



ZENTRUM FÜR ENTWICKLUNGSFORSCHUNG  
CENTER FOR DEVELOPMENT RESEARCH  
ZEF Bonn

Economic and Ecological Restructuring of Land and  
Water Use in Uzbekistan/Khorezm:  
A Pilot Program in Development Research



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## ZEF Work Papers for Sustainable Development in Central Asia

No. 3

# Farmer Priority Setting: Issues and Research Needs for Khorezm, Uzbekistan

by

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Bonn, September 2003

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**Фермер приоритетлари тизими: муаммолар ва  
Хоразмда тадқиқотларга эҳтиёж  
(Узбекистон)**

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**РЕЗЮМЕ**

Мазкур ҳужжат экологик ва иқтисодий ривожланиш учун йыналтирилган фермер приоритетларнинг махсус ижтимоий аспектларига қаратилган. Бу омил ердан фойдаланишнинг экологик ва иқтисодий қайта тузишни таъминлашда маҳаллий шароитларга мос келиши ва маҳаллий аҳолининг кизиқишларини ақс эттиришда асосий омилларидан бири деб ҳисобланади.

Бу ҳисоботда фермер ҳужалиқларида олиб борилган мунозаралар ва интервьюлардан олинган маълумотлар муҳокама қилинади. Изланишда асосий эътибор арендаторлар ва ширкат ҳужалиқлари (давлат томонидан бош=ариладиган) вакилларидан иборат булган ҳамма фермерларнинг тенг ҳуқуқли иштирокини таъминлашга қаратилган.

# Определение фермерских приоритетов: Вопросы и необходимость в исследовании в Хорезме, Узбекистан

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## **РЕЗЮМЕ**

Данный документ концентрируется на специфических социальных факторах классификации приоритетов фермеров для экологического и экономического развития. Данный фактор рассматривается актуальным для обеспечения того что экологическая и экономическая реструктуризация землепользования в Хорезме является приемлемой в местных условиях и отражает интересы местного населения.

В этом отчёте обсуждаются результаты, полученные в ходе ряда обсуждений и интервью на уровне фермерских хозяйств и в группах управления фермерскими хозяйствами. Особое внимание уделялось последовательному исследованию, направленному на обеспечение равноправного участия всех фермеров, состоящих как из арендаторов, так и из представителей ширкатных ферм (управляемых государством).

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## **ABSTRACT**

This paper focuses on the specific social factors of the classification of farmer priorities for ecological and economic development. This factor is argued as being vital for ensuring that the ecological and economic restructuring of land use in Khorezm is both appropriate to local conditions and reflects locally articulated desires.

This report discusses the findings from a series of farm level and farm management group discussions and interviews. The emphasis was on process-based research, aimed at ensuring the equitable participation of all farmers, representing a cross section of both leaseholders as well as (state directed) Shirkat farms.

## **1 INTRODUCTION**

Uzbekistan, especially the Khorezm region, suffers from a range of ecological and economic problems that threaten the livelihoods of all who live there. In order for Uzbekistan to disabuse itself of these ecological and economic problems, assistance in the form of technical solutions is required. However, these technical solutions must be developed in a manner that is cognisant of the specific social context. This requires specific enquiry into both farmer priorities for development as well as the identification of barriers to technological adoption. The preliminary study that this paper reports on sought to identify preliminary issues as well as future research needs. It is not claimed that the findings are conclusive; rather this work aims to provide a set of current concerns and focus for future research.

It is vital that the identification of social needs and priorities occurs concomitant with the development of technical solutions. If not, then there is a high risk that the technical solutions will either be inappropriate given local capacity and capabilities, or irrelevant to the needs and desires of the end users. In either case the technical solution will suffer from low adoption rates and poor fulfilment of project objectives. Through the proper use of social development advice, technical solutions can become both more appropriate and acceptable to the end users. In this respect development projects need to stop looking at technology and asking ‘what can this do?’ but rather need to look at problems and ask ‘what technology could help here?’ (Norrish, 1998, pp1).

## 2 SAMPLING

Several considerations were made in taking a sample of the population, which included the operational type of the farm, position of the farm relative to irrigation (up or downstream), gender aspects and pragmatic factors. Provided in Figure 2.1 is a map of Khorezm, indicating the Rayons (administrative districts) in which the research was conducted. Please note that the Amu-Darya river flows from the South-East towards the North-West, making Gurlen the most downstream Rayon within Khorezm.

Farm types vary in Khorezm. Whilst no private farming exists, there are degrees of operational autonomy. This ranges from devolved state farms which retain central state ownership (kolkhoz), joint-stock farms with collective ownership (shirkat) and smallholder leased farms (dekhan). Efforts were made to include a representative sample of each farm type, which is detailed in Tables 2.1 and 2.2 (p.8).

The typology of upstream and down stream is based on access to irrigation water, assumed to be a key determinate of economic and agricultural affluence. The assumption is that ‘upstream’ farms that are early in the water distribution cycle have an advantage over ‘downstream’ farms (which are later in the distribution cycle). Upstream farms have greater security of irrigation supply, as water will flow past them before it arrives at downstream farms. This also has an effect on the salinity of the water available for irrigation, with upstream farms entering saline and other pollutants into the irrigation canals, which is then used by downstream farms. This effect is most profound during the leaching cycle (whereby surface salt is ‘leached’ away through surface flooding). This report adopts a more sociological definition of up/down stream access. Access to water is typified as having greater control over, ready supply of, and preferable timing for, irrigation water. This can take a variety of forms, but in each instance they describe a “social relationship and expression of power” defining not only “access to a resource, but also a relationship of inclusion and exclusion, and control over decision-making” (Boelens and Hoogendam, 2002, p ix). This may or may not relate directly to the ‘geographical’ definition of up/down stream farms. Rather, the social definition of upstream is of farms that have ready access to and availability of irrigation, whereas downstream farms are those which experience poor access to, and availability of, irrigation water. In Khorezm, Gurlen is a downstream region, compared to Kazarasp and Bagat which are upstream.



Figure 2.1: Map of Khorezm region: Administrative Districts

Gender sampling faces serious challenges in the culturally conservative Khorezm region. The revival of Islam in Uzbekistan has seen the growth of traditional notions of women's segregation from certain aspects of society. Husbands and fathers might wish to restrict women's contact with a white, western young male as a researcher. However, working with two female interpreters, and by building rapport through group work, it was possible to access 68 women, 33% of the sample. In the first research period, where mainly group activities were used, women's participation reached 39%. However this was pulled down to 21% representation in the second research period. It would have been preferable to have increased the participation of women. However, the challenge of conducting one on one interviews with women made this very difficult. Where it was possible, there were usually follow-up interviews and longer length discussions, to ensure more equitable representation of opinions.

The two research periods of March 2003 and September to October 2003 constituted slightly different sample groups, and are analysed separately for this reason. The first period (March 2003) is given in Table 2.1 (p.8) and the second research period (September to October 2003) is provided in Table 2.2.2 (p.8). Most of the group based activities were conducted in Phase One (March 2003) which explains the higher number of individuals involved in each farm visit. However there were a greater number of total contacts in the second phase of the research (September – October 2003).

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Table 2.1: Sample Size, Gender and Farm Typology: March 2003

Rayon	Farm Type	Up/Down Stream	Men	Women	Total
Khiva	Research Farm	Down	13	6	19
Khiva	Research Farm	Down	0	8	8
Khiva	Research Farm	Up	9	12	21
Yanghibazar	Dekhan	Up	7	2	9
Yanghibazar	Dekhan	Up	4	7	11
Yanghibazar	Dekhan	Up	8	2	10
Yanghibazar	Dekhan	Down	3	5	8
Yanghibazar	Dekhan	Down	8	2	10
Khanka	Shirkat	Up	15	0	15
Khanka	Shirkat	Up	5	3	8
Khanka	Kolkhoz	Up	3	2	5
Khanka	Kolkhoz	Up	4	0	4
Khanka	Kolkhoz	Up	4	4	8
<b>Total – March 2003</b>		<b>70% Upstream 30% Downstream</b>	<b>83 (61%)</b>	<b>53 (39%)</b>	<b>136</b>

Table 2.2: Sample Size, Gender and Farm Typology: September - October 2003

Rayon	Farm Type	Up/Down Stream	Men	Women	Total
Khiva	Dekhan	Down	2	1	3
Yangiaryk	Cattle	n/a	1	1	2
Yangiaryk	Dekhan	Down	1	1	2
Yangiaryk	Dekhan	Down	1	0	1
Yangiaryk	Dekhan	Up	1	0	1
Yangiaryk	Dekhan	Down	1	1	2
Khanka	Fruit Grower	Up	3	0	3
Khanka	Fruit Grower	Down	2	2	4
Yangiaryk	Shirkat	Mixed	14	1	15
Yangiaryk	Dekhan	Up	7	1	8
Yangiaryk	Shirkat	Down	4	0	4
Yanghibazar	Dekhan	Up	3	1	4
Yanghibazar	Dekhan	Down	5	0	5
Yanghibazar	Dekhan	Down	1	0	1
Gurlen	Cattle	n/a	0	1	1
Yanghibazar	Dekhan	Up	3	0	3
Yanghibazar	Dekhan	Up	2	2	4
Yanghibazar	Dekhan	Down	1	0	1
Yanghibazar	Dekhan	Unknown	1	1	2
Khiva	Research Farm	Down	1	1	2
Khiva	Research Farm	Down	1	0	1
Gurlen	Kolkhoz	Up	0	1	1
Gurlen	Kolkhoz	Up	1	0	1
<b>Total Sept. – Oct. 2003</b>		<b>40% Upstream 60% Downstream</b>	<b>56 (79%)</b>	<b>15 (21%)</b>	<b>71</b>



## **2.1 Qualitative Methods**

A range of interview techniques were used, and adapted as conditions required. These interviews included key informant interviews, group interviews and informal farmer level discussions. In each case the respective Hakim and/or Shirkat Farm Manager was approached and interviewed, and permission sought for the conduct of farm level meetings. In most cases this permission was forthcoming, however there were limited instances of xenophobia or miscommunication, that led to Hakims and Shirkat Farm managers declining to allow farm meetings to occur. In each instance of farm meetings and informal farmer discussions, a brief introduction was provided by the facilitator (the first author) by way of an interpreter. This introduction covered privacy provisions, the rationale for the research and began by relating some of the facilitator's knowledge of the New Zealand farming systems. This served to introduce the facilitator, and to begin the rapport building process.

### **2.1.1 Simplified H-Forms**

Simplified H-Forms are an adaptation of a commonly used tool in guiding participatory discussions. What they require is for a large group of participants to be separated into groups of 6-8 people, and for each person to be given a pad of Post-It notes. Usually five different colours are given to men, and a slightly different five colours to women, however this aspect is not shared with the participants. Each group is then given a large (A1) sheet of paper, with a capital H drawn on it. At the top is a question, written in Uzbek, and a 0 is marked on the left hand intersection and a 10 is marked on the right hand intersection. Participants then wrote reasons why the status quo is NOT a 0 and NOT a 10, which is done individually. The group then discusses the findings, and collects together common answers on each side, which are ranked vertically (top most important). These grouped Post-Its can be used as a starter for group discussion, as well as taken away for further gender disaggregated analysis. From this a clear idea of local priorities, views on project activities and wider opinions can be gained. It is also useful from a gender standpoint because men's and women's answers can be disaggregated using the colour-coding system. As an ice-breaker activity this process is useful as it gets groups working together, as well as allowing the facilitator time to stand back and observe how groups interact and which individuals hold traditional or existing power over others. These individuals can then be targeted, and their influence can be dissipated through the careful use of 'sabotage management' techniques by the facilitator (see below).

In total nine H-Forms analyses were undertaken, often with larger groups of individuals. In six cases the groups were divided at random, and in three cases the groups were gender segregated. It was the belief of the researcher that conducting mixed gender groups using the subtle colour coding system was the most useful mechanism for disaggregating responses by gender.



Figure 2.2: Photograph of a Simplified H-Form

### 2.1.2 Semi-Structured Interviews

Otherwise named *Informant Structured Interviews* are an inductive method of research, which begin with a range of information desired, without tying the researcher down to particular question sets or ways of accessing information (Reinharz, 1992, p18). The advantage of this is that discussions lead towards issues of importance for the participants, which is the key aim of priority setting. In this manner the researcher can access information from different perspectives and the participant feels less like the 'subject' of research and more like a partner in the research process. In this way, rapport is built more easily and the bias of the 'expected'

or ‘desired’ answers by the researcher is less of a distortion to the research. Semi-structured interviews served as one of the most commonly used interview techniques in the second phase of the research. In total sixty seven informant structured interviews were conducted.

### **2.1.3 Focus Groups**

This method was used to separate men and women, and to focus on issues of particular importance to each group. The main aim of using smaller focus groups is to encourage more equitable participation. Large groups tend to be dominated by the more eloquent speakers, or those who hold traditional power and authority. In such situations many people, especially the disenfranchised, tend to stay silent rather than risk the rebuke of making a comment. This is especially the case in societies where men speak ‘on behalf’ of women (in reality, instead of). Whilst this is not absolutely the case in Uzbekistan, in more traditional rural areas there is certainly a tendency for it. As such, smaller focus groups were established where peers could confidently discuss specific issues with the facilitator. Focus groups were utilised on fourteen occasions.

### **2.1.4 Household Meetings**

This method involved the researcher visiting (by appointment) a series of households, in order to observe the family and discuss household decision-making processes with them. These meetings ideally included the children, as well as the husband, wife and any other members (i.e. a widowed mother of either spouse). The conduct of these discussions often followed that of a semi/un-structured interview, and the timing occurred after the initial focus group discussion. In this manner a degree of rapport was already established, and there were always a number of issues arising from prior meetings that benefited from clarification at a household level. Such an example was discussions over vegetable planting decisions, typically a female domain but one many men would claim as their own in front of their male counterparts. The aim of using the household as a unit of analysis is not simply used for convenience, rather it is considered a good method to encourage a synergy of “insights and solutions that would not come about” without the household meeting (Brown et.al, 1989, p40; *cited in*; Patton, 2002, p16). Household meetings were utilised twelve times during the second phase of the research.

### **2.1.5 Problem Trees**

These followed on from the priority ladder exercise (see below ‘Quantitative Methods’), taking the top three or four priorities established by the farmers in that activity. The group

was then broken up into three to four sub-groups, and each sub-group was given a priority to make into a problem tree. These priorities formed the ‘trunk’ of the tree. The causes of the problems were listed by participants, and linked to the trunk like roots, indicating how they led to the specific problem. The effects of the problem were then classified as the branches, the visible impacts of the problem. These problem trees were then used as discussion pieces, and were later taken for interpretation and analysis. ‘Problem trees’ were found instructive in cases where there was a high level of literacy and where participants had a large amount of spare time. In many respects more ethnographic approaches (such as semi-structured interviews) were found more helpful. In total five problem trees were developed by mixed gender groups, all in the first phase of the research.

### **2.1.6 Sabotage Management**

This involved eliminating the influence of overly vocal group members, initially by using body language and directing questions to other group members. In the extreme situation the saboteur manager, one of the interpreters nominated prior to the meeting, complemented the individual on the degree of their knowledge and requested a one-on-one interview in a separate room, thus eliminating the saboteur. The use of sabotage management was only necessary on two occasions, and in each instance it was possible to continue with the group activity by removing the saboteur. It is necessary to exercise caution in using sabotage management techniques, as it remains a matter of judgement as to what constitutes a saboteur. Excessive use of sabotage management can hinder, and possibly contradict, an ethnographic approach. In spite of this it remains a useful tool to use in extreme situations.

## **2.2 Quantitative Methods**

In keeping with the ethnographic approach, quantitative methods are not used extensively in this research. Priorities ladders were used, and analysed using non-parametric tools.

### **2.2.1 Priority Ladders**

This is a simplification of Q-sort methodology, devised for psychology and adapted for self-referent social research by Celia Kitzinger (1987), in ‘The Social Construction of Lesbianism’. The Q-sort methodology is not externally referenced, so the numbers produced bear no resemblance to factors outside the study, rather it “is fundamentally a means of eliciting subjectivities” (Kitzinger, 1987, p78). The adaptation used in this research involved developing fifteen factors of life in Khorezm, gleaned from the semi-structured interviews

and household meetings. A focus group was then presented with each of the factors written on a large piece of card. Each of these was then arranged at random, and the group was asked to rank them in order from highest to lowest priority. Each group member was allowed to move two cards, moving each only one place up or down the 'ladder'. This ensured equitable participation and input by all participants. The ranking of the priorities was then recorded, and analysed. The priority ladder was used initially for staff training and at six farms, during the March 2003 research period. These farms were; Khorezm (1), Khorezm (2), Mustakil, Khamid, Mashrab, Khudaibergam. The priorities used were:

- Fertiliser availability
- Price of vegetables at Bazaar
- Quality of Wheat produced
- Quality of Cotton produced
- Availability of herbicides/pesticides
- Agricultural Engineering
- Seed Quality
- Supply of Machinery and Technology
- Availability of Diesel for Tractors
- Financial Resources
- Soil Quality
- Water Quality
- Water/Irrigation Timing

In an effort to better understand the barriers to technological change that exist in Khorezm, a 'farmer first' approach was adopted. This approach of positioning farmers at the primacy of the research process was of benefit for three key reasons.

Firstly, the farmer first approach enabled the research to take cognisance of the priorities of the rural poor. These priorities, or a conflict between farmer priorities and the economic reality, have the potential to be a major barrier to technology transfer. Thus the first period of research undertaken placed a great emphasis on farmer priority setting. This priority setting contributed to the thesis by positioning further research in light of farmer priorities. This identified aspects of rural life that are often assumed to be important by external development projects, yet which this exercise showed to be of marginal or limited importance to farmers.

Secondly the ethnographic approach of eliciting farmer priorities, made it possible to build the empathy of the researcher towards the participants. In many cases farmers were very

honest about their lack of money and their concerns about future harvests. From the outset of this research this enabled the researcher and translation staff to understand the most serious problems facing farmers, as well as being aware of factors that farmers did not consider to be of real concern. A concomitant advantage of priority setting is in improving the efficacy and efficiency of research and technology transfer. Any efforts towards technology transfer must be acceptable to the socio-political context in which they will operate. Most importantly this means that for farmers to adopt new technologies, these technologies must respond to needs that have been identified by farmers themselves. It is not sufficient for external researchers to identify perceived needs and to solve these. Technologies must be appropriate to the needs of the rural community for them to be used.

The third aspect is that of empowerment. By working with farmers to identify their own needs, and then by assisting them in solving these needs, a process of empowerment occurred. Farmers became aware of their needs as legitimate, and ultimately as solvable. Communities and families were encouraged to work collectively towards solving common problems, sharing the strategies for meeting their needs and priorities.

It is hoped that the priority setting exercises, as well as subsequent interviews and group discussions met the three aims of empathy, efficacy and empowerment. Whilst limited in its scope, this research hopefully provides a useful insight into farmer level priorities and a guide for further technology development.

### 3 PRIORITY LADDER RESULTS

Farmer priority setting was informed partially through the use of the ‘priority ladder’ discussed in the methodology section. Each priority was initially developed from the earlier discussions held on farms, and was vetted by two trials of the method, before the final list was produced. The results of the priority ladder are given below in Table 3.1 (p15), which provides the final priority from each farm meeting. A ‘1’ indicated primary priority, whilst a ‘14’ indicated lowest priority. Of greater use is the analysis of these results, which is provided in Table 3.2 below.

There are a number of interesting results that emerge from this analysis specifically the low importance of ‘Price of vegetables at Bazaar’, ‘Quality of Wheat produced’, and ‘Quality of Cotton produced’. Equally interesting, and encouraging for the project, is the primacy given to ‘Soil Quality’, ‘Water Quality’, ‘Financial Resources’ and ‘Water/Irrigation Timing’. Each of these findings is discussed in the following section and compared to the legal and economic framework analysed in subsequent chapters.

Table 3.1: Priority Ladder Results: By Farm

Priority	Khorezm (1)	Khorezm (2)	Mustakil	Khamid	Mashrab	Khudaiberg
Fertiliser availability	7	9	9	9	2	9
Price of vegetables at Bazaar	11	13	14	14	9	14
Quality of Wheat produced	10	12	12	11	12	11
Quality of Cotton produced	9	11	11	12	13	13
Availability of herbicides/pesticides		10	10	10	6	10
Agricultural Engineering	6	8	7	5	5	8
Seed Quality		7	1	3	11	7
Supply of Machinery and Technology	4	6	5	2	7	2
Availability of Diesel for Tractors	8	5	6	7	10	3
Financial Resources	1	4	4	6	8	1
Soil Quality	2	1	3	1	1	6
Water Quality	3	3	2	8	4	5
Water/Irrigation Timing	5	2	8	4	3	4

Table 3.2: Priority Ladder Results: Analysis

Rank <sup>a</sup>	Priority	Median	Mode	Minimum	Maximum
1	Soil Quality	1.5	1	1	6
2	Financial Resources	4	1	1	8
3	Water Quality	3.5	3	2	8
3	Supply of Machinery and Technology	4.5	2	2	7
5	Water/Irrigation Timing	4	4	2	8
6	Availability of Diesel for Tractors	6.5	-	3	10
7	Seed Quality	7	7	1	11
8	Agricultural Engineering	6.5	8	5	8
9	Fertiliser availability	9	9	2	9
10	Availability of herbicides/pesticides	10	10	6	10
11	Quality of Cotton produced	11.5	11	9	13
12	Quality of Wheat produced	11.5	12	10	12
13	Price of vegetables at Bazaar	13.5	14	9	14

### 3.1 Market Price of Vegetables

The fact that ‘Price of vegetables at Bazaar’ was most commonly the lowest farmer priority is of interest. This could be due to an error in sampling, which may have favoured farmers with allotments that were not focused on vegetable production for sale. However, pursuant research suggested that a sampling error was not to blame. What emerged was that most farmers were self-sufficient in basic foodstuffs and vegetables. Thus they were not influenced greatly by the market price of crops, as they produced sufficient vegetables for domestic consumption and only infrequently bought vegetables at the bazaar. Vegetables at the bazaar constituted a small part of household expenditure, only increasing during preparations for life cycle ceremonies, especially for weddings which require the host to cater for large numbers of people. In this case there is a significant expenditure on rice, carrots, mutton and cotton seed oil for making *plov*, the national dish, traditionally served at weddings and other life cycle ceremonies. The reverse is true for urban and peri-urban families, who were informally interviewed at various bazaars. These families ranked the cost of staple foodstuffs as amongst

<sup>a</sup> The Rank is gained by taking the sum of the median and mode, and then ordering the priorities according to their relative score. The lowest score indicates highest priority.



their highest household expenditure, and complained about the incessant inflation of prices since Independence.

In the case of farmers who are producing marketable surpluses what emerged from follow-up interviews and focus group discussions was that farmers saw market prices as relatively inflexible.

Female respondent: “The price at the bazaar doesn’t change that much”

CW: “Does the price change from year to year?”

FR: “Yes, it goes up all the time – but things are the same compared to other things ... meat always costs more than carrots”

Whilst price inflation was noted by most farmers and consumers alike, farmers stressed that this increase in market price did not even keep pace with increases in the cost of agricultural inputs and new forms of expenditure since Independence. For example, schools now charge fees and require students to purchase their own textbooks, whereas all education was basically free during the Soviet period. Despite these complaints, those farmers who do produce marketable surplus saw themselves as price takers, who had little ability to influence the price which they were paid for their goods.

Notably women farmers were observed to place greater emphasis on the market price of vegetables than their male counterparts. During the priority ladder exercise research staff noted that women would often move this item further up the ladder, whilst men left it relatively static or moved it down the ladder. Pursuant interviews suggested that the relatively low income gleaned from the sale of excess vegetables at market is a ‘women’s activity’. Not only is vegetable production largely in the female domain, but the sale of surpluses at market is usually conducted by the leading woman in the family, usually the mother spouse or mother of the head of the household. These women are then able to retain the profits from this sale, often spend on children’s clothing and other large, irregular, expenditures. The fact that the market price of vegetables was considered such a low farmer priority, despite the importance of it to women farmers, possibly suggests a lot about the state of gender equality in rural Khorezm.

This finding does not remove the importance of vegetables and marketable surplus in the rural economy. What it does highlight is the high degree of self-sufficiency in vegetables for most of the rural farming population. This self-sufficiency, combined with the statements about price elasticity, actually confirm the importance of vegetables to rural Uzbekistan. However, the price is an inappropriate measure in determining this priority, and identifies a need for greater clarity in translation between English and Uzbek.

### 3.2 Wheat Quality

The quality of wheat produced, with a median of 11.5, indicates the degree to which the governmental and farm management systems distort the agricultural market. In a competitive environment, quality of produce is usually of primary importance to farmers. In this instance it would appear that state strategic plans, which emphasise only the ‘quantity’ (i.e. weight) produced, do so at the expense of quality control. Wheat became a “strategic crop” under central government planning soon after Independence in 1991. The Uzbek government continues to aim for national self sufficiency in grain, not wanting to rely on imports from Kazakhstan and elsewhere in the world.

Owner of Private Wheat Mill: “We process the wheat, but the quality is not as good as Kazakhstan – if people could afford to they would buy their wheat from Kazakhstan...it is much better to eat and cheaper”

At present approximately 50% of farmer yields are subject to purchase at the ‘plan’ price, with the remaining 50% theoretically available for sale outside the state system. This is somewhat illusory as the majority of flour mills are state owned, and operate a protected market. Farmers complain that whilst they only receive 150 sum (Local currency: During the time of the interviews one USD equalled about 1000 sum at the unofficial exchange rate) per kilogram of wheat, they then buy back the milled flour at 300 sum per kilogram. The privatisation of grain processing facilities was underway during this research, and there was evidence of private milling of grain for either a percentage of produce or a set monetary charge.

One family of farmers proudly displayed a home made flour mill - capable of processing several hundred kilograms of wheat per day. The fact that this mill was very small made it difficult for the family to sell their flour at any marketable quantity. However the family reported a ready market of neighbours who were prepared to pay a portion of their harvest to use the mill.

Small-Scale Wheat Threshers: “Our neighbours come and get us to put some of their wheat through...we take about a tenth part, depending on how close they are to us”

CW: “What do you mean by how close?”

SS: “Well, if they are family or good friends then we take less and it all depends on the arrangement”

CW: “What if the Mahalla came to check”

SS: “Feed him well enough to keep his mouth full – so he can’t speak” (laughter).

CW: “Is the grain you process better quality than the state mill?”

SS: “Yes, but only because farmers bring their best wheat to us – the tool is the same quality”

Various women interviewed in household interviews in the environs of the private mill noted a preference for privately milled flour. I was told that the flour from private mills is much easier to make good bread from, and is thought to have improved nutritional qualities. The fact that women think this suggests that the private use of technology is a possible solution to technology change. This demonstrates that it will be important to monitor the impact that privatisation has on the priority accorded to the quality of wheat.

Equally significant, one businessman discussed his ownership of wheat and rice processing equipment, of Russian origin. Purchased using private finances (of unknown origin) this equipment employed several staff, and charged 5 sum per kilogram for rice and 6 sum per kilogram of wheat. Those farmers in the nearby region who availed themselves of this service demonstrated a much higher concern for the quality of their wheat, not just the quantity produced.

It would however be wrong to state that the Uzbek government is solely responsible for the excessive emphasis on weight as the sole indicator of production. Soviet central planning, and the education system that served it, placed undue emphasis on quantification of weight. Whilst this may have aided the analysis of aggregated statistics, it created adverse affects in terms of proper incentives for farmers and indeed other industries. Regrettably the Soviet legacy has been perpetuated by the Uzbek government, which continues to focus, almost exclusively, on the weight produced. Indeed, the Yangiariq Hakimyat observed in 2003 had a propaganda billboard, boasting of the tonnes of each commodity produced in the past harvest (Figure 3.1).



Figure 3.1: Photograph showing Tonnes of Production: Yangiariq, September 2003

From my own observations, this problem is exacerbated in the education system that trains agronomists and other agricultural specialists in almost purely quantitative techniques at the expense of qualitative techniques. Many agronomists were visited during the course of the research. Often when the research was explained to them, they eagerly ran off a litany of previous years (probably spurious) production figures. Many would also boast to what extent their region had fulfilled or exceeded the state plan.

The low farmer priority of wheat quality emphasises the impact of negative incentives for constructive farmer behaviour. If the central government continues to measure output using inappropriate, and solely quantitative, tools then farmers will continue to place a low priority on quality factors.

### 3.3 Cotton Quality

The state plan for cotton calls for 100% of the production to be procured at sub-market rates by the government, which is then ginned and sold on the international market. This internal monopoly provides a significant, yet un-quantified, part of the national accounts. Farmers are paid for their cotton according to three or five grades of quality, averaging a price of 250 sum per kilogram. These quality grades are deceptive for two reasons.

The first is that farmers are not actually paid according to a verifiable quality scheme, rather paid on a calculated figure depending on several factors. These include which

picking the cotton is from (the first picking is generally of a superior quality), the variety, and whether it is hand or machine harvested. There is also, apparently, laboratory testing of the quality. However, no information on how this is verified or tested is available. Farmers have little ability to increase the grading of their cotton (except through bribery and inducements) through improved agricultural techniques. Also important to note is that the preference for weight over quality can lead to irrational farming behaviour, such as that observed in September 2003, prior to the cotton harvest. In this instance farmers were seen irrigating their cotton crop during cotton boll development, which would appear unnecessary.

CW: Why are you irrigating now?

Male Dekhan Farmer: “We make the cotton wet, because we just get paid by weight ... it is an old trick”

CW: “Does it do anything to the quality of cotton?”

MDF: “I don’t really care ... the pay is the same – too low”

The second factor influencing the low priority placed on cotton quality is the limited price differentials along the quality gradient. Farmers are not aware of what price they will receive for their cotton ahead of time, and act as passive price recipients. This system discourages farmers from making future production decisions based on economic logic. Rather, farmers tend to plant crops that have delivered high profits in previous years rather than choosing future production based on anticipated future prices. This retrospective decision making process saw the over-production of rice in 2003, as farmers all strove to produce this (usually high value) crop.

### **3.4 Soil Quality**

Farmers interviewed attributed clear importance to soil quality, with a mode of ‘1’ and median of ‘1.5’. The fact that those interviewed recognised the importance of soil quality means that further research and extension can emphasise the direct relationship between sustainable land use and soil quality. This rates it as the most important priority for local farmers and was thus considered to warrant further research.

In order to provide a more in-depth analysis of farmer priorities for soil quality, a decision tree was completed for five of the interviews. These trees exposed a lack of understanding of the causes of poor soil quality, with farmers focusing on the need for more fertilisers and other inputs. These problem trees also identified the causes of soil salinity and chemical toxicity as being from either the Soviet past, or from a lack of irrigation water. The fact that farmers correlated water shortages with soil quality is of some note, as it is often the

excessive application of low quality (rather than low quantity water) that degrades soil quality.

However, those interviewed demonstrated a good understanding of the effects of good and bad soil quality. The fact that fertility, yield and quality of harvest consistently appeared confirmed the importance of soil quality to farmers. There was a significant correlation between priorities identified by farmers in interviews and the effects of bad soil quality noted in the problem trees. For example fertility and yield were frequently cited in both formal and informal farmer meetings, and the connection was often made with soil quality. This reinforced the importance of soil quality, as well as illustrating how degrading soil quality is and will continue to be a key constraint to technology transfer. What it also identifies is that greater levels of education are required, especially in terms of the causes of soil quality, for the project to successfully transfer technologies.

The primacy of soil quality to farmer priorities was confirmed in the H-Form exercise. In each H-Form completed, the most popular grouping of negative responses to “I like Farming in Khorezm” was that of ‘ecology’. Within this grouping, popular responses included land salinity, poor soil structure and decreasing yields attributed to generally poor soil quality. Follow-up discussions from the H-Form exercises identified that many farmers not only saw land quality as poor, but that they perceived it to be declining at a rapid rate.

Focus Group Participant 1: “Our land is getting harder to grow crops on ... we used to be able to grow fruit trees but not any more”

FGP 2: “It is very bad for the health of the old and the young – and us working age people get less and less from the land”

The high instance of marginal lands, being those lands where traditional farming methods were not possible due to acute environmental degradation, in Khorezm was also a key priority for farmers. Many farmers when asked about their saline soils which were no longer productive actively sought advice on what to grow on them. This active interest suggests that high saline levels pose a present constraint to technology change in Khorezm.

### **3.5 Water Quality**

Water quality ranked third equal in terms of priorities, with a median of 3.5 on the priority ladder. This identified it as an important, though not vital component for those interviewed. When questioned, some farmers identified a decline in water quality over the past ten years, whilst older farmers talked of a high level of water quality in their youth. Notwithstanding the statements made in ‘Soil Quality’ (above), there seems to be a disconnection between the high

priority attached to soil quality, and the relatively low priority attached to water quality. The accepted scientific research on Khorezm indicates poor water quality as the primary cause of degrading soil quality. The high presence of salinity, and persistence of agricultural chemicals, is generally considered by the academic community to be a primary cause of declining soil fertility and quality.

Interestingly, many farmers did not make a significant association between salinity of water and soil salinity. This is surprising, given the logical connection between saline application and saline residue. Whilst most farmers seemed concerned with a decline in the *quantity* of water available, there was limited concern with the existence of salt or other pollutants. This may reflect concerns of water scarcity during drought 2000-2002. It also reflects the conventional wisdom that salt can be “leached” away. The twice annual application of water to leach surface salt may be effective in the short term. The long term effects of raising the water table, and increasing the levels of salinity in this water table, are not well acknowledged by farmers. The effects of the saline water table are evident, and include not being able to plant fruit trees on land with a high water table. This finding would tend to suggest that there is a need for farmer education about water quality to enable technology change.

The issue of poor water quality illustrates the dependent nature of Khorezm. As a downstream user of the Amu-Darya, the Khorezm region is subject to the water use of upstream riparian regions and countries. The water usage of Kyrgyzstan, Tajikistan, Afghanistan, Turkmenistan, as well as significant regions of Uzbekistan, has a profound impact on Khorezm. To a large extent the farmers of Khorezm are unable to control the water use, or polluting, of upstream users. Khorezm is very dependent upon central state, and interstate planning bodies for their water allocation.

Informant Interviewee: “We have no say over the water – it just comes to us and we use what we can when we can ... it is not very good – but what can we do, we are just farmers”

The despondence of many farmers reflects the fact that many are resigned to accepting whatever water arrives, and see no mechanism for ensuring that quality and quantity concerns are met.

### 3.6 Water/Irrigation Timing

This variable ranked much lower than was expected, however is still significant at a median and mode of four. This was possibly due to the fact that whilst water supply had been a problem in the past two drought years, it had not been and farmers did not anticipate it to be a problem in 2003.

Female Focus Group Participant: “We have no problems with water this year ... in past years yes we did – but this year there are no problems”

This may also reflect the formulaic approach to irrigation, which is dictated more by calendar date and rostering, than the actual crop needs. All farmers discussed some short-term lack of supply, but claimed that this was always remedied within an acceptable time span.

Male Informant: “we all need water, so we take turns ... it always works out”.

In most cases a “responsible person” (ibid) monitors water use and makes ad hoc rulings on irrigation timing manages water allocation. Given the paucity of metering or other adequate control mechanisms this would appear to be an effective solution. However, personal interviews identified a high incidence of corruption, and water theft.

Female Informant: “How it works is that if you have money, or are friends with the right people you have water. We are poor. We have no water. Some people take the water when we are not allowed, what else can we do if the crops need water? Everything needs the same amount of water – plants don’t know how rich their owner is”

On a macro scale the irrigation of cotton in particular is too infrequent, with many cotton crops being irrigated from one to four times throughout the entire growing cycle. The system of taking turns favours upstream users who will over-irrigate their fields, unsure of their next opportunity to access irrigation water. This produces problems of saline runoff, which is then gathered in collector canals (many of which are old and poorly maintained). Downstream users receive both limited and untimely water access, as well as increased levels of salt in their water.

Of considerable concern is the use of ‘emergency’ ground water supplies for general crop irrigation. Many farmers discussed using electric or tractor driven pumps to access shallow well water for irrigation, during times when no canal water was available. In doing this farmers are using high saline ground water, which contributes to the already problematic soil salinity.



Family group interviewee 1 (male): “We all use wells and drainage canals if we can – it is water, but it is very sour [salty]”

FGI 2 (female): “It is not very good for humans or animals but it is good for the crops, except for fruits and trees that don’t like sour water”

FGI 1: “You have to know what the plants need – I am a farmer and I know what plants need – cotton can have sour water so long as it is old enough, if it is too young it will die”

The use of ground water for irrigation highlights both the relatively low priority farmers attach to water quality as well as the high importance to the project of improving irrigation timing.

### **3.7 Financial Resources**

Financial resources are, unsurprisingly, a key concern with a mode of one and a median of four. The reasons for this are two-fold. Firstly the settlement accounts system of Uzbekistan is a significant barrier to accessing financial resources, as well as an inhibitor to rural development. In brief, the majority of transactions must occur through the ‘settlement account’ of an individual. This includes receiving payment for official crops (cotton, wheat and rice) as well as paying production costs such as for fertilisers and seeds. In most cases men are the legal ‘leaseholders’ of land and it is their settlement account into which monies are paid. Whilst women are legally entitled to lease land, and some do, this remains a rarity. Similarly, there is no reason why a woman’s banking account could not be nominated for receipt of payments and for expenses. However informal interviews showed that in almost all cases men are both the legal leaseholder and the bank account is in their name. The only common exception is where a widow annexes her husbands lease and bank accounts following his death.

The second reason for the importance of financial resources is the generally high level of poverty in Khorezm, especially in the rural regions. Many families subsist on or below what is colloquially termed ‘the poverty line’. Extensive use is made of informal cash income mechanisms, with the black market dominating the rural (and urban) economies. Family focus group discussions exposed that there was an acute lack of cash resources. For example one family noted that they did not have enough cash to bribe their two children into University.

Mother: “I have not been paid as a teacher for the past three months, I should get 30,000 sum [\$30 US] but I get much less than that, if I am lucky enough to get anything at all”.

One of the coping mechanisms employed by this family was for the father and eldest son to travel to Karakalpakstan where some extended family lease a farm. The men then harvested rice by hand, in return for a portion of the rice they harvested. During the summer months the mother also bought ice-cream in bulk, and sold it from her front door for a small profit.

What is clear from this research is that farmers are motivated towards gaining cash income, especially if it is outside of the official settlement accounts system. This enables them perfect access to their cash, rather than access only to buy certain inputs from government firms. This preference was evidenced quite clearly in 2003 by farmers stating a preference for rice over cotton, even though the profit was not so great. The advantage of rice was that all the profit was in cash rather than in an inaccessible back account.

#### **4 SUMMARY AND CONCLUSIONS ON FARMER PRIORITIES AND BARRIERS TO TECHNOLOGICAL CHANGE**

What these research findings show is that locally articulated priorities demonstrate that there exists a real impetus for change within rural Khorezm. Whilst the Soviet legacy continues to stifle the development of new agricultural technologies, farmers are interested in improving their land and improving their crop profit. What the farmer priority setting research enables is for this thesis to compare and contrast articulated farmer desires with the opinions of farmers and decision makers on technological change. From a development perspective this is very useful in enabling technological intervention to be properly targeted to meet the needs of the rural poor. Moreover, the farmer priority setting research serves as a useful introduction to the problems of technology transfer in Khorezm.

The first finding from this study is that there is a lack of access to cash resources and that this poses a serious constraint to the adoption of new technologies. This constraint identifies the need for cash generating technologies to ensure successful technology transfer. It is important to note that financial resources kept in banks are not always accessible, and that new technologies that are promoted through the private sector may be inaccessible to the very poor. This is because the private sector requires cash payment whereas the government managed Machine Tractor Parks accept transfers from the settlement accounting system.

The second issue to note is the level of motivation by farmers for improving both water quality and irrigation timing. Whilst farmers attribute high levels of priority to these factors, they are not as high as would be optimal for technology transfer. A general lack of impetus, at the farmer level, for change can be seen as a serious constraint to technology change. This barrier intersects with the lack of access to cash resources noted above. This is especially true if a lack of cash is shown to be having an adverse effect on farmer level education, as indicated by one family interview. It is the intersection of these two barriers that needs to be analysed jointly, as part of the complex of barriers to technology change.

It is likely that the continued privatisation of agricultural production and post-harvest processing will see a move away from quality focused production, towards quality and quantity focused production. This transition towards the private sector, including the move towards quality focused production, has the potential to exacerbate the problems identified by farmers in this chapter. This privatisation is likely to reinforce problems in the rural community if it does not occur concomitant with a rationalisation of the banking system and improvement in the state of family financial resources.

The priorities of farmers in Khorezm are understandable given the socio-legal context in which they are formed. This study attempts to adopt a farmer first approach, working from the perspective of meeting the articulated needs and priorities of the rural poor. This represents the first step in the process seeking out the priorities of households in rural Khorezm.

#### **4.1 Conclusions**

The technologies presently being developed by the ZEF/UNESCO project in Khorezm hold considerable potential for meeting the development needs and priorities of local farmers. In particular, several key conclusions can be made: 'Amount of Rice Produced', 'Price of vegetables at Bazaar', 'Quality of Wheat produced', and 'Quality of Cotton produced' are all of a low priority to farmers in the Khorezm. 'Soil Quality', 'Water Quality', 'Financial; Resources' and 'Water/Irrigation Timing' are all of key importance to farmers interviewed. This holds great potential for the project; especially in the introduction of tree fallow and fish farming, as well as improved irrigation and tillage practices.

A limited farm decision-making autonomy exists, which will pose a key constraint to the successful transfer of technologies, however this situation is slowly changing with privatisation.

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