; straw is used to stretch these now that they are scarce. They are not satisfied with the present system of feeding, and would like to have more grains and bran, because the grains especially help the buffalo give more milk. The wife would check with the agricultural assistant before buying a new feed. They would prefer more buffaloes because they give milk for the children. If the animal does not give milk, they suspect the evil eye has hit it; but if she does not eat they consult the veterinarian. The wife also owns five chickens, three ducks and four pigeons which she buys from salesmen who come to the door for she does not go to market (female respondent).

5. Here is a somewhat unusual case both by its size and its composition; clearly it is likely to change and grow in the near future. The household head is a divorced, literate farmer of 28 who lives with his 2-year-old daughter. He rents 2 feddans and owns 18 qirats and his house; his income is from agriculture and wage labor. He owns a 9-year-old female buffalo which he bought and keeps at home and a donkey. He uses the milk at home, and earns 65 pounds from the buffalo. He also owns three chickens, ten ducks, six geese, a turkey and 7 pigeons which are cared for

by a neighbor. In the winter he feeds the buffalo bersim, and in the summer wheat straw mixed with bran. If need be, he buys food for her. She is fed seven times a day and watered twice a day. The stable is cleaned three times a day. Altogether this takes about three hours a day. He is not aware of a change in the feeding system, but he is not satisfied because kusb is scarce and feed in general is expensive. He would prefer to have green maize and sorghum because they would help fatten the animals. He prefers cows because the calves grow fast and the cows give a lot of milk. He would ask no one's opinion when considering a new feed, but he would take a sick animal to the vet (male respondent).

6. This case is at the other end of the family cycle, although the attitudes do not appear to be affected. This household consists of an elderly couple, aged 72 and 65. They have six married sons of whom one lives in the house with them and one in Kuwait; but they form a household apart. The head owns two feddans and rents another. Agriculture and livestock are the principal sources of income. The head also owns 8 chickens, 8 ducks and a turkey which his wife cares for. In addition to a donkey, he owns one female buffalo of 6 years. She was born to a buffalo they owned. The calves are sold when the head decides. The profit is about 30 pounds, and the money is used for the household budget. The milk is used at home. She is fed bersim in the fields in winter and 'alaf at home in the summer. This 'alaf consists of straw, kusb and bran. It takes about two hours a day to feed her, for there are five meals of 25 minutes each.

They douse the animal in summer, and it takes about half an hour to lead her to drink and 15 minutes to clean the stable. She drinks twice a day in winter and 3 to 4 times in summer. The head appeared to argue that in the old days everything for the animal was grown in the fields whereas now they also buy feed. He is not satisfied with the present system because of the scarcity of feed, but there is nothing specific he would like. He would not seek advice when buying a new animal, but he would solicit help from a vet in case of illness. He would prefer cows because of the offspring (male respondent).

7. Off-farm income is an important factor in this case. This household consists of 9 people. The head used to be a farmer but now works in the cooperative as a guard; he is literate but did not attend school. He lives with his wife and four sons of whom the eldest is married and has two pre-school age daughters. This son is 33 and a farmer as is the third son, aged 17. The second son, age 20, is a second-year university student, and the youngest, age 14 is in 3rd year of intermediate school. The two farmer brothers look after the animals in winter when they go to the fields, and the two wives look after them in summer when they stay home. The household rents 3 feddans for 50 or 60 pounds a year; the income sources include the head's salary, the sale of animals, and agriculture. They have no poultry.

The head owns a cow of 3 or 4 years and a female buffalo of 9 years, both purchased. Their products are all used at home. The beef calf is kept for a while and then sold but the buffalo

calf is sold immediately. The milk is drunk and used to make cheese. The head is in charge of buying and selling, and the wife is in charge of milk. At present they have no milk because both animals are pregnant, and so they have to buy the milk they need. The head controls the income from animals and it is used for education and for feed for the animals. The beef calf is sold at 18 months for 250 pounds, while the buffalo calf is sold at 45 days for 50 pounds. The animals are fed in the fields in winter (bersim) and at home in summer (straw). They are fed five or six times a day, and drink twice a day. The buffalo is doused once a week, or in winter once a month. The stable is cleaned twice a day.

They are not aware of any change in the way of feeding the animals, but they are not satisfied with the present situation because it is hard to find kusb or bran, and when you do, they are expensive. But they have no idea of any new feed they would like. If they were to buy an animal, they would consult inside the family, but would seek a vet for a sick animal. They are not interested in having any more animals because they can't afford it and they have no more room (female respondent).

8. Off-farm income, this time from adult and educated sons, is again important here; this case also shows something of a market-orientation. This household consists of 7 people -- the head, a farmer of about 61 years with some primary education, his wife, four sons aged from 32 to 23, and a daughter of 17. The oldest son normally works as a health assistant, but is now in

the army, and the youngest son left the army on the day of the interview. The second son, 30, graduated from the Agriculture Institute and is a cooperative manager; he sometimes helps with the land. The third son left school after the primary level and is a farmer, while the daughter is in secondary school. The wife says they own from ten to fifteen feddans, perhaps more; agriculture is the main source of income followed by the salary of the cooperative manager. The wife owns and looks after around 50 chickens, 10 ducks, 50 geese, 40 pigeons, 40 rabbits and a turkey.

They own 2 buffaloes, 3 beef calves, 9 sheep and 4 goats. They are looked after by a person hired to do that; he is an "Arab" and earns around 12 to 15 pounds a month plus food and clothing. All the animals are currently kept in a new house which is not yet finished. They belong to the household head. The beef calves were bought especially to be fattened and resold, while the buffalo are kept for their milk and their offspring are sold to the butcher after 45 days. The sheep are also kept for fattening and sale, and so are some of the goats. One is a female and her milk is sometimes used. Decisions about the sale of animals are made by the head, but his wife is responsible for milk. Disposal of wool and hides is also the responsibility of the head. Goats are sold for 20 pounds, adult sheep for 50 pounds, young buffalo are sold for 60 pounds, and adult cows are sold for 300 pounds. The head takes charge of the money and uses it for everything.

The calves eat kubb and bran, the cows eat beans and bran, the buffaloes eat cereals and bran, the sheep eat corn and bran, and the goats eat bran, corn, straw and lentils. They are aware of no change in the way of feeding the animals, and they are satisfied. Someone else does all the work, and they take the products. They do not desire any special new feed. They do not want any more animals, but if they were to buy one the head would consult with his sons, especially the ones with training in agriculture. They would seek a vet for a sick animal (female respondent).

9. This case is in a way rather confused but it illustrates some interesting variants. The household is headed by one of six brothers who share some things but not others. This man quit school in the primary level, used to be a farmer but now works as a mechanic in Saudi Arabia. At home there are his wife, a son of 12 in intermediate school, and a daughter of 4. The principal income is the husband's job in Saudi Arabia, but they also rent five feddans of land which the remaining three people clearly do not work. All the animals belong to all six brothers together, but we have no information on the other five. Presumably one or more of them looks after the land and animals. There are also a number of servants who help with the farming and the animals; some of these also eat with the family although they live elsewhere and thus could be included in the household since our operative definition was those who ate together. The principal servant appears to be a 50-year old man who used to help with the animals when he was younger.

The animals that belong to these six brothers include 4 cows, 3 buffalo, 20 sheep, 25 goats, 4 donkeys and a camel. All have been bought, and they are kept in a building in the fields where they are looked after by a female servant. The sons of the six brothers feed the animals with the help of two servants; it is usually the sons who buy the feed. The milk is used by the wives of the six brothers for household purposes, and they take turns in milking. Each turn lasts for four days, and the animals are brought to them at home. The wool is shorn by a servant and sold, and the male offspring of the animals are sold. The money is used to repay debts.

In the winter the animals eat bersim. In summer they receive ten meals of straw, beans, bran, kusb and cereals. They buy bran, half an ardeb of beans, and two sacks of kusb every two weeks for 50 pounds; each sack of kusb costs 5½ pounds. They are not aware of any change in the system of feeding. They are satisfied with it but hate the expense of buying the feed. They have enough animals and would not like any more. The men of the family would consult with each other before making a purchase. As for an animal that falls sick, it dies; sometimes they bring a vet (collective interview).

10. The size of this household (22 members) makes it poorer than its resources alone would suggest. The head is a farmer of 41 years. His household includes his father and mother, and four brothers ranging in age from 25 to 38. All but the youngest are married. The head has a wife and two sons and three daughters,

the school-age ones being in school. The second brother, an illiterate farmer has 2 school-age children and three pre-school children. The third brother is a school janitor and has a young child. The fourth brother is an agricultural wage laborer of 30 and is married without children. The youngest brother is a teacher. They rent five feddans at 40 pounds per feddan per year. The fourth brother works seasonally as a wage laborer at one to one and a half pounds a day. Agriculture and livestock are the main sources of income.

They own 2 female buffaloes aged 5 and 10 years, one of them bought and the other born at home. They belong to the entire household and are used primarily for their milk which is consumed at home. Women are responsible for the milk. Buffalo calves are sold after 45 days for 50 pounds, and this is the job of the household head. The money earned in this way is mainly used to buy food for the animals. The household also owns a donkey, two chickens and two pigeons.

They grow bersim, beans, wheat, lentils and cotton on their land. They buy kusb, bran and cereals for their animals. Women are in charge at home in the summer, and men in the fields in the winter. The animals are fed 5 to 6 times a day, and given to drink 3 times. The stable is cleaned twice a day. The animals mostly eat bersim and straw; there has been no change in the system of feeding, and they are satisfied, and they are not looking for anything new. They would welcome any kind of an additional animal. But the head would consult only himself on this. A vet would be called for a sick animal.

11. This is an example of a large and prosperous household with a definite market orientation. It consists of 14 people, a pair of brothers and their wives and children. The head has four school-age children and three younger ones, and the brother, 27, has three young children. The latter is a farmer who reached 3rd year of secondary school; the older brother is literate and a farmer but did not attend school. The family owns about 20 to 25 feddans on which they grow wheat, barley, bersim and have a garden. They also own some machinery and rent some village land to two schools. Agriculture and machine rental are the main sources of income.

The animals owned by this household include 6 buffalo -- 2 adult females, one older male buffalo calf, and 3 proper calves. There are also two sheep, a goat, a horse, a camel and a donkey. The animals are inherited (perhaps the father was only recently deceased) and are kept at home. Someone is hired to look after them. The main purpose in having the livestock is to produce offspring and because they trade in animals. The milk is used at home and is divided between the two families. The sheep and goats are raised for their meat and are eaten at home. They make around 20 to 25 pounds for each cow, shared by the two brothers who use the money for all purposes. There is a small amount of poultry (7 ducks, 2 geese, 4 pigeons).

In the summer the women wake up at 6 am to give the animals their first meal, consisting of kusb, cereals, straw and brany, about one kilo altogether. Every two hours a similar meal is fed them. In the winter, when they eat bersim, the animals leave for

the fields about 6 am without first eating at home. They eat bersim there and more is brought home for them to eat at night. The horse eats barley and sliced-up beans and is used for riding. The camel eats straw, bersim and beans and is used to transport crops. The donkey eats straw and barley and is also used for transport. The sheep and goats are usually kept in the fields and eat straw and bersim. The stable is cleaned twice a day and the dung is used for fuel. The buffalo are milked twice a day, and it takes a woman one to one and a half hours to do the milking.

They are not aware of any change in the manner of feeding. Feed is expensive but they have to buy it. They like to feed their animals kush, grains and bran, and to give them beans and maize from their own land, but above all kush because it fattens the animal. They buy the kush from the cooperative and bran and cereals from the market. They might like to have a cow because they might make more profit from it, but they would seek the advice of the person selling the animal in case of purchase. They would call the vet for a sick animal (female respondent).

Zawiet Ghazal

12. With the head absent, this isn't really a farming family at all. This household of five persons is headed by a man of 40 who used to be a farmer and is now working in Jordan as an electrician. This is also the main source of income. At home there are his wife and three small children. They have no

animals, but do have 3 ducks and 3 geese. The household owns half a feddan and their house, but the land is worked on shares and they only receive half the income (female respondent).

13. Because of other occupations, this household is also not oriented to agriculture. The head of this household is 52 and works in a mill of which he is part owner, together with various members of the same extended family. He lives with his wife, his son who is in last year of secondary school, and the widow of his brother. They rent $2\frac{1}{2}$ feddans, and own their house. They also have 10 chickens, 3 geese and a duck. The main income is from the mill, held in partnership with his uncles, and secondarily the land. They have no animals (male respondent).

14. Here is an example of a small and poor household, yet one that manages to include a cow. This is a woman of 50 living alone, although she rents her house from her brother. She rents one feddan of land and counts herself a farmer. She has a young cow (one year old) at home of which she has on shares (maqawma), for one-third. She feeds it maize and straw three times a day, and in winter it eats bersim. She has no money to buy feed. If the cow seems sick, she brings in clean straw, and would eventually call a vet. The animal is too young to work. Her main source of income is the land, after the cooperative and the owner take their shares. She is unhappy with the feed because there is not enough of it at prices she can afford. She would like kusb and beans because they make the animal grow. She would prefer a

buffalo for milk and semna, but it costs too much so a cow is probably better for her now. She would borrow money to buy an animal if anyone would lend her some. On a new feed she would consult her brother (female respondent).

15. This case from the end of the domestic cycle should be compared to Case 6. This household consists of two people, an elderly illiterate farmer of 65 and his wife. They own 1½ fed-dans and their house, and land is the main source of income followed by their buffalo. They own one female buffalo, 6 years old, which they bought so that it belongs to them entirely. They earn about 30 pounds a year and use the money to buy food for animals and people. In winter she feeds on bersim, in summer variously. One way is to put down a bed of straw and over it beans. If it has worked during the day, then it is fed beans and straw at night. It may also be fed green stripped maize leaves. The feed is adequate and it is nutritious. But if the household had more feed available, they'd feed it to the animal they already have rather than seek a new one. He would consult cooperative workers about a new kind of feed, and would take a sick animal to the vet. The buffalo drinks from the canal and also wallows there. The stables are cleaned daily. The animal's main work is turning the saqia, usually working from noon to sunset. He would prefer a buffalo because it helps in the fields and gives milk and semna, but would not borrow money to get one (female respondent).

16. This case is one of a poor family with young children; the sharing system allows for the presence of a cow. The household of eight persons includes the head, a literate wage laborer of 41, his wife, and their six children. The oldest, a son of 15, is in 3rd year of intermediate school; a son of 13 is in 1st year of intermediate school, and a son of 9 is in 3rd year of primary school. A daughter of 10 is illiterate, and there are two young children. They own one feddan and their house. The main source of income is what the children earn by day labor, then their land. They have one cow, in which they have a 1/4 share, and the husband and wife look after it. She was pregnant at the time of the interview, and they expect to sell the offspring; their share will be 10 or 20 pounds with which the wife will buy clothes, seeds, and pay school tuition for her children. In the winter the cow eats bersim, in the summer straw, maize and beans. The wife feeds the cow but the husband chooses the feed and determines the timing. The wife takes her to drink and wallow once a day and cleans up after her; the husband decides if she is needed in the fields, which is mostly for an hour or two a day in the summer.

There used to be more feed in the past, but the time and way of eating is the same. She would like to feed it kusb and beans so that she will gain weight and because they are good for the cow's health. She would prefer a buffalo because it is quiet and because of its products. She would borrow money to buy an animal but she knows that no one is likely to lend money to someone not

well off like her. Although her husband would make the choice of a new feed, he would consult her. They would go to a vet in case of illness for the cow (female respondent).

17. Still relatively poor is this nuclear family in the early stages of the domestic cycle, although slightly better off. The household head is a 37-year-old farmer who finished primary school; he lives with his wife and three young children. They share crop 2 feddans and own their house. They also have 15 chickens, a duck and a goose. Agriculture is the main source of income. They own one cow fully; now ten years old, it was initially bought. It is kept in the stable and they hire labor to look after it. It gives milk for household use which they only sell in case they need the money. They also own a male calf of 8 months and a goat. They recently sold a buffalo because they needed the money, and they would also sell the cow if they needed to. They earn about 20 pounds from their animals, and the money earned is used for everything.

The husband decides what the animals will eat, but the wife feeds them, starting at 5 am. If the cow is pregnant they feed her less but more nutritious food. In the summer the animals eat flour and kusb. In the winter they have a morning feed at home before going to the fields to eat bersim. The main job they hire labor for is to take the animals to the fields in winter to eat bersim. The animals work only if needed for the rice.

They are satisfied with the feed, but beans are more expensive than they used to be, and kusb is too scarce. They like

kusb because it helps the animal give milk and fattens it up. If they had to decide on a new feed, they would ask those who have tried, or the big owners. If an animal fell sick, they would first try home remedies and then seek out the vet. They would prefer a buffalo for the milk, and would not borrow money because no one lends money anyway (female respondent).

18. Here is an example of an extended family household, with a balance between people and means. This household has 15 people; it consists of an illiterate farmer of 70, his two sons of 23 and 17, and his brother's son of 34. His son of 23 is illiterate and a farmer; he is married with three small children. The son of 17 is a student with a diploma in commerce, but he sometimes helps with the work. The brother's son is a farmer with some primary education; he has a wife and 5 children of whom three are pre-school age. Of the other two the boy, aged 13, is in 6th year of primary school, and the girl, aged 10, is not in school. They rent 4½ feddans, and they rent their house from the owner of the land. Agriculture is the main source of income. They have two female buffalo, aged 14 and 16, which they bought and own fully, and a donkey. They intend to sell the older buffalo and buy a younger one. Basically they rely on the buffalo for milk for household consumption, but every two years the household head sells a calf for 40 pounds and uses the money for general household purposes.

The women of the house feed the animals 5 to 6 times a day in summer, and in winter the two young farmers take them to the

fields to eat bersim. He also buys additional feed from the black market in Damenhour. The buffalo are taken to the canal to drink once a day in winter and three times a day in summer. The children take the buffalo to wallow once a day. They are milked by the women twice a day. In the summer the buffalo help in the fields.

Long ago the animals used to eat beans. He is satisfied with the feed (he said), but also unhappy because he cannot get kusb from the cooperative. He would like to feed them kusb and maize, and if he had more feed he would give it to the animals he already has rather than acquire new ones. If he were to get a new animal, it would be a cow for working purposes, but he would not borrow money for that. He would consult with his brother's son on a new feed, and with the vet for a sick animal (male respondent).

19. Similar is the case of a fraternal extended family. The household head here is a literate farmer of 30 who dropped out of school during primary school. The household includes his own wife and four children, his 25-year-old brother and his wife and 2 children, and an unmarried sister and brother. His 3 school-age children, all boys, are all in school; the others are too young. The married brother currently works in Saudi Arabia but used to be a farmer. The unmarried brother, 22, and the unmarried sister, 28, live at home. The three brothers own 5 feddans and their house, as well as 6 chickens, 2 ducks, 2 geese, a turkey and 2 rabbits. Agriculture is the chief source of income. The

three brothers jointly own two female buffalo, a cow, two donkeys and 2 ewes. All these animals are kept in a large stable attached to the home, and everyone helps look after them. Some of the dairy products are used at home and some are sold; the head's unmarried sister looks after them and earns about 3-4 pounds a month in this way. When they sell a calf, they earn 100 pounds, and the household head spends this money for the house.

The womenfolk feed the animals three times a day -- kusb and straw in the summer, and in winter the men take them to the fields to eat bersim. The household head is responsible for choosing the kind of food and any of the women decides when to feed them. If a cow has just given birth, they feed her a little more; otherwise there is no variation. They drink three times a day from a tap in the house, or from a canal if they are in the fields with the men. The buffaloes turn the saqia and plow land winter and summer. They wallow every couple of days in the canal.

Animals used to eat more in the past. They are not satisfied with the present situation; they would buy more feed but it costs too much. They would like to feed the animals "yellow corn". If they had more feed they would first of all feed it to the animals they already have, then buy more. They would prefer a buffalo because of its milk and because it works better. Sometimes they borrow money for animal purchase. The household head is consulted on decisions about feed, and a sick animal is either taken to the vet or they give her oil (female respondent).

20. Also an extended family, this one has more resources. This household includes 18 people. The basic structure is given by three brothers, aged 37, 29, and 22, who live with their widowed mother and their engaged sister of 25. All three are married. The head has six children of whom the four boys are in school and the two girls are too young for school. The brother of 29 is in the army and has four children of whom the two oldest are in school. None of the three brothers had much formal schooling, but the two eldest became literate during a literacy campaign.

They own 9 feddans and their house. They have two female buffaloes, three cows, and two male calves aged 3 and 4 years old. The two buffaloes and one of the cows are owned on shares, by halves; the others are owned outright. The old lady owns 20 chickens, and the whole family owns 10 ducks and 6 geese. The informant, the old lady, says that livestock is the chief source of income followed by agriculture. They consume the dairy products of the buffaloes, and sell the offspring of all the animals. The animals may also work in the fields, turning the sagia or plowing, depending on the work of the moment, usually for around 4 hours a day. They take in about 300 pounds a year from their animals but spend 250 pounds. The household head uses the money for the house, for animal feed, for insecticides and fertilizers and for hiring labor.

They are not satisfied with the feed; they need kusb and other market foods (alaf) because they are more nutritious for cattle. If they had more money, they would buy more feed for the

animals they have now. They prefer a cow because of its dairy products, and they would borrow to get one. When considering a new feed, they would seek the advice of an engineer or agricultural assistant; in case of sickness they would first try molasses, then consult a vet (female respondent).

21. This is another fairly prosperous extended family, but one that relies on trade rather than agriculture. This household includes 19 people, in a three-generation extended family. Apart from the head and his wife, there are three married sons of 45, 40 and 24, of whom the two eldest also have children. The oldest brother is a seed merchant, and has six children of whom four are in school and one is too young and the last is an illiterate 16-year-old boy. The other brothers are farmers and the middle one has five children of whom three are in school and two are too young. They own 11 feddans but some of this is rented out, or let out on shares, to other people. They own their house and also a pump. They also have 30 chickens, 12 ducks, 7 geese, 4 turkeys, 4 rabbits and 10 pigeons. The major source of income is trade, then the land. As for animals, they have two female buffalo, both aged 7, and two cows, one 8 and one a calf. They are all fully owned. The old man takes charge of looking after them. The animals are used to work; the old man decides on this and they usually work an hour or two a day. They turn the sagia and plow.

In the past there was more kusb, otherwise the feeding pattern is about the same; they are satisfied but would like to find more

kush. If they had more feed they would feed their present animals better. The grandfather would make any decisions about new forms of feed, and they would seek a vet in case of sickness. They would prefer a buffalo because it is stronger and more able to work in the fields (male informant).

22. There is off-farm income here, too, but not really enough to compensate for an inadequate resource base -- but the family may be building since there are many lands and enough enterprise to seek out sharing opportunities in both land and animals. This is another three-generation extended family with 23 members. In the oldest generation is the widowed mother, the registered landholder; in the middle generation are five brothers four of whom are married; and in the youngest generation there are 13 people of whom the oldest is 16. The five brothers are aged 40, 36, 35, 23, and 20; they are all farmers but the eldest one who works in the electrical factory across the canal. He is also the only one who is literate. Only one granddaughter, age 14, is currently in school, though three grandsons dropped out of primary school. They own their own house and $1\frac{1}{2}$ feddans, and farm another $4\frac{1}{2}$ on shares (three of this is planted in bersim). They are partners in a mechanical pump. Their poultry include 7 chickens, 10 ducks, 4 geese and 4 turkeys. Their main source of income is the land, followed by livestock. They own two donkeys, and have one buffalo and 3 cattle (1 cow and 2 heifers), all on partnership by halves. They spend 300 pounds a year on these animals and make a profit of 100 pounds because the animals

work in the fields. The head looks after the money and uses it for the house, to hire people to work on the land, and to buy fertilizers. The old lady helps make many of the decisions concerning the animals.

They feed their animals straw and on top of that beans if there are any, or if not, maize. In winter there is bersim. In case of illness or pregnancy they reduce the quantity of food and vary it. The animals drink four times a day and wallow three or four times in summer. Their use in work -- for the sagia and plowing -- is decided by the men; they work an average of four hours a day in all seasons.

They are not happy with the present feed situation for there is not enough kusb. They would like to feed them more kusb and beans because it increases the amount of milk. The head of the household would make any choice of new feed, and they would consult a vet if need be. They would like to buy a buffalo because it gives more milk, and they would borrow money to buy it (female respondent).

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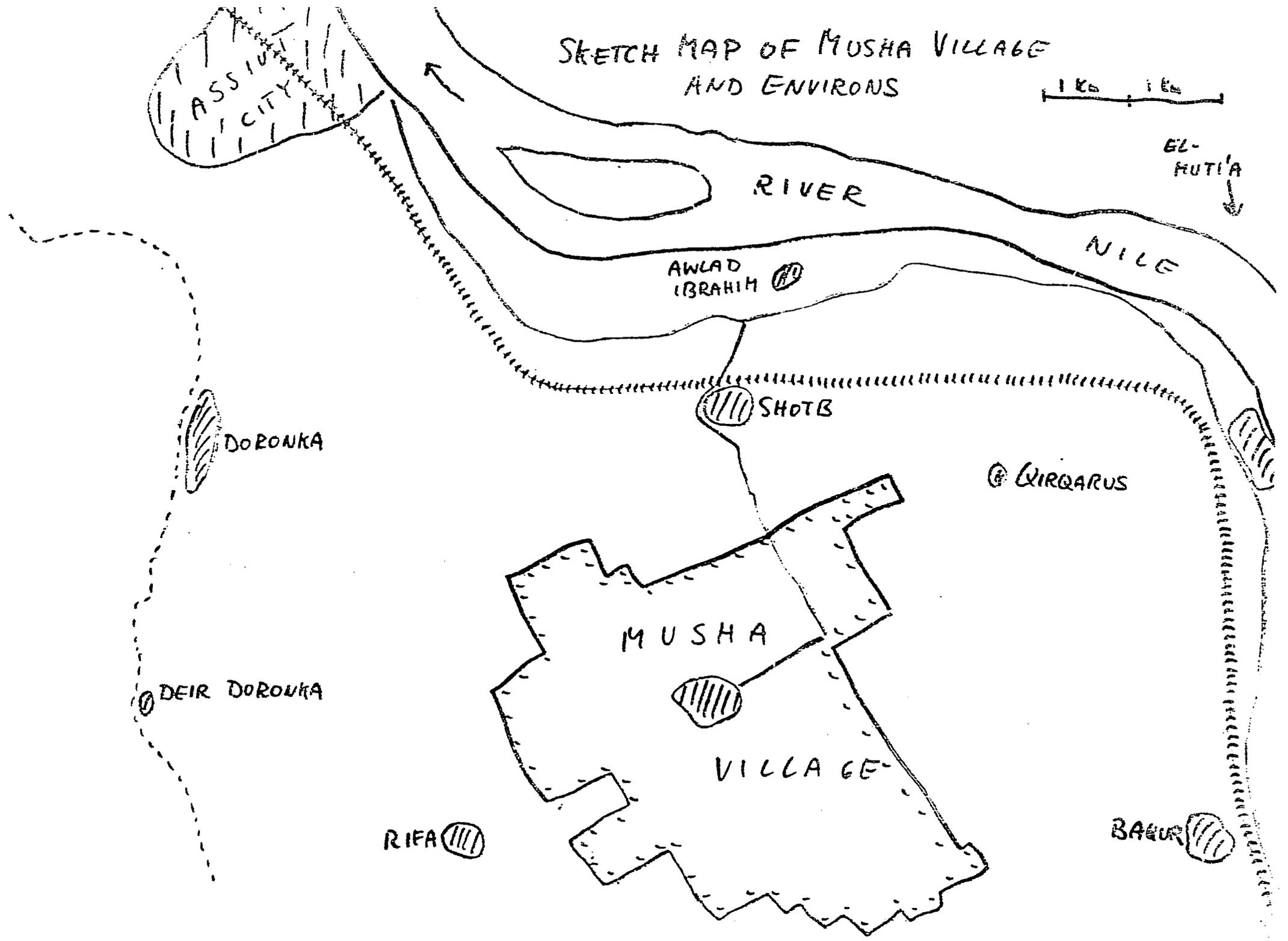
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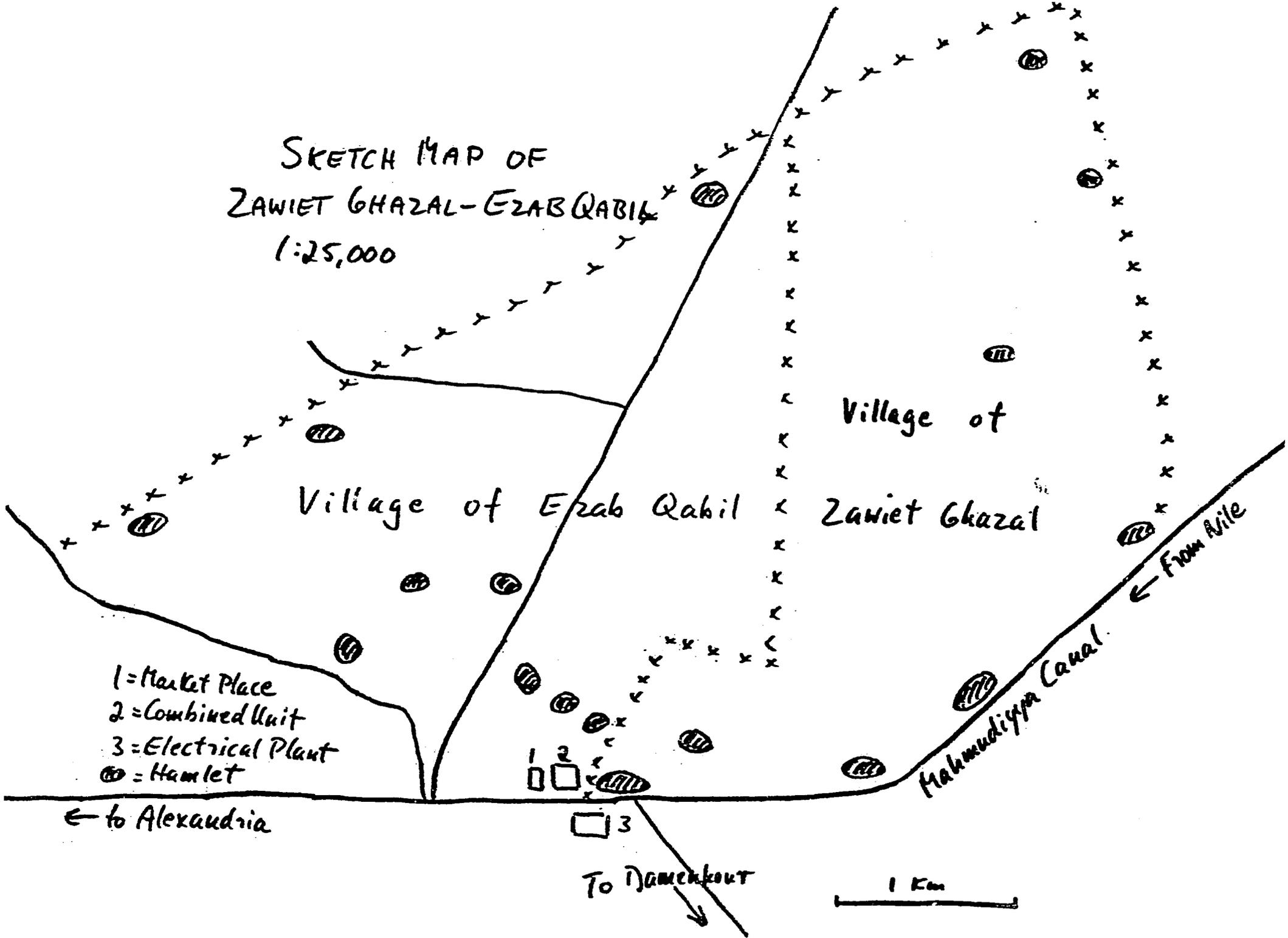
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SKETCH MAP OF MUSHA VILLAGE AND ENVIRONS



SKETCH MAP OF
ZAWIET GHAZAL-EZAB QABIL
1:25,000



Village of Ezab Qabil

Village of
Zawiet Ghazal

- 1 = Market Place
- 2 = Combined Unit
- 3 = Electrical Plant
- ⊙ = Hamlet

← to Alexandria

To Damenkout

← From Aite

1 Km