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TENANCY AND IRRIGATION WATER MANAGEMENT IN SOUTH-EASTERN PUNJAB, PAKISTAN



ANNEMIEK TERPSTRA

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GLOSSARY

Abiana	Water tax; rate charged for canal water supply for the purpose of irrigation
Arain	Agricultural caste; in the past they were known for their horticulture
Baraderi	1) Sub-caste 2) Kinship group of brothers and their families
Barani	Rainfed
Baildar	Laborer, Irrigation Department
Basti	Part of a village
Bhatti	Probably descent from Jhat or low-caste Rajput
Budh	Waterlogged area used to drain by Mehmood command area farmers' caste
Chak	Village
Chuhaan	Originally a Rajput sub-caste, but no longer recognized as such since they began practicing widow-marriage
Dera	House or compound in the field
Desi	Local; indigenous
Gauge-reader	Distributary gate operator; controls the water level, Irrigation Department
Jat	Essentially a word for agriculturists (Zamindar), but is used as a Punjabi term for a 'grazier' or 'herdsman'
Joiya	Some claim Rajput descent, but this is not proven. They used to have large herds, but were known as bad cultivators
Kammi	1) Member of a non-agricultural caste, such as weavers, potters, barbers, goldsmiths, etc. 2) Sharecroppers or servants of big landlords
Kanal	8 kanals = 1 acre
Katcha	Unofficial
Kharal	Agricultural caste with a dubious origin (some claim Rajput descent). They were known in this area as simple cultivators who were industrious, social and attached to their own fields
Kharif	Summer season, with cotton as a main crop; officially from mid-April to mid-October
Khokhar	Clan name for lower castes in Punjab. In the simple watercourses, they were originally pastoralists, nowadays, mostly laborers and tenants
Kila	1 kila = 1 acre
Kulaira	Name of a caste
Lobana	Gujar sub-caste; in the sample watercourses, originally cattle traders who took agriculture as an additional means of livelihood
Madder	Name of a caste

¹ Definitions of castes are partly derived from Sir Penzil Ibbitson (1883), *The Races, Castes and Tribes of the People*, reprinted in 1994 as *Punjab Castes*, by Sen-e-Meel Publications, Lahore, Pakistan

Mahaar	Joiya-type caste; were known in the past as cattle owners and (cattle) thieves, who had little interest for agriculture
Malik	1) Landowner 2) Name of a caste
Marla	20 marla = 1 kanal
Mogha	Outlet of fixed size through which water passes from a canal to a watercourse
Mohal	Name of a caste
Muhajir	Migrants from India
Nakka	Cut in a watercourse through which a field is irrigated Numberdar Collector of revenues of land and water in a village for the Irrigation Department, and acts as intermediary between the Irrigation Department and the villagers
Overseer	Officer in sub-divisional Irrigation Department
Panchayat	Traditional system of conflict resolution through unanimous decisions by elders and respected people of a village
Patwari	Field Officer, Irrigation Department; responsible for recording fields irrigated with canal water in a group of villages
Pukka	Official
Rajput	Descendants from royal families; probably from the same ethnic origin as the Jat. They were known as good warriors, and landowners who looked down upon their tenants who did manual labor. They attained high political supremacy and have a high status to this day
Rabi	Winter season, with wheat as the main crop, officially from mid-October to mid-April
Rishwat	Bribe
Salanabandi	Annual closure period of about one month in January
SDO	Sub-division Officer, Irrigation Department
Square	25 acres
Syed	Large-scale landowners, who claim descent of Ali, son-in-law of the Prophet Mohammed; they have status as large landlords and are acknowledged for their holy descent
Tehsildar	Representative of the provincial government, responsible for collection of revenues and for legislation, as well as recording all changes in landownership in a Tehsil (part of a district), Revenue Department
Warabandi	Water turn
XEN	Executive Engineer, Irrigation Department
Zilladar	Subordinate canal official, Irrigation Department; supervises the work of ten or more Patwaris

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FORWORD

In Punjab, the Irrigation Department and water users are involved in the management at different levels of Irrigation system. End users of irrigation water (i.e. farmers) are the main actors in the management of the irrigation system at the tertiary level. They organize and undertake a number of irrigation water management activities in order to match the irrigation water supply to their perceived crop needs. However, some activities are undertaken collectively, while others individually; some at the local level (i.e. within the watercourse) and some at a higher level (i.e. the distributary).

The goals and objectives of different water users could be different since water users may or may not be an owner of the land. Therefore, action and interest in execution of the water management activities to achieve individual goals could also be different, which ultimately reflects upon the overall performance of the irrigated agriculture.

Their social relations and forum of action shape the way in which water users, landowners and tenants organize water management activities. Much of the irrigated land is farmed by tenants. Hence, in order to be able to understand the context in which irrigation takes place, it is important to study the tenancy relationships and their impact on the water management activities, which is the main thrust of this study.

This very well written report provides insights into the motivation that owners and tenants have in undertaking individual and collective actions taken under different tenancy contracts in managing irrigation water and thus making irrigation possible.

Robina Wahaj

EXECUTIVE SUMMARY

Water management practices are influenced by the physical irrigation system itself, and by socio-economic as well as political factors. Social studies on water management activities have largely focused on two components:

1. the managerial component; and
2. the social set-up in which irrigation activities are embedded.

Although about 40 % of the South-eastern Punjab is under tenancy contract, tenure has never been a topic of research. This study will focus on landowners' and tenants' motivations and interests for certain tenancy types, as well as water management practices. This study aims to:

1. describe different tenancy contracts in South-eastern Punjab; and
2. determine the impact on water management practices at the watercourse level.

Field work was conducted in three watercourse command areas: Fordwah 67, Fordwah 84 and Mehmood 118. During five months of field work, qualitative data were mainly collected by conducting semi-structured interviews. Qualitative data assist in understanding why landowners and tenants choose certain strategies to pursue their individual and collective interests in watercourse management activities.

There are two main types of tenancy contracts; sharecropping and leasing. Sharecropping contracts are mostly on a 50-50 basis, whereby the yield and costs of agricultural inputs are divided equally between the landowner and the sharecropper. The sharecropper is responsible for all of the manual labor, along with daily soil and water management activities. The landowner, if not absentee, remains in control of non-daily watercourse activities and of water rights, including selling and purchasing canal and tubewell water. Decisions are reached through mutual discussion. Communal decision-making requires that the landowner remains the main actor, but not the actual water user.

In leasing contracts, the water and usufruct rights shift to the lessee for the duration of the contract, commonly for a period of one year. After paying the rent, the lessee takes full responsibility for soil and water management tasks. He pays 100 % of all inputs, and reaps the rewards of the entire yield. The landowner does not have control over soil and water management practices during this period. The lessee can even sharecrop the land; he is the contemporaneous owner of water rights and is also considered as such in communal decision-making.

The social structure and tenancy pattern differ for each watercourse. In Fordwah 67, most landlords migrated from India to Pakistan at Partition, and almost without exception, acquired land on claim. They belong largely to the Arain caste. Tenants in this watercourse are mostly locals who used to be pastoralists, without land of their own, and

belong mainly to the Khokhar caste. One big landowner at the tail end of this watercourse has an important role as an initiator of agrarian development, e.g. installing tubewells and lining the watercourse. He also acts as mediator in representing tenants' interests to officials, making use of his political contacts. Also, this landowner leases and sharecrops all of his land, so that over 80 % of his land in this watercourse is under tenancy contract.

In Watercourse Fordwah 84, two main castes are living in *deras* in the surrounds of the watercourse. Arains have their land mainly on the right branch, and the Lobana, on the left branch. Landowners on this watercourse tend to have small landholdings, and almost 60 % of them lease or sharecrop all of their land. Tenants get more access to land by sharecropping and leasing in land, thereby consolidating landholdings and water rights. Canal water supply is insufficient and irregular, with tubewell water being a widely-used alternative on this watercourse. Also, about 30 % of the actual cultivators have off-farm employment. Collective action on this watercourse is problematic to organize. Conflict within the caste has caused disinterest in the land, and watercourse cleaning has become a problem on the left branch, whereas on the right branch, where relatively more land is under tenancy, the organization is much better. The watercourse has remained unlined, as efforts for contrary outcomes have failed due to landowners' non-payment.

Watercourse Mehmood 118 shows a varied social structure, with many different castes. Most landowners acquired land on claim during Partition, and the average landholding size is higher than in the other two watercourses. Landowners themselves cultivate 65 % of the land, so ownership-cum-cultivation is the dominant management practice. Compared to the other watercourses, this one has a better canal water supply. Irrigation through groundwater is of less importance. The watercourse is also close to the gauge-reader, who is responsible for water allocation for Fordwah and Mehmood Distributaries. Landowners and tenants can easily get information from him and bribe him to allocate more water during their water turns.

To divide landowners-cum-cultivators, landowners who sharecrop and landowners who lease their land would be a simplification of reality. The same counts for a division of the actual landowners-cum-cultivators, sharecroppers and lessees. In fact, different combinations are evident. For example, a landowner in need of money can decide to lease his own land for a few years, and sharecrop other land in order to provide the basic needs for his family.

Landowners have different motivations to lease or sharecrop (part of) their land. Likewise, tenants have different motivations for leasing or sharecropping (more) land. Factors influencing motivation for a certain tenancy strategy can be divided into social, economic and physical factors.

Social Factors

1. If relationships with neighbor-farmers are bad and conflicts arise, a landowner may decide to lease his land under tenancy to avoid direct quarrels or confrontation with neighbors. Conflicts with neighboring farmers can, for example, lead to the refusal of selling tubewell water to that farmer. If relationships with neighbor-farmers are good, there might be cooperation between them in terms of labor exchange on a reciprocal basis. It is, thus, also important for landowners to find a tenant who has good relationships with others, as in the example of Mehmood 118, where several farmer-groups help each other in this way.
2. The amount of adult men in the cultivator's family determines access to family labor. Households with access to about two family members who help in cultivation, more often take (extra) land for sharecropping. Also, big families need more land to provide the family with food for domestic consumption. Shortage of family labor can be a reason to give land on tenancy.
3. A cultivator may prefer to take land on lease to make his own decisions and to avoid being ordered by a landowner. He may prefer sharecropping to gain some sort of protection from the landowner. So, the attitude of the cultivator also determines his choice for a certain tenancy type.
4. The attitude of the landowner can determine his choice for a certain tenancy contract as well. When a landowner does not want to lose control of management activities, he will choose sharecropping. Likewise, when he does not care about agriculture, he can lease it, so that all land management responsibilities shift to the lessee.
5. When landowners have other lands in given watercourses, they may be less interested in the land in the command area, especially when the soil type is less suitable for growing preferred crops, or when canal water supply is poor. They may then opt to lease the land. This is the main factor why the majority of landowners in Watercourse Fordwah 84 do not cultivate the land themselves.
6. Another social factor that influences motivation for a tenancy type, is the legal rights meted to tenants. Insecurity of tenure leaves room for the tenant to be evicted from the land quite easily, especially also because tenancy contracts are almost always verbal. For landowners, it may be easy to evict a tenant when they do not appreciate their way of farming, but for tenants, insecurity diminishes their interest in long term soil and water management practices. For example, a lessee would be less inclined to install a tubewell when necessary, as he may not benefit from it for a long time.

Economic Factors

1. Landowners with off-farm employment may not have time to cultivate their own land, and may decide to lease it. Tenants may also leave contracts if they find livelihood alternatives outside farming. About 30% of Fordwah 84's landowners and cultivators, especially sharecroppers, have (additional) off-farm employment, which decreases their interest in proper management of soil and water.
2. The household's economic circumstances may force them to choose a specific tenancy type. Above, an example is already given of a landowner who urgently needed cash, and thus leased his land out. Poorer households which are landless or who do not have enough land, tend to sharecrop land in. In this way, they share financial risks for cultivation with the landowner. More well-to-do households intending to cultivate more land, would sooner opt to lease as they can afford the double investment of paying the rent as well as the inputs.
3. The rent rate, of course, also influences the choice for leasing. When the rent is low, and the quality of land and water availability is high, it becomes more beneficial for the landowners. Landowners tend to attempt increasing the rent each year.
4. Household needs (e.g. food for domestic consumption) can motivate tenants to lease or sharecrop (extra) land in. In leasing contracts, tenants can make decisions about which crops to grow, but in tenancy contracts, this can be discussed with the landowner. Ownership of cattle also plays a big role. Almost all cultivating households have some cattle, such as cows or buffaloes. They need to grow fodder for their cattle. In sharecropping contracts, there is even a norm that tenants can grow at least 0.5 acres of fodder. This is an important incentive for taking land on tenancy, because households with more cattle tend to lease or sharecrop in more land.

Physical Factors

1. The distance between a landowner's residence and the field may be too far for him to cultivate it himself. In this case, he would give the land under tenancy, preferably leasing. Cultivators who want to cultivate more land will try to find land close to the field(s) they already cultivate; thus, they can try to consolidate landholdings and water rights, as happens in Watercourse Fordwah 84.
2. The size of a holding also determines whether land is owner-cultivated or not. Plots too small for efficient farming, such as through the division of holdings with inheritance, especially if less than one acre, tend to be leased or sharecropped out. Landholdings too large to cultivate alone, will also be (partly) given under tenancy.

3. Making investments on land with bad soil quality for cultivation is less beneficial. Landowners may be more inclined to give these fields on a sharecropping contract. On the other hand, if the tenant has the means, he will take land of good quality on tenancy. Sharecropping of good land may be more beneficial than taking bad land on lease.
4. The availability of canal water also plays a role, as a sufficient and regular supply of canal water is beneficial for the soil, the crop, types of crops that can be grown, and less money on tubewell water is spent. In Watercourse Mehmood 118, where the canal water supply is good, farmers tend to cultivate themselves, whereas in Fordwah 84, where canal water is insufficient and irregular, landowners tend to give their land on tenancy. In this case, the availability of tubewell water becomes more important. Tenants show a preference to take land with good canal water, or with tubewell water supply.

Concluding, tenancy has negative, neutral and positive influences on water management activities.

Negative Influences

- 75 % of tenants tend to take less, or equal, care of soil and irrigation management practices as owner-cum-cultivators;
- Leasing tends to increase degradation of the irrigation system, as lessees aim to get high yields and income in order to get a profit from their double investment within a one-year contract;
- Sharecropping contracts do not have favorable conditions for optimal use of water markets, as they do not have full water rights, which leads to less flexibility in irrigation practices; and
- Sharecropping has implications for communal decision-making for collective action, as sharecroppers are not considered as farmers with full rights on soil and water management.

Neutral Influences

- Tenancy does not have an impact on the maintenance of the main branches of the watercourse; and
- Most landowners distribute water among tenants according to the size of the plot, like in the official warabandi system. Inequality in water rights allocated from landowners to tenants is rare.

Positive Influences

- Involvement in tenancy arrangements offers more flexibility in canal water supply to farmers, especially for lessees, who have full water rights; and
- Taking land on tenure is a way to consolidate landholdings and water rights by sharecropping and leasing in nearby plots.

1. INTRODUCTION

In Pakistan, about 50 % of the population depends on agriculture, crop production and livestock, as a source of income (World Bank 1994). Agricultural production in the Punjab Province is of major economic importance for the whole country. Of the cultivated land, 79 % depends on irrigation, and 62 % (partly) on canal water irrigation (Pakistan Census of Agriculture, 1990).

According to the 1980 Pakistan Census of Agriculture, 36 % of the cultivable land in Pakistan was under tenancy arrangement (Nabi, *et al.*, 1986). The two main tenancy types are sharecropping and renting. In 1980, about 80 % of the area under tenancy was cultivated by sharecroppers, and the remaining 20 % by lessees. However, little research has been done on present tenancy relationships in Pakistan, and the implications of tenancy for agricultural production and irrigation practices have never been assessed.

From a sociological perspective, the present study describes today's tenancy relationships, and determines their impact on performance of the irrigation system. Irrigation and water management activities are embedded within the social structure of society. Society and irrigation influence each other on different levels; political, economic to organizational and livelihood on village levels. What motivates people to become involved in these relationships will be discussed, along with the advantages and disadvantages for the cultivators, and how this influences water management practices.

Tenancy relationships are agreements between two parties, the landowner and the cultivator, about usufruct (i.e. the right to use and derive profit from a piece of property belonging to another, provided that the property itself remains undiminished and uninjured in every way). A lessee is a person who pays a certain amount of rent for an agreed time period to the landowner before he starts cultivating the land. A sharecropper is a person who cultivates a landowner's land for a share of the profits, agreed upon in advance. In Punjab, sharecropping is mostly done for 50 % of the yield, although contracts for 25% or less also exist. There are different tenancy contracts or agreements between landowners and the actual cultivators or water users. Presumably, patterns of tenancy also vary from watercourse to watercourse.

In the warabandi irrigation system of Punjab, each landowner gets a fixed water turn timing for irrigation according to the amount of land he has (Bandaragoda and -ur-Rahman, 1995). The timings follow an seven-day rotational scheme, so landowners get one water turn for one piece of land every seven days.

Landowners have legal water rights in the warabandi system. A landowner is the man or woman who has rights on land through inheritance, buying land or otherwise, thus, obtaining legal rights to the land. This concept of landowner should be distinguished from an official landowner, as it is legally registered by the Irrigation Department. These records are often outdated, as often the registered landowner has passed away, so the actual landowners are his / her offspring. A piece of land or a farm

can belong to more landowners, who see themselves as owners of common (family) land. They have a common water turn, and divide the turn among themselves.

Although landowners possess the legal water rights, they are not always the ones who use the water. Actual cultivators are the water users. Actual cultivators can be an owner-cum-cultivator, a person who leases the land, a person who sharecrops the land for a certain percentage of the yield, or a permanent agricultural water laborer.

Tenancy is a social structure that has an impact on the performance of the irrigation system, as the landowners, who have water rights, are not the actual water users. Tenancy relationships form an integral part of how landowners and actual cultivators organize irrigation management activities. Water management activities include water allocation, water distribution, watercourse maintenance and improvement, handling of excess water, and tubewell operation (Wahaj, 1996).

Farmers are not assumed to be passive recipients within the irrigation system, but rather, that they try to shape the system according to their desires and needs (Ubels, 1989). They are regarded as knowledgeable and capable to act. They collectively, or individually, create and use 'room for maneuver' within the system to reach their own objectives. By looking at both landowners' and cultivators' motivations, a better understanding can be developed about why they take certain actions, or adopt certain strategies, to achieve their objectives.

Although farmers can organize themselves to reach a common objective, they cannot be seen as a homogenous group. Nothing is less true. Individual farmers, or groups of farmers, have diverse and sometimes conflicting objectives. Tenants may have different interests than landowners. Increasing the amount of irrigation water for one group of farmers might decrease the availability for another group. Water management activities that a single farmer adopts, might be harmful for another farmer, etc.

This study aims to determine positive or negative implications of water management activities for tenants, predominantly by looking at tenants' and landowners' individual and collective interests, motivations and strategies.

Section 1 has introduced this social study on tenancy relationships. The research questions and the methodology used for data collection and analysis are presented in Section 2. Section 3 introduces the research area and describes the present tenancy relationships in the researched area, together with peoples' motivations to get involved in these relationships. It looks at both the advantages and disadvantages for landowners and cultivators. The implications of tenancy relationships for irrigation are discussed in Section 6, which exposes the collective and individual strategies of landowners and tenants for water acquisition and water distribution. The last section contains concluding remarks about the impact of tenancy for water management activities.

2. METHODOLOGY

This section presents the conceptual framework, the research questions, and the sociological methods and techniques used during the fieldwork.

2.1. CONCEPTUAL FRAMEWORK

As stated in Section 1, society and irrigation influence each other on different levels. Both social and physical factors determine irrigation practices. Irrigation practices are defined according to the widely used Uphoff model (1986), who distinguishes four water use activities. These are:

1. **Acquisition** of water from surface or sub-surface sources (thus both canal and tubewell water) by creating and operating physical structures like dams, weirs or wells, or by actions to obtain some share of an existing supply for water users;
2. **Allocation** of water by assigning water rights to users, thereby determining who shall have access to water;
3. **Distribution** of water brought from the source among users at certain places, in certain amounts and at certain times; and
4. **Drainage** of water, where this is necessary to remove any excess supply.

Instead of regarding watercourse maintenance (and improvement) as a control structure activity, this study will regard it as a fifth water use activity. Maintenance and improvement on the watercourse level are regular activities to facilitate acquisition and distribution of water. This forms an inherent part of irrigation management activities. Less attention has been afforded to drainage activities, as farmers did not mention this as a problem during the fieldwork.

Social and physical factors that influence irrigation practices are dynamic in that these change in time and space. The irrigation system itself, the 'static' part, consists of different levels of canals, ranging from main canals, branch canals, distributaries, minors, watercourses and field channels. Physical factors that influence irrigation practices are, for example, soil quality, canal water quality, depth and quality of groundwater, topographical features like slope and distance from the watercourse to the field, but also climatic factors like evapotranspiration and rainfall, which change as seasons change.

Literature about social factors influencing the society and irrigation practices are divided into two components. One is the managerial component, whereby irrigation tasks are performed by people already organized in a specific way to manage the system. For example, effective watercourse cleaning requires that this activity is done within a certain time, and thus often needs some sort of collective action.

The second component is the social set-up in which irrigation activities are embedded. This can be the social structure of the society (ethnic groups, migration,

castes, the family system, the culture of cooperation and competition, etc.), the economic structure of society (e.g. water rates, the existence of developed water markets, the price farmers gain from higher or lower water-demanding (cash) crops), and the political structure (e.g. irrigation systems can be used by the government as a means to control farmers).

Factors are closely interwoven. The quality of groundwater (a physical factor), for example, can influence decision-making about which crops to grow (a managerial factor), and so can the existence of water markets (an economical factor). The existence of illegal, though institutionalized, payments to officials to obtain more water (a political factor) can influence equal water distribution (a managerial factor). Plurality of a community in an ethnic sense (a social factor) can prohibit the organization of collective action for watercourse maintenance (a managerial factor). These are only a few examples where physical and social factors interact with each other.

Figure 2.1 gives an overview of relationships between physical and social factors that influence water management practices. This research will mainly look at issues mentioned on the right side of the figure (i.e. farmers' response, water rights, and process) insofar they are related to tenure.

Furthermore, it should be realized that irrigation practices form part of a broader set-up of agricultural practices. In decision-making and task-division at the farm-level, irrigation is but one input for agricultural production. Other important, and just as influencing or constraining inputs, are labor, livestock, money, credit, and (modern) techniques, like tractors, pesticides and fertilizers, to name but a few. Farmers' access to all of these inputs can be a bottleneck for agricultural production, but access to water is definitely considered as one of the most important by both farmers and policy-makers in Punjab. Decision-making and execution of tasks in irrigation practices are not standing separately from decision-making and task-division on other farming activities. This should be kept in mind when addressing any irrigation management activities.

At this point, it can be seen that an irrigation system is influenced by social as well as physical factors, and that water management activities are embedded within the social, economic and political structures of society.

A study on irrigation practices from a sociological perspective should include the social 'dynamics' of the irrigation system. Who are those involved in different irrigation management activities, how these persons interact, which resources and strategies they employ in these interactions, and what are the outcomes of these strategies, are essential topics for investigation.

A conceptual framework for studying these dynamics is given by Mollinga's (1995) water control model. In fact, he writes about the control over the production factor

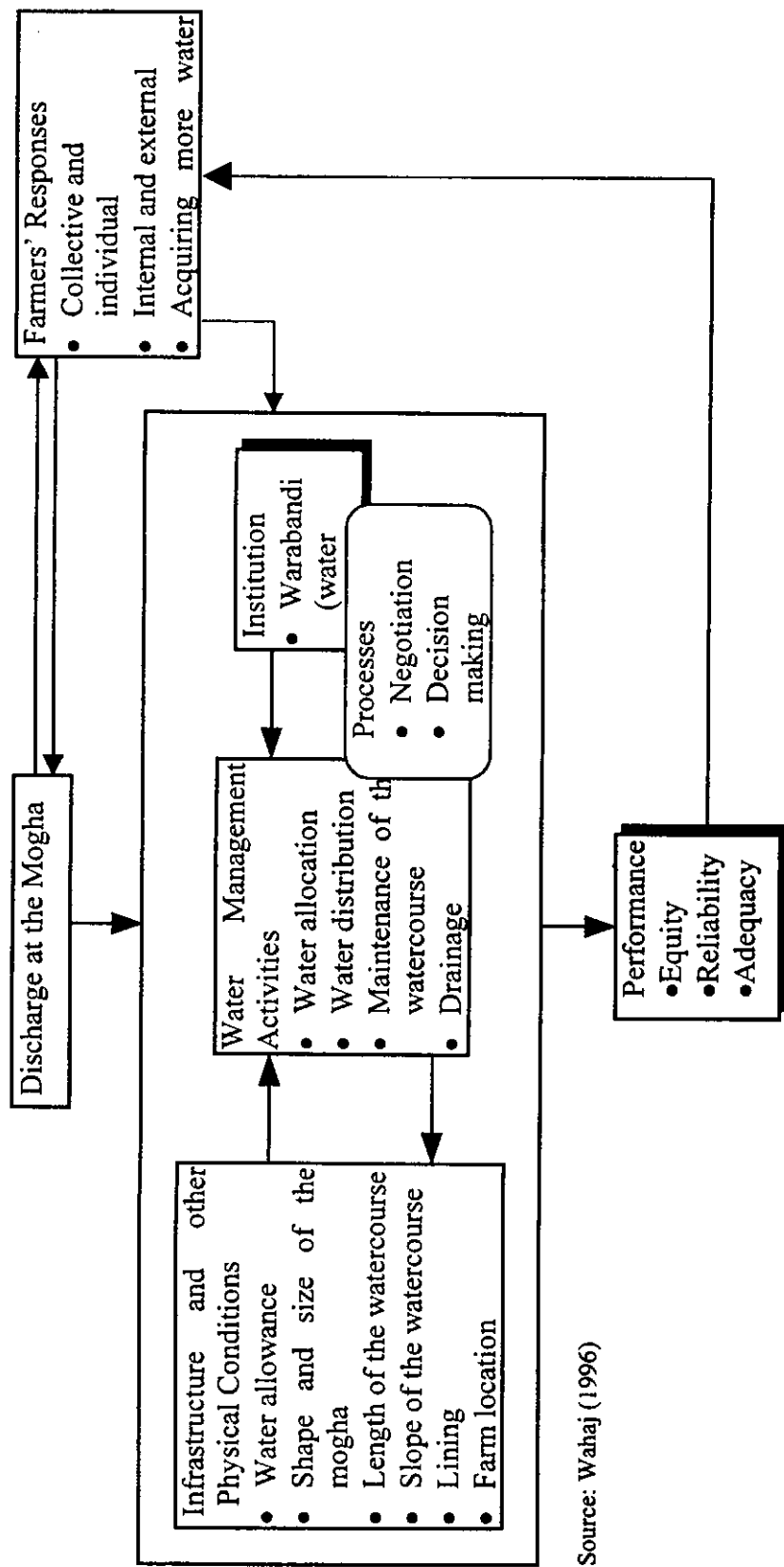


Figure 2.1. Inter-relatedness of issues below the mogha.

of water. He builds upon Long's (1989) interface approach when he describes water users as 'human beings who actively participate in the shaping of their world, in this case, the irrigation reality'.

This approach is, as Mollinga describes, building upon the concept of 'human agency'. Human agency means that people are *knowledgeable* and *capable* to act. Landowners and actual water users know the social, physical, economic and political possibilities and constraints of the irrigation system from their own experiences. They reflect upon these experiences and individually, or collectively, actively try to shape irrigation according to their own demands.

Around the organization and execution of irrigation activities, different *actors* (individuals, groups, organizations, etc.) can be identified, like water users, landlords, water users organizations, officials at all levels, etc.. In fact, a researcher is also an actor 'intruding' by collecting information about water management activities.

Different actors are identified according to their different interests and objectives. For example, in times of water scarcity, tail-end farmer may have different interests than farmers who have their fields at the head of the watercourse who are still getting enough water to irrigate their crops properly. An official who is responsible for equitable water distribution may be more interested in protecting his/ her position, rather than listening to farmers' complaints. To reach their aims and objectives, actors follow particular strategies. Irrigation Department officials, for example, can ask for bribes from farmers to facilitate giving them access to water, thereby reaching the objective of earning more money. Actors try to mobilize resources to pursue their interests. These resources can become economic capital (money) or social capital (using power, favorable relationships with higher officials). In this way, as Long calls it, '*interfaces*' are created where actors interact with each other. Interaction takes place in '*arenas*' where various actors try to create '*room for maneuver*'; mobilizing their resources to reach their own objectives.

For studying the way in which *de facto* water rights are constructed, the concept of legal pluralism will be used. Local water rights can be a body of customary norms, local norms and national legal norms. Landowners and tenants may have different perceptions of their rights to use water. Farmers may also use different institutions to establish their rights. For example, when there is a conflict over water rights, people can use traditional ways to solve conflicts of the village level, or they can go to court. The choice of the institution that may best represent actors' interests has been called 'forum shopping' (Benda-Beckmann *et al.*, 1997).

Concluding, tenancy is a social structure that influences irrigation practices in particular ways. Landowners and tenants, as different actors, might have different, or even conflicting, objectives. As water rights belong to landowners and not directly to tenants, this influences strategies that different actors employ to pursue their own interests. The differences in bargaining power, access to resources, and resource

mobilization of the different actors, influence decision-making and task-performance in irrigation management activities.

2.2. RESEARCH QUESTIONS

This report aims to find the implications of different tenancy contracts on water management activities. The main research question is: **How do tenancy relationships influence water management activities?**

To answer this question, a description of different tenancy relationships is a pre-requisite. In this way, the main research question is divided into two parts with the following sub-questions:

I. Description of Tenancy Relationships

- What kind of tenancy arrangements exist?
- How are tenancy arrangements negotiated between actors?
- How is decision-making authority arranged in the tenancy contract?
- How are the organization and the execution of water management tasks divided between the owner and the tenant?
- What motivates landowners and tenants to get involved in tenancy relationships?
- Does the duration of the tenancy contract affect the actors' interest in the organization and execution of water management activities?
- Do landowner preferences (e.g. wants his tenants to grow cash crops) influence decisions on water management?
- Which social factors (kinship, caste, power and authority) play a role in tenancy contracts?

II. Implications of Tenancy Contracts on Water Management Activities

- How do actual cultivators cope with a perceived lack of canal water?
- How do farmers create room for maneuver to shape water management activities according to their needs and desires?
- Who is involved in collective action to represent farmers' interests to officials?
- When, and between which actors, do conflicts over water rights, or water management activities, occur?
- How do landowners and tenants manage these conflicts?

2.3. METHOD AND TECHNIQUES

To answer these research questions, sociological field work has been conducted in three watercourse command areas. These watercourses are part of a sample of six watercourses selected from a Ph.D. research being undertaken by R. Wahaj on irrigation performance below the *mogha* (forthcoming). The three watercourses are:

- Watercourse Fordwah 67160 L;
- Watercourse Fordwah 84140 L; and
- Watercourse Mehmood 11860 TC.²

Hereafter, they will be called Fordwah 67, Fordwah 84 and Mehmood 118.

These watercourses were selected after analysis of data that were already collected for the Ph.D. research. The criteria for this selection were:

- Diversity in tenancy arrangements within the watercourse command area; and
- Diversity between the watercourses, with regards to relative importance of tenancy.

All three watercourses are part of perennial watercourse distribution systems. This means that the watercourses are supplied with water the whole year round (during *kharif* = summer season, and *rabi* = winter season). All three have a *pukka* (official) warabandi. This means that there is an official warabandi schedule, prepared by the Provincial Irrigation Department at the farmers' request, detailing a prescription of the timings allocated to each official landowner, in minutes, for canal irrigation.

To become familiar with the sample watercourses, Participatory Rural Appraisal (PRA) techniques were used, such as village mapping exercises and other important-ranking exercises, both at the village and watercourse levels.

This was followed up by five months' of field work, using semi-structured interviews as the main method for data collection. The field work was conducted with an interpreter and with the help of local field staff. Although interviews were designed to obtain both quantitative and qualitative information, the focus was on qualitative information. Two questionnaires formed the basis for interviewing landowners and cultivators (see Annex 1). Additional questions were asked whenever judged relevant or necessary.

For the quantitative part of the research, data analysis was done with the help of both a Statistical Package for Social Sciences (SPSS-PC+), and Kwalitan, a program for qualitative data analysis.

About 20 % of all the sample farmers were interviewed for the first questionnaire of the research (see Table 2.1). As a result of the lack of key informants in the first sample, more farmers were interviewed randomly for the second part of the research.

² The numbers stand for reduced distance from the outlet to the head of the distributary. 'L' stands for 'left', 'TC' stands for 'tail centre'. A command area served by a mogha off-taking through the left bank of the distributary, going downstream, are indicated by 'L' and a command area served by a mogha located on the right bank, by 'R'.

Table 2.1. Amount of Landowners and Farmers.

Watercourse	Total	Sample	Sample as % of Total
Fordwah 67	68	16	24
Fordwah 84	111	22	20
Mehmood 118	96	19	20
Total	275	57	21

criteria for obtaining a balanced sample were:

1. Interviewing poor as well as rich landowners and cultivators; and
2. The sample should be representative according to different tenancy strategies employed by landowners and cultivators.

In-depth interviews were held with farmers who talked openly and easily with their own experiences as reference points, and who follow different strategies (e.g. farmers who are owner-cultivators, rents out land, and are sharecropping themselves with other landowners).

3. DESCRIPTION OF THE SAMPLE WATERCOURSES

The sample watercourses are situated along two distributaries: Mahmood and Fordwah. (see Figure 3.1) These distributaries form, together with Azim Distributary, the tail branches of Fordwah Canal. Fordwah consists of 88 watercourses, and Mahmood only 7. A characteristic of Fordwah Distributary is that the tail is almost always dry, while Mahmood's tail always has water, and often has excess water. In this section, the sample watercourses will be shortly introduced. Their physical and sociological set-up will be briefly discussed (see Table 3.1 for an overview).

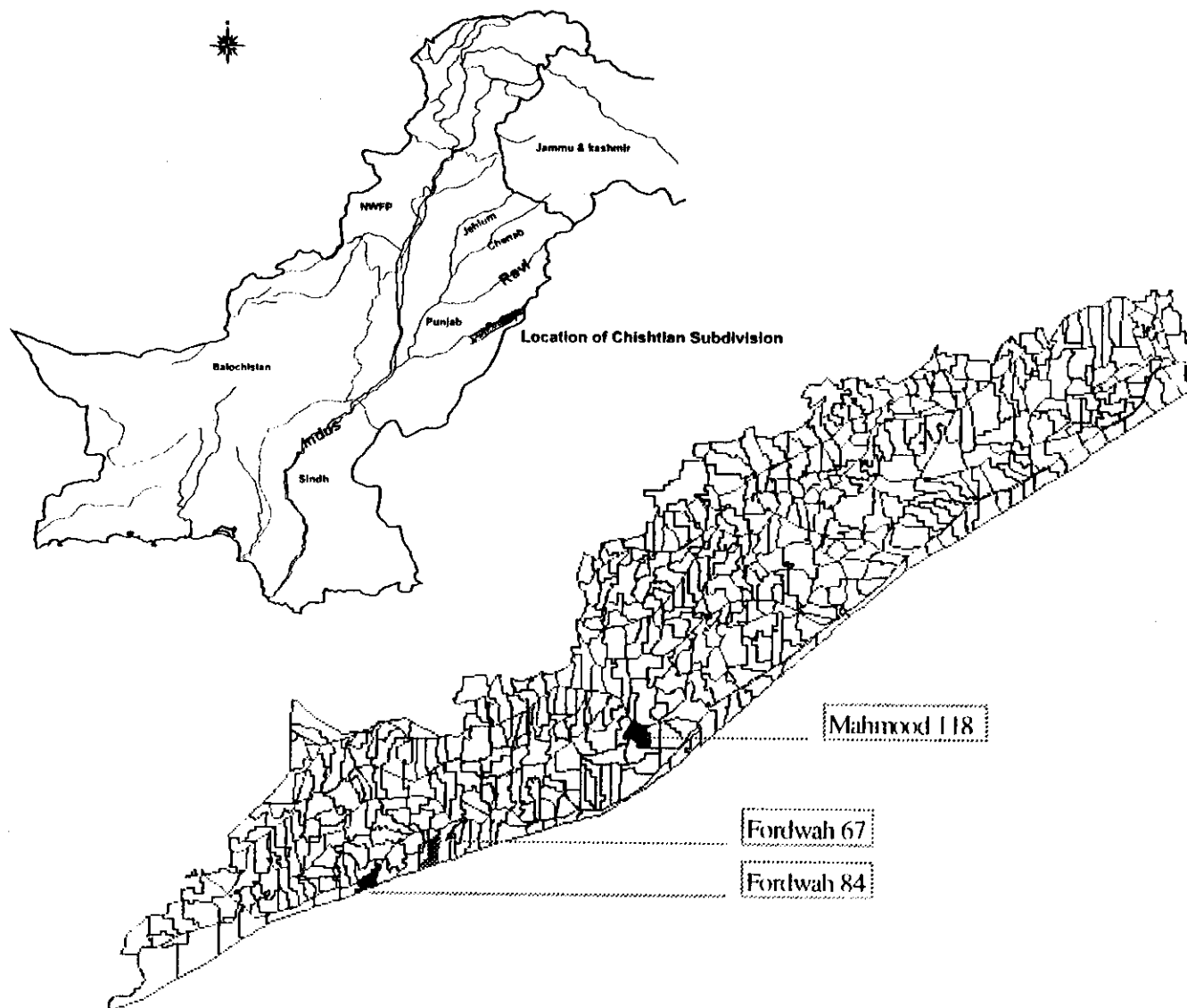


Figure 3.1. Location of Sample Watercourses in Chishtian Sub-division of the Fordwah/Eastern Sidiqia Irrigation System

Table 3.1 Overview of Features of Sample Watercourses.

Watercourse	Canal water supply	Tubewell density per acre	Tubewell density per cultivator	Canal water allocation	#Land-owners	% Non-cultivating landowners
Fordwah 67	Above average	9.14	.37	As agreed upon warabandi	44	52
Fordwah 84	Below average	19.17	.48	Most less than agreed-upon warabandi (15% gets more than 20%)	88	69
Mehmood 118	Above average	2.67	.07	More than agreed upon warabandi	77	27

3.1. WATERCOURSE FORDWAH 67160 L

Fordwah 67 (abbreviation for 67160) is a 1950 m-long watercourse, almost completely lined. Compared with other watercourses in the Chistnian Sub-division, it has an above-average canal water supply, and an above-average density of tubewells. Most farmers get canal water (on time) according to the agreed-upon warabandi.

There are 44 landowners in this watercourse, and 23 out of the 44 (52 %) are not cultivating themselves. There are 46 cultivators, of whom 24 % are renting land and 43 % are sharecropping. An important feature of this watercourse is that there is one landowner who owns about 3 squares (150 acres) of land, and is considered to be an important person for the welfare of the watercourse. About 30 % of the cultivators (both owner-cum-cultivators and tenants) have off-farm employment besides their agricultural activities.

The main castes in this watercourse are Arain and Khokhar. Arain is the geographic and socio-economic dominant (i.e. land-owning) caste, while Khokhar is the biggest group of tenants in this watercourse. (see Figure 3.2)

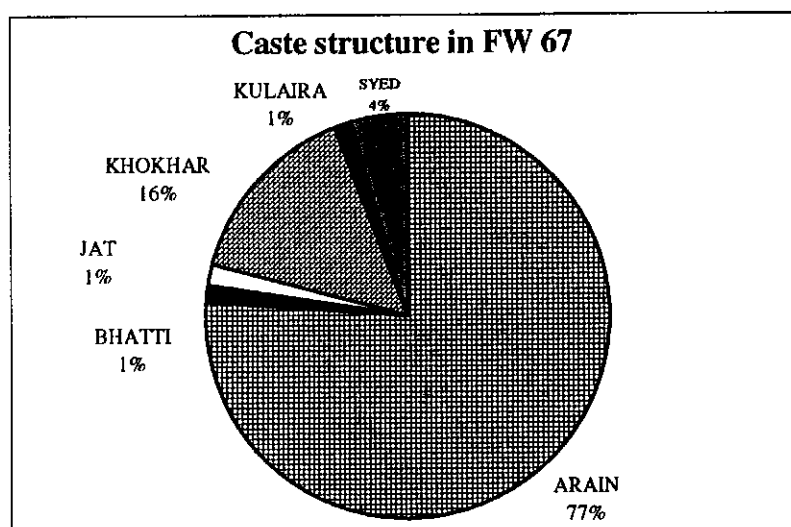


Figure 3.2. Caste Structure of Fordwah 67.

3.2. WATERCOURSE FORDWAH 84140 L

Fordwah 84 is a 2730 m-long watercourse, and compared with the density of tubewells in other watercourses in the Chistnian Sub-division, has a below-average canal water supply. Many farmers receive somewhat less water than in the agreed warabandi. At the same time, 15 % of the farmers get more than 20% more water than in the official or *pukka* warabandi. About half of the farmers have a tubewell available.

There are 88 landowners in this watercourse (of whom 5 are female), but a high percentage (69 %) are absentee or non-cultivating. There are only 49 cultivators in this watercourse, so many cultivators have different plots and different landowners. Of these, 32 % is renting in land, while 56 % are sharecropping. About 15 % of the landowners have a job outside agriculture. Among those farmers who are owner-cum-cultivators, only 10 % combine cultivation with another job, but for tenants, this is 46 %.

The main castes in this watercourse are Lobana (Gujar sub-caste) and Arain (see Figure 3.3) Together, they form 84 % of the landowners and cultivators of this watercourse. Most Arains have land on the right branch of the watercourse, while the Lobana *baraderi* has land on the left branch of the watercourse.

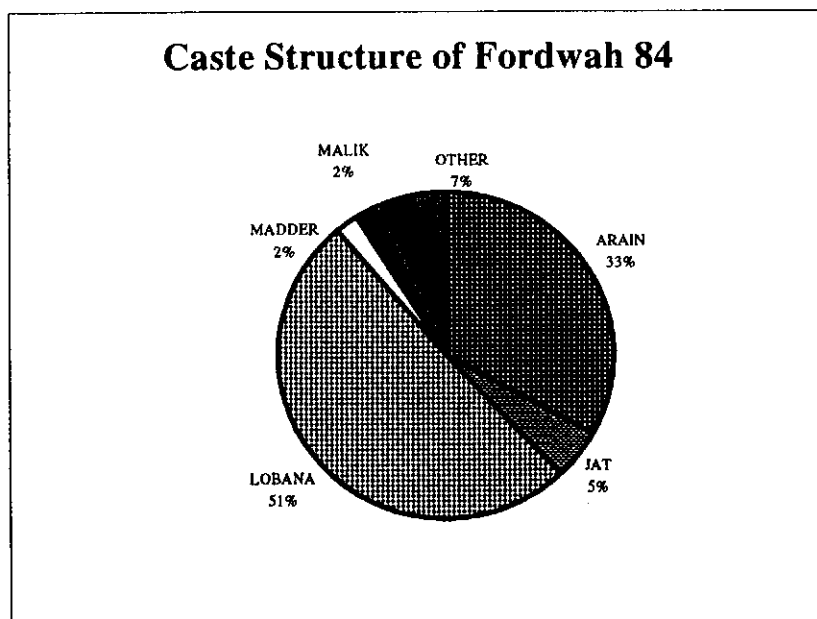


Figure 3.3. Caste Structure Of Fordwah 84.

3.3. WATERCOURSE MEHMOOD 11860 TC.

This watercourse is 2798 meters long. All cultivators in the watercourse command area get slightly more time for irrigation than the agreed-upon warabandi.

There are 77 cultivators and 75 landowners according to the warabandi list. Most landowners are cultivating their own land. Only 35 % give (part of) their land under tenancy contracts. Of the actual cultivators, only 18 % are renting in land, and 20 % are sharecropping. There are only seven tubewells in the whole watercourse command area. Compared with the other two watercourses, only a few cultivators (9 %) are dependent on off-farm employment as a source of income. From the owner-cum-cultivators, 16 % have an extra source of income.

Compared with the other two sample watercourses, the social structure is very diverse in Mehmood 118 (see Figure 3.4). There is no important main caste; the biggest castes are Joiya-Sukaral, Joiya-Lekhwaira, Kulaira and Bhatti, but these castes, together, still form only 64 % of the total population of landowners and cultivators.

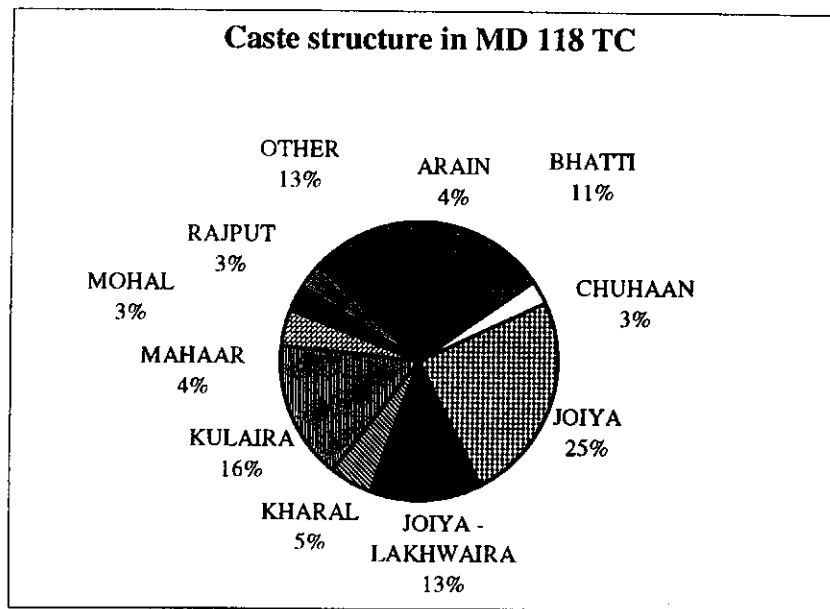


Figure 3.4. Caste Structure Of Mehmood 118.

4. HISTORY OF THE WATERCOURSES AND THE TENANCY SYSTEM

This section introduces the three sample watercourses - Fordwah 67, Fordwah 84 and Mehmood 118, and describes their situations before and after Partition in 1947, when Sikhs and Hindus were forced to leave Pakistan and move to India, and when Muslims came from India to Pakistan. This change had drastic consequences for the social structure in the rural areas, and for tenancy relationships and cultural practices.

4.1 WATERCOURSE FORDWAH 67

The cultivators of this watercourse are mainly living in *deras* (i.e. houses dispersed over the watercourse command area, unlike a village where houses are grouped). There are a few *bastis* where about 20 households are living. The biggest, in the middle of the watercourse, is *Chak* 12 Kahlian Wala. Kahli was the name of a Sikh, the founder of this *basti*. Nowadays, this is basically the place where Arains are residing. At the head of the *mogha*, another important *basti* can be found, known as Khokhar Wala. Officially, this is still part of *Chak* 12. Here, people from the Khokhar *baraderi* are living. Originally, it had been government land, but as part of Z.A. Bhutto's 1972 Land Reform Act, a 5 *marla* scheme was launched for landless farmers to build their houses on. In this way, the land was allotted to Khokhar.

The history of this area goes back to before Partition. Especially older Khokhar people still remember that time. They say that most of the area was free bushland about 60 years ago, where they raised their cattle, living a semi-nomadic life as pastoralists. Following the rain, they moved from place to place with the cattle, but their residences were permanent. A household owning 60 buffalo and 100 cows was not exceptional at that time.

Then, land was already being cultivated, but most of the land was barren, and cropland was dependent on rain and wells at the time. The houses were not grouped as these are now, but scattered over the whole region, quite far from each other.

Before Partition, Sikhs were the main cultivators in the area. The land from this watercourse belonged to one man, Kishen Sikh Kahli (the founder of the *basti*), who cultivated part of the land with his three sons. Whenever he came across an empty patch of land, he would start cultivating there. In other places, Sikhs also sharecropped out land (e.g. in Fordwah 84). This Sikh was popular for his helpfulness to other people; for example, in times of food scarcity. Cattle owners used to graze their cattle on his land, while taking care that the cattle did not spoil the crops.

Khokhar never obtained land before Partition, although some were offered land against installment payments when the irrigation system was first introduced. But, for most cattle owners, bushland did not have financial value at the time. The following example, told by a resident Khokhar is very illustrative:

Before Partition, the British, allotted 7 squares (175 acres) of land to my grandfather, who wrote a letter to the department stating that he did not need the land.

After Partition, the land of Sikh Kahli was divided among Muslim newcomers from India, or *Muhajirs*, who could get land on claim from 1947 to 1962. Slowly and gradually, the area became populated, and with this process, more land came under cultivation, thus, the tenancy system developed. The older people in Khokhar say they were happy with those changes because the newcomers were Muslim brothers, and the improved irrigation system relieved problems related to water deficiency. Since that time, many cattle owners started cultivation as tenants. Thanks to the manure from their cattle, they were able to convert barren land into fertile land.

Rooted in the historical process next to the division of land after Partition, there is another pattern in this watercourse which influences landholding and tenancy relationships. This is the relationship between big landlords and their tenants.

Two big landlords have land in the watercourse command area. One is from a big landowning family in the area who owns 250 acres of land in different watercourses. His case displays the traditional landowner-sharecropper relationship clearly.

The Syed family originally obtained land in the area in the 17th or 18th century. A forefather, Zaman Shah, was married with a daughter of a Kasi (i.e. Chief Justice) who was appointed by the Nawab (i.e. king; in this area not the British government, but the Nawab, reigned) of Bahawalpur Division. That Kasi was very rich, and his daughter inherited his fortune. The Syed family purchased an additional 100 to 200 squares from different people (mostly small farmers). Land was mostly barren at the time because of the lack of irrigation. People owned many cattle in those days. The grandfather of the present landlord had a lot of cattle (sheep, buffaloes). He sold some buffaloes and purchased more land (about 200 squares or more), and, when he died, owned 300 squares which had been divided into 100 squares each among himself and two brothers. After the Islam Barrage had been constructed, they were requested to move to elsewhere, but they refused. Part of the land of one of these brothers was flooded as a result.

His sons remained big landowners in the area, and they are still remembered by locals. Some of their former *kammis* still living in the area say that they invited landless people to settle on their land, and to build houses for themselves in the fields. The tenants did not only cultivate for them for half of the yield, but were also their servants or *kammis*. For example, they had to carry bricks and cement and build their houses also. The sharecroppers' women often worked in their houses.

The traditional landlord-*kammi* relationship is no longer very common, as sharecroppers object. Z.A. Bhutto had prohibited the utilization of free sharecropper labor by law (Nabi *et al.*, 1986).

Nevertheless, most big landowning families still use their cultivators to perform personal services for them. This family's present generation also has families living on their land in houses which they provide, and in return, the tenants carry bricks and build houses for them, just like in the past. Most landlords' *kammis* have been quite poor for generations, and their forefathers, often, were also *kammis*. They realize this unfair practice is not according to normal sharecropping rules currently being enforced. One reason, however, why *kammis* tolerate this situation, might be that by sharecropping for a big landlord, they get the opportunity to cultivate a fairly big amount of land (about 10 to 25 acres), and, in return for their loyalty, they benefit from the protection that the landowner provides.

To relieve the situation of landless cultivators, a land scheme was implemented after Z.A. Bhutto's 1972 Land Reform Act. The aim of the Land Reform was to break the power of absentee landlords, and to improve the position of the landless tenants and small landowners. However, the amount of land owned by big landlords in Punjab that was redistributed, was less than 1 % (Nabi *et al.*, 1986:59). Landlords, thus, maintained their status and their power during this period. The benefit for some landless tenants was the acquisition of 5 *marla* plots of government land on which to build their houses. This is how Khokhar Wala was created.

There is another big landowner in this watercourse command area these days. Unlike the Syeds, who are local landlords, his family is Arain, and came to Pakistan with Partition and settled in Faisalabad. His father bought about 3 squares of land in this watercourse; from a *numberdar*. Like any traditional landowner, he has his *kammis*, who live in a separate part of his *dera*. Most of them are from his hometown, Faisalabad. His tenants have a very positive attitude towards him and his wife; the landlord is considered to be a good man, as he is never harsh with them. He is helpful and his (ex) tenants are always welcome to visit them in their home. He has very little involvement in practical agriculture. As long as his tenants work hard, they can also make most of the decisions at their own discretion.

In different ways, this landlord is also an important person at the village and watercourse levels:

- He extended financial assistance to build the *katcha* road leading from his *dera* to the main Hasilpur Road;
- He helps to solve problems at the village and watercourse levels. Most times, when meetings, or even an informal *Panchayat*, are called, these are held in his *dera*;
- He mediates with Irrigation Department officials when farmers of this watercourse request him to. His, and one or two others', political affiliation with the People's Party, makes representation of farmers' interests to higher political levels much easier; and
- In response to the continuing lack of water and the irregularity in water supply, he initiated a tubewell scheme by installing a few tubewells on his fields.

Taking him as a role model, more and more farmers started installing tubewells.

Throughout the watercourse, farmers, especially sharecroppers, give examples of big landowners who violate the unwritten tenancy contract rules. The worst examples they give are from powerful landlords on Azim Distributary. The stories farmers hear about them has reinforced their consciousness about equal and fair landowner-tenant relationships. The big landlord currently in this watercourse is observed to use his power positively, even though a few petty conflicts between him and other farmers in the command area exist. Besides doing much for the watercourse by way of stimulating agricultural development, he also helps people on a personal basis.

In conclusion, the social structure of this watercourse displays a clear pattern of landless cultivators, mainly Khokhar; small farmers, mainly migrated Arain; and big landlords. Traditional local landlords have largely maintained their landholdings and status, while the local castes formerly specializing in cattle, are largely still landless. The Arains who migrated from India to Pakistan obtained, almost without exception, land on claim against land that they had in India.

4.2. WATERCOURSE FORDWAH 84

Most of the farmers from the Fordwah 84 watercourse live in two villages, *Chak* 16 Fordwah, Tumber Pan, and *Chak* 60 / 61 Fateh. There are hardly any *deras* in the watercourse command area because these two villages are near to the command area.

The two main castes in the watercourse are Lobana (a Gujar sub-caste) and Arain. The Lobana families are all related to each other and have all migrated during Partition from Bikaner State in India. They are cultivating land on the left branch of the watercourse, while Arain are cultivating on the right. The watercourse is unlined.

4.2.1 Locals

About ten years before Partition, the British government offered people the opportunity to purchase land on this watercourse on installments, along both Fateh Canal and Fordwah Distributary. As the irrigation system was already established at the time, conditions to cultivate land became more attractive. Local Arain, agriculturists by caste profession, availed the opportunity to cultivate as they could easily acquire 1 or 2 squares (25 to 50 acres) of land. The same option was offered to cattle owners, but many refused, because for them, cattle farming remained more lucrative.

Locals currently cultivating land in the command area partly lived along other watercourses before. One reason they chose to move to Fordwah 84 for cultivation purposes is because the soil in the previous watercourse became totally waterlogged and saline. Another reason was the floods. Around the time when irrigation systems were only just introduced, Sir Malcolm Darling (1925), in his book, "*The Punjab Peasant*",

describes the dominating insecurity farmers are subjected to. He wrote that cultivation was a 'gamble which frequently ends in the losses of half the crops' due to rainfall, and when a riverbank bursts, frequently whole villages, including crops and cattle, were swept away by the summer floods of the Sutlej and other rivers.

Some of these people first started cultivating as tenants when they lost all their land, simultaneously seeking protection from big landowners. Others built their houses on government land illegally, and those living here now have also built their houses without permission. This means that they could be evicted at any time, as almost happened at the end of Benazir Bhutto's rule. They are mainly landless cultivators and laborers, and some cultivate as sharecroppers (for 25 % and 50 %) in the watercourse command area.

Due to the rainfall, and in conjunction with summer floods, agricultural insecurity used to be merely climatic (Darling 1925). The insecurity still exists, albeit it being more political. The Sutlej River was tamed when irrigation practices were initiated in 1883 (Nasir 1993), but canal water supply remains an unpredictable factor for farmers.

4.2.2. *Muhajirs from India*

At the time of Partition, there was no irrigation canal in Fordwah 84 yet. Wells were used for irrigation, and people built their *deras* next to these wells. Many people who come to this watercourse have their own land in different places. For example, the Lobana *baraderi* were allotted land here by the Tehsildar, but this was less than equivalent to their claim in India. After a few years, they acquired more land in Bahawalnagar, Faisalabad and Sherfarid. The division of holdings by inheritance resulted in many families owning small plots of land in various locations. Some families who migrated from India were allotted land in another watercourse downstream, but moved to this watercourse instead, as canal water deficiency in the tail of the distributary hampered their irrigation practices. Other families have bought extra land (e.g. from a family member who found a job outside agriculture) in nearby watercourses.

People who migrated from India to Pakistan, and who had land in India, could go to the Tehsildar and claim land in Pakistan. This was achieved through a unit system. Every family who applied was allotted land according to an amount of units. Each acre of land in India got units according to the following characteristics:

- Land where well water was available, was worth 52 units;
- Land with water or irrigation available for 12 months, was worth 38 units;
- Land where water was available for six months, was worth 28 units; and
- Rainfed or *barani* land was worth 9 units per acre.

People from the same *baraderi* were often allotted land in the same watercourse. This explains why there are an abundance of Lobana and Arain in Fordwah 84, and also

some Rajput, who acquired land on claim in a nearby village. They divided their land per family head. Likewise, there many Joiya in Mehmood 118, and Arain in Fordwah 67.

Not all *Muhajirs* claimed land, although their families owned land in India. The data from these sample watercourses suggest that about 10 % of the migrated families did not get land on claim. The two reasons they give are:

As the family was illiterate, they did not know how to apply, or where to issue the claim; and

Another reason is that illiterate families asked others to apply on their behalves, but those people transferred the land to themselves, so their claims were wasted. During Ayub Khan's government, a date in 1962 was set as the cut-off for people to claim land. Mostly, *Muhajir* cultivators who did not get land on claim are sharecroppers and laborers now.

Whereas, before Partition, sharecropping was the common tenancy practice. Just before Partition, a new tenancy arrangement developed - leasing contracts. As so much land was still barren or uncultivated, people allowed others to cultivate their land without taking money from them. Leasing started with a few farmers who charged rents of between Rs 50 and Rs 100 per acre. After Partition, leasing gradually increased in importance.

Market-oriented production also developed after Partition, with the cultivation of cash crops such as wheat, grams, sugarcane, *desi* cotton, mustard and some vegetables. Shopkeepers acted as middlemen or agents for the grain market; they visited farmers in their homes to ask them to sell their yields to them. In the beginning, very few farmers sold products to the grain market, whereas nowadays, crops grown in *kharif* season are primarily cash crops. Before Partition, agricultural production was mainly for domestic consumption, but after Partition, people started cultivating cash crops and the cropping pattern intensified.

4.3. WATERCOURSE MEHMOOD 118

Mainly locals reside near the head of Mehmood Distributary. The tail, thus, also in Mehmood 118 TC, has mainly migrants from India, *Muhajirs*, inhabiting the land. Most people in this watercourse are *Muhajirs*, and almost all of them had claimed land. Compared with the other watercourses, less tenancy arrangements exist there.

Some farmers along this watercourse live in *deras* in the field, but most live in *Chak* 6 Fordwah, Rumi Wala. Villagers divide Rumi Wala into three parts - 'the old village', 'the new village' (by registration, this is the official village) and Sikhs, where mostly Arains reside.

Besides not being leveled, the land was barren and inundated with sand ridges before Partition. Sikhs owned the land then, and until 1957, only a few people lived in the command area. Rumi Wala was government land reserved for village space after the construction of the distributary. The first people who settled here were Joiya-Lekhwaira. Most *Muhajir* who live here are Joiya, who occupied government land from the time of Partition until 1949. That year, the government allotted land to the whole *baraderi* and Patwari in this watercourse, and they moved to what is known as Rumi Wala.

Normally, *Muhajirs* did not pay money for land they claimed. They just filled out the forms and requested land from the *Tehsildar* and Patwari. Sometimes, they occupied plots of land before it was officially allotted to them. However, in some cases, people did pay money to get land allotted to them through bribery or middlemen. A man from a nearby watercourse, known to be a master in purchasing claims from other people, told people he would provide them with a claim if they paid him Rs 100 per *kila*. Informants from this watercourse told the following two stories which adequately illustrate that money was sometimes paid to claim land.

1. During the British rule in India, I [caste: Maher] had 70 *kila* of land. They asked us to cultivate *barani* land, which is how we acquired the 70 *kila*. We had to pay taxes [fees and installments] to the British. Here in Pakistan, people who opted for bribes got a lot of land. When we arrived here, I was only allotted 6 *kila* of land, which was mainly barren or bushland with grasses and weeds. Some crops grew here and there, and there were some wells for irrigation. Canal water was also available at that time.
2. My maternal grandfather possessed land in India, but rented it out. Against that claim, we got land here in Pakistan on installments. In 1955 or 1956, we had to pay money to the government for that land. It was very difficult to pay this, as the land became very expensive.

Although most land was barren or fallow before Partition, the arrival of many people in the area resulted in more land coming under agricultural production. Many farmers were sharecroppers then, and leasing contracts started with a very few people leasing out land to others. The rent rate was as low as Rs 50 per acre in the beginning, but the selling rate for good land where canal water was available increased to Rs 1,000 to Rs 1,200 per acre during Partition. Where the quality of the soil was weak, the rent was half as much compared with land where canal water was lacking. When a sugar mill started operating in the area, people started cultivating sugarcane as a cash crop, selling the yield to the mill, and earning a lot of money in the process. This caused a rapid increase in the value of land between 1960 and 1970, but the rent rate also increased to between Rs 3,000 and Rs 4,000 per acre.

The majority of the people living in this command area claimed land after migrating from India, and most also cultivate. Compared with the other two watercourse

command areas, less landless cultivators settle there, and tenancy arrangements play a less important role.

Differences in social structures in these three watercourses influence the way tenancy arrangements are made. Many local inhabitants, especially cattle owners of low caste, still do not have their own land. As they shared common land prior to Partition, this held little financial value. After Partition, however, they could not claim land as local inhabitants. Where they are involved in agriculture, it is often as sharecroppers or wage laborers. *Muhajirs* mostly have their own land, but not necessarily along the same watercourse. They either lease or sharecrop out part of the land, or they lease or sharecrop extra land in. Big landowners, as in traditional feudal relationships, can still use their holdings as a source of wealth and power. They have the potential to be useful for representing farmers' interests to higher officials when not absent.

5. DESCRIPTION OF PRESENT TENANCY RELATIONSHIPS

This section takes a glimpse at different ways in which tenancy contracts are made, as well as its various terms and conditions. Both varieties and similarities within contract terms and conditions, will be discussed. These reflect the extent to which unofficial or unwritten norms and rules govern tenancy contracts. Decision-making and task-division arrangements, especially, are considered, as these are important to enable water management activities. Also, differences in landowners' and tenants' motivations are discussed, mainly to pinpoint the parties' primary objectives. Landowners and tenants, both, need to reap certain benefits from the contract before they even become involved.

5.1 FAMILY STRUCTURE

Before tenancy relationships are described, it should be clear that tenancy relationships are embedded within the broader social set-up of Punjabi society. One of the most salient features of rural Punjab, is the way in which *baraderis* and households are organized. When cultivators take, or give, land on lease or sharecropping, they almost never take this decision in their own interest; the interests of the whole family are involved.

The most common farming practice is a (group of) son(s) cultivating the land, with the father helping or supervising. About 50 % of the sample households cultivate according to this practice. Most farmers cultivate with help from their sons. This can mean that either the 'official' cultivator, or the father, takes regular help from his son(s), or that he hands the land's daily management over to his son(s) completely. Mostly, in the latter instance, the father has retired from agriculture, but has not divided the land yet, or only partly. Often, he remains the supervisor, taking major decisions and advising his son(s). The eldest son might inherit supervision tasks once the father is no longer able to, but this also depends on whether the father wants to supervise his sons closely, or leave the management to them while he occupies his time cutting fodder and grazing cattle.

People also opt to cultivate land in common with their brothers (e.g. after the land is divided through inheritance), or with a nephew or an uncle (29 %), or alone (21 %). The last case frequently happens to households where there are no family members to handle cultivation activities in the watercourse command area.

Of the sample farmer households, 52 % are nuclear families, thus, a man, a woman and their children living together in one compound. The other 48 % form part of joint households. This means that parents live with their married sons and their families in extended environments. In only a few households (13 %), brothers remain living together after their parents have passed away.

Nuclear families tend to lease or sharecrop land out more often than joint families, because less male labor is available. Likewise, comparative to nuclear families, joint

families more often lease and sharecrop extra land in. However, differences are not statistically significant, as the amount of adult men in a family is negatively associated with leasing or sharecropping land out. When there are more than three men in the family, less chance exists for households to lease or sharecrop land out. However, neither adult men in the family, nor in the household, are being considered. So, interestingly, the amount of adult men in the family explains labor availability better than the amount of men in the single household.

With the social structure in which tenancy relationships are embedded in mind, the present tenancy relationships will now be described.

5.2 CLASSIFICATION

Out of 57 sample farmers, 47 (82 %) are somehow involved in one or more tenancy arrangements. Twenty eight informants are involved in sharecropping as a landowner or a cultivator, and 30 in renting.

According to jurisdiction, three different landowner-tenant relationships (interview with a lawyer dd. 07-08-97) exist. One is sharecropping, where the tenant and landowner have a 50 % share in production. The second is leasing, in which case the cultivator pays a fixed price for a certain time to use the land. Shareholding, the third, is when a permanent laborer provides manual labor for 1/5th or 1/10th of the yield, and normally refrains from investing in land or crops.

Table 5.1. Classification of cultivators.

Tenancy type	Costs inputs (%)	Labour input (%)	Yield (%)
Owner-cum-cultivator	100	100	100
Lessee	100	100	100
Sharecropper 50 %	50	100	50
Sharecropper < 50 %	25 to 0	100	< 50
(Permanent wage labourer	0	100	0)

This study follows a similar classification (see Table 5.1), and is convenient for reference because it runs parallel with the cultivator's socio-economic status. Landowners have a higher status than non-landowners. People who can afford to rent land (as the rent often has to be paid in cash and in advance) have a higher status than people who sharecrop land. Often, sharecroppers simply do not have the means to rent land, thus, work for a landowner for a share in the yield. Permanent-waged laborers have a low status, and do not have the means to start businesses or bear cultivation costs. The same applies to sharecroppers, who constitute less than 50 % (mostly 25 % or 12.5 %).

Next to socio-economic status, this classification also shows a clear commonality with decision-making power over natural resources. Owner-cum-cultivators can do whatever they like with the land and its water rights, because it is (or will be through inheritance) their property. Renters can make all decisions pertaining to land and water management activities, as, once they have paid the rent, the land is theirs for the contract period.

Sharecroppers, for 50 %, mostly confer with landowners about which crops to grow, when to irrigate or apply fertilizer, etc., but the landowner can still make the final decisions. Thus, compared with lessees, sharecroppers have less decision-making power. Sharecroppers, for 25 % or less, have little to say about the land, as what to do, and when, is decided for them. In fact, this category can be viewed as permanent laborers, paid in part of the yield rather than money. For manual labor, permanent waged laborers, with no decision-making powers at all, are hired (e.g. when a high labor-demanding crop is grown).

There is no simple way to categorize people involved in tenancy into landowners, lessees and sharecroppers. The description is a simplification of the actual situation. A whole range of possible combinations exist. For example, people who cultivate their own land (owner-cum-cultivators) might lease and / or sharecrop in more land, whereas landowners, while cultivating certain parts of their land themselves, might rent or sharecrop part of their land out. Landowners might even rent out their own land while sharecropping or renting in other land in the next watercourse.

Combinations found among sample farmers (i.e. OC = owner-cum-cultivator, OL = leasing out land; OT = sharecropping out land; L = leasing in land; and, T = leasing in land) follow.

OC	OC/L	OC/L/T	OC/OL	OC/OL/OT	OC/OL/L
OC/OL/L/T	OC/OT	OC/T	OL	OL/L	OL/L/T
OL/OT	OL/OT/T	OL/T	OT	L	T
T/L					

Note that these combinations are the sum of contracts an individual farmer can possibly have in different watercourses. For example, a farmer who is a landowner in more than one watercourse might lease land out in one watercourse, cultivate his own land in another watercourse, and lease in extra land in the sample watercourse (OC/OL/L).

The six categories distinguished are:

- I Owner-cum-cultivators;
- II Owner-cum-tenants (owner-cum-cultivators who are also sharecropping or renting land in);
- III Owner-cum-cultivators who sharecrop or rent part of their land out;

- IV Landowners who sharecrop or rent out all of their land;
- V Landless cultivators who sharecrop or rent land in; and
- VI Mixed strategy.

- In category I are landowners who neither rent nor sharecrop land in or out. They are dependent on their own fields and are not involved in tenancy contracts.
- Farmers in category II are owner-cultivators who seek extra land to cultivate; either by renting land, sharecropping land, or both (OC/L, OC/L/T, and OC/T).
- Category III details owner-cultivator farmers who have more land than they can, or want, to cultivate, and sharecrop or rent part of their land out, while they continue to cultivate themselves (OC/OL, OC/OL/OT, and OC/OT).
- The IVth category consists of landowners who no longer cultivate themselves. Not everyone in this category is an absentee landlord. Some have found (good) jobs outside agriculture, and simply no longer have time for cultivation. Others merely collect the rent and remain at home. These landowners are also no longer involved in agricultural activities (OL, OT and OL/OT).
- Category V is a group of landless farmers who are involved in agriculture because of tenancy relationships with one or more landowners.
- The last, somewhat vague, category VI, consists of people who both rent land in and out, or rent out their own land, and sharecrop another plot. The ratio behind these strategies differs per individual.

Within these combinations, socio-economic status and decision-making power over natural resources, like land and water, cease to run parallel with each other. Suppose that a well-to-do landowner sharecrops in more land from a poorer landowner; thus, the tenant has a higher status than the landowner. The tenant automatically has more bargaining power, and is likely to obtain more favorable terms and conditions, as well as above-average decision-making power. The tenant may also share equal socio-economic status with the landowner, in which case sharecropping becomes a sort of joint cultivation practice. In renting, contract differences in socio-economic status do not play such a big role.

Table 5.2 shows that 31 % of the sample cultivators own land outside the watercourse command area. Fordwah 84, with 41 %, could be an exceptional case. The whole Lobana *baraderi* cultivating in this watercourse command area acquired plots of land in different places after Partition; so many of them have land outside the watercourse. In the other two watercourses, still 20 % of the cultivators own land outside the watercourse. People may follow different strategies in different watercourse command areas.

For example, if the land in one watercourse is very weak and sandy, it would be rational to find a better quality of land on share, or lease in another watercourse. When a landowner does not live nearby his land, he might lease land in nearby that watercourse.

Therefore, 31 % of the sample cultivators within the sample watercourse command area are not solely dependent on the land he owns or cultivates.

Table 5.2. Landowning status in and out of the watercourse command area of sample farmers in percentage (n = 57).

Watercourse	Landless farmers	Landowners in command	Landowners in + out of command	Landowners out of command
Fordwah 67	31	50	19	0
Fordwah 84	14	36	41	9
Mehmood 118	26	53	21	0
Average	23	46	28	3.5

Purely the watercourse level, thus, excluding land that people own or cultivate outside the watercourse, categories are divided into an owner level and a cultivator level. The categories in the cultivator level are especially important, as these run parallel with different water management strategies, as will be pointed out in Section 6.

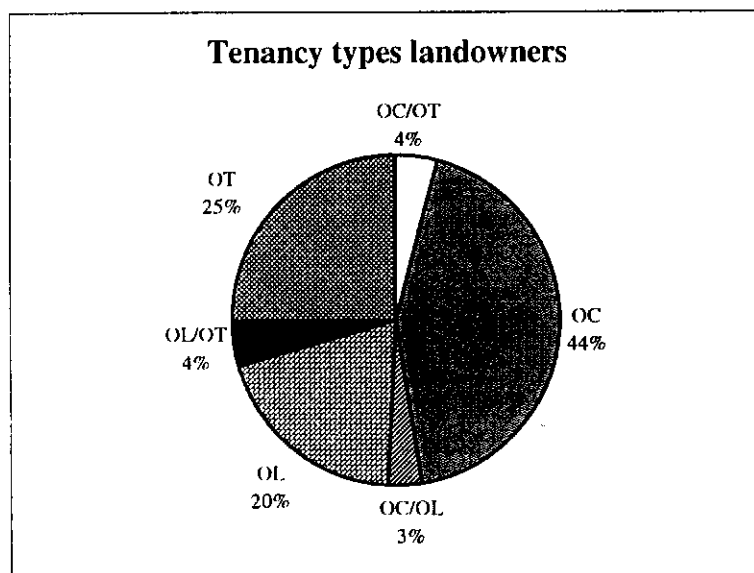


Figure 5.1. Tenancy status of landowners (N = 209).

Forty-nine percent of the landowners in the sample watercourses are not cultivating their own land (see Figure 5.1). This means that they are either absentee landowners, or still living in their villages, but lease out all of their land. Twenty percent of the sample landowners are leasing all of their land out, so 20 % have lost complete involvement in agriculture. A slight preference for sharecropping seems prevalent. Another 7 % of the landowners are only partially leasing or sharecropping their land out.

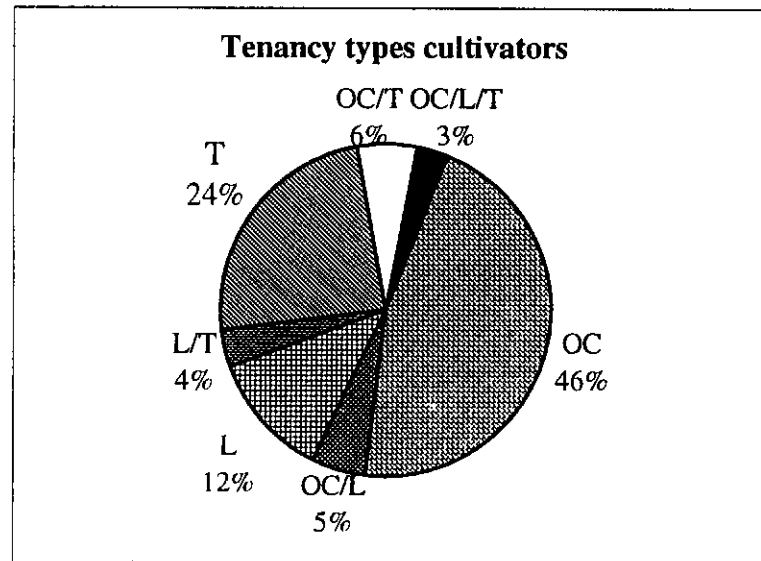


Figure 5.2. Tenancy status of cultivators (N=49).

Figure 5.2 shows that of all cultivators in the three sample watercourses, 60% are owner-cum-cultivators. Of this 60 %, 24 % are owner-cum-tenants, who are leasing or sharecropping extra land in. Fifty-four percent of the cultivators work (partly) under a tenancy contract, with 26 % also owning a plot of land (14 % of the total sample). The other 74 % of the farmers involved in tenancy contracts are totally dependent on the land they rent and / or sharecrop for income. This is equivalent to 40 % of the total sample.

The first thing notable is that the amount of cultivators is much less than the amount of landowners. meaning that many landowners lease or sharecrop out most of their land. Tenancy plays an important role for landowners and cultivators in Watercourse Fordwah 84, as sharecropping contracts are more prominent than leasing contracts. There is a relatively small amount of landowners who are owner-cum-cultivators, and a large amount of landless tenants (52 % of the sample cultivators). Furthermore, owner-cum-cultivators often sharecrop extra land in.

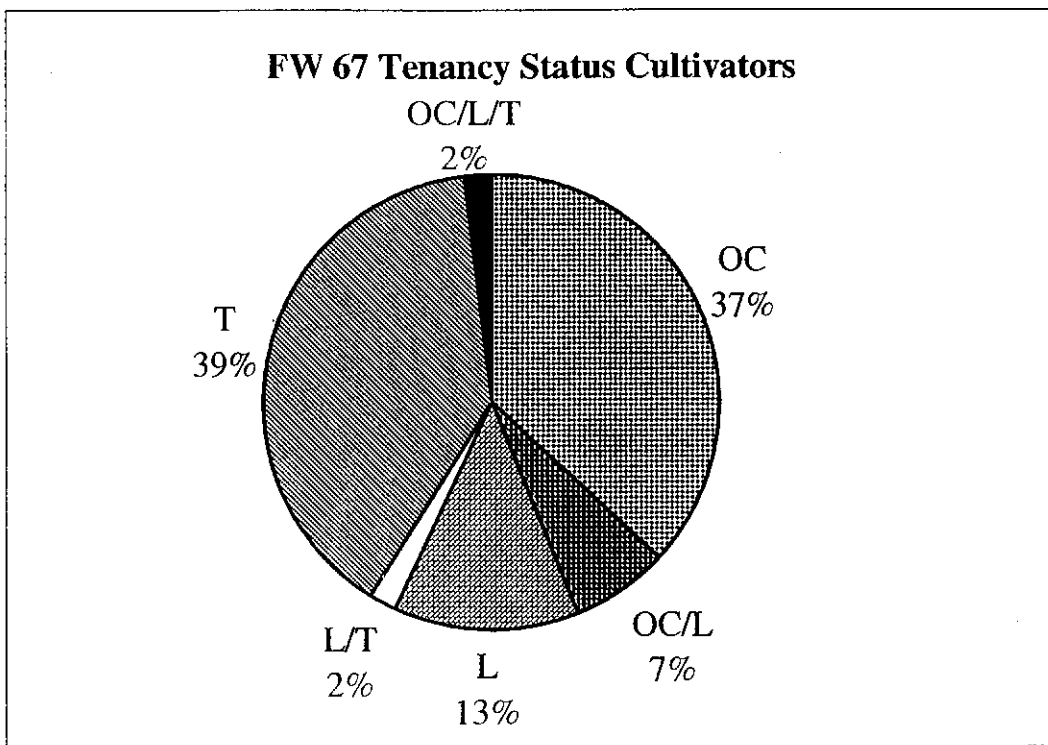


Figure 5.3. Tenancy status of landowners in Fordwah 67 (N = 44).

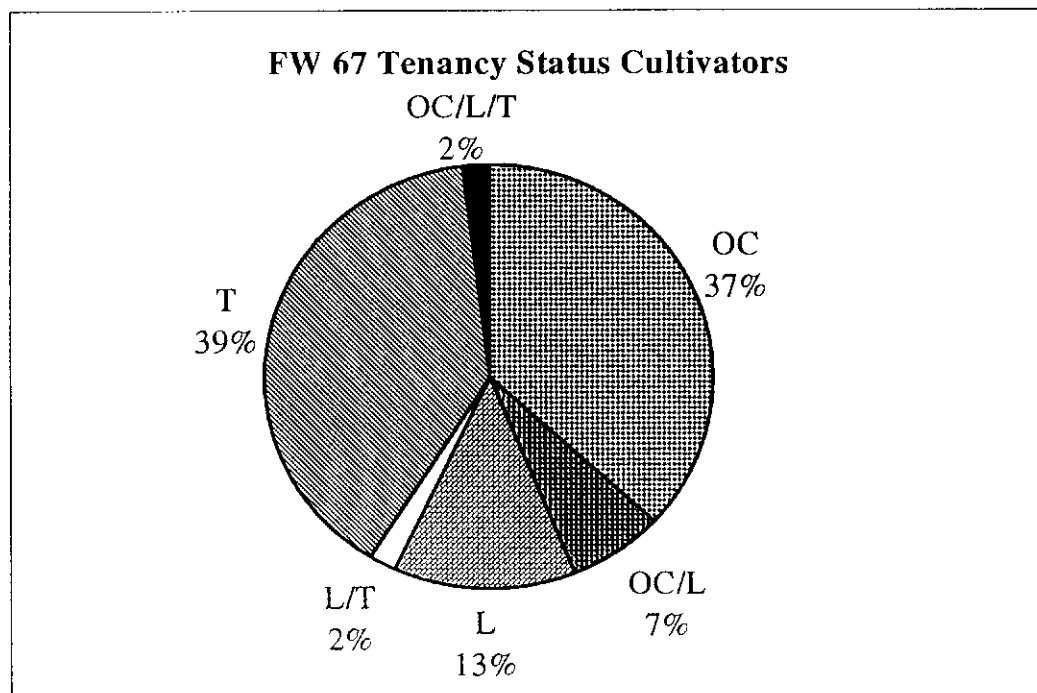


Figure 5.4. Tenancy status of cultivators in Fordwah 84 (N = 46).

Categories of tenancy show various patterns for the three sample watercourses as shown in Figures 5.3 to 5.8.

Tenancy relationships Watercourse Fordwah 67 show a similar pattern as the whole of the sample watercourses. The difference is that there are relatively more landless sharecroppers, and fewer owner-cum-cultivators.

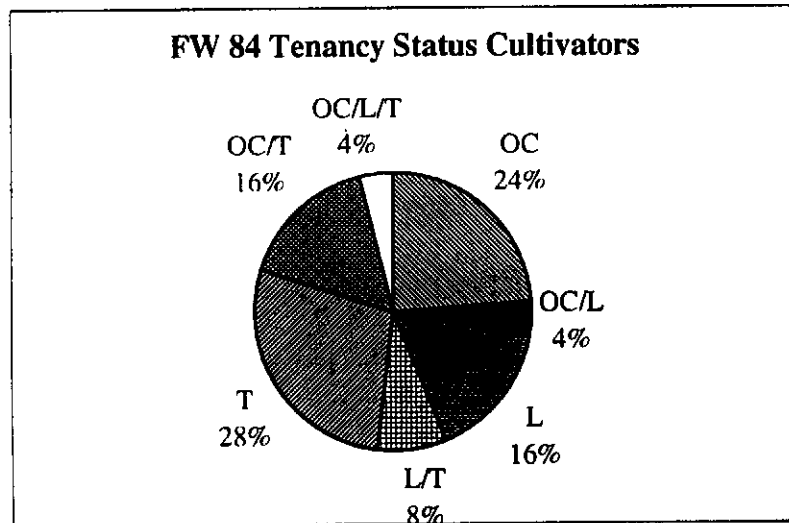


Figure 5.5. Tenancy status of landowners in Fordwah 84 (N = 88).

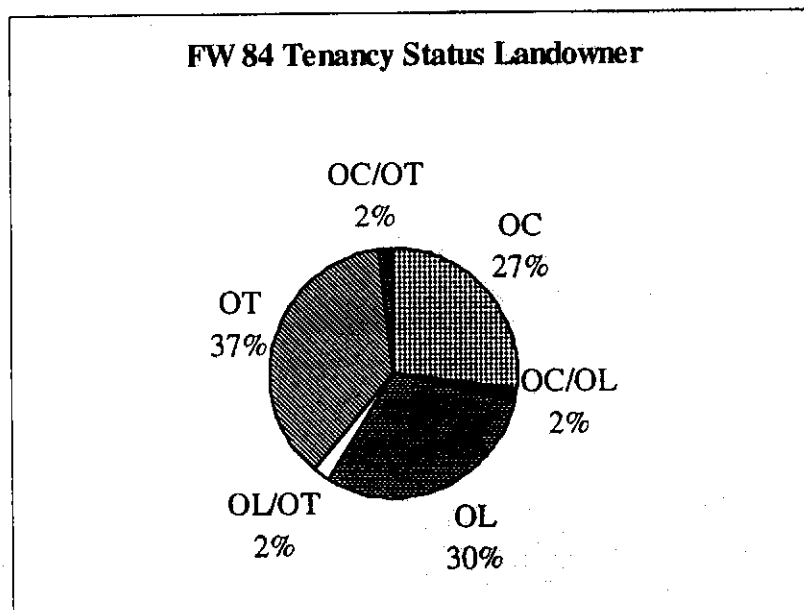


Figure 5.6. Tenancy status of cultivators in Fordwah 84 (N= 49).

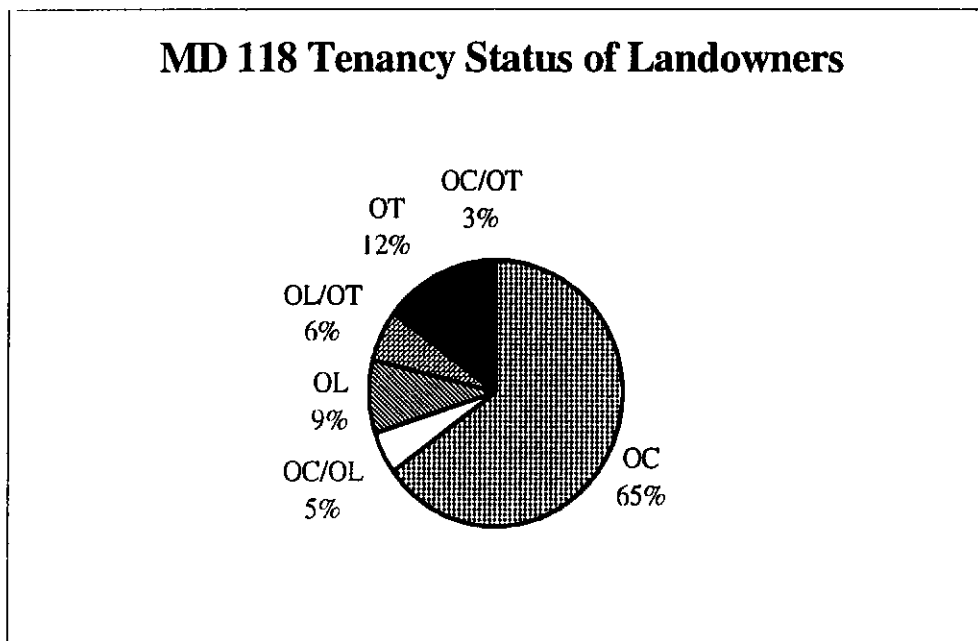


Figure 5.7. Tenancy status of landowners in Mehmood 118 (N = 75).

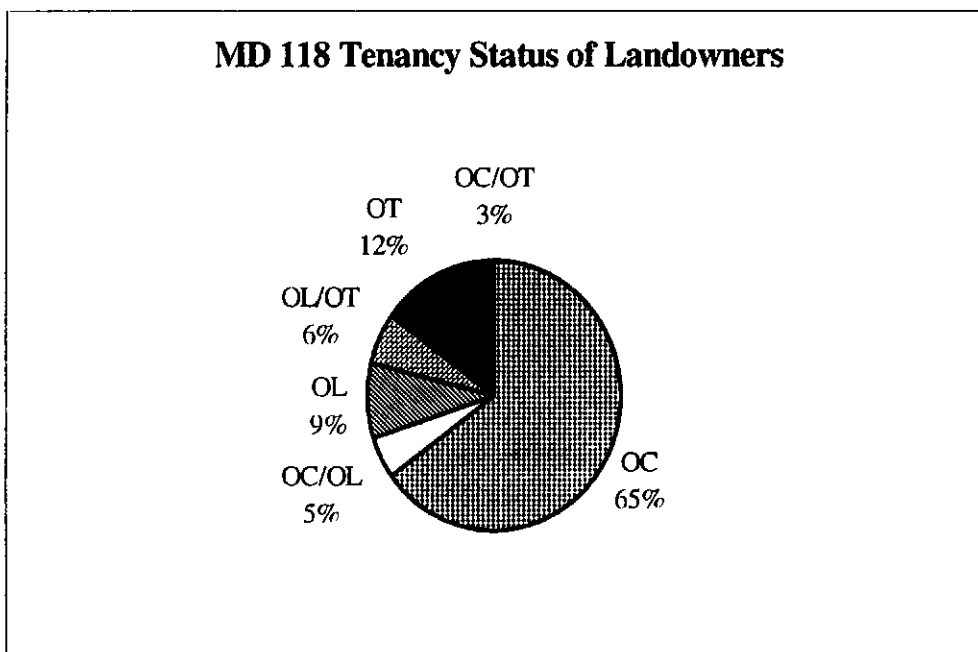


Figure 5.8. Tenancy status of cultivators in Mehmood 118 (N = 75).

Tenancy plays a relatively small role in Watercourse Mehmood 118. The dominant practice is clearly owner-cum-cultivation.

Tenancy plays a relatively small role in Watercourse Mehmood 118. The dominant practice is clearly owner-cum-cultivation.

The three watercourses show differences in many tenancy structures. Mehmood 118 is a watercourse where owner-cum-cultivation prevails. Only 23% of the cultivators are totally dependent on leasing or sharecropping land in, compared to Fordwah 84, where the situation is almost the reverse; sixty-nine percent of the landowners sharecrop or lease out all their land. Also, the number of actual cultivators is much lower than the amount of landowners in this watercourse, which is similar to Fordwah 67, where more than half of the landowners are sharecropping or leasing all of their land out.

Looking at the differences between landowners and cultivators, it can be concluded that landowners more often show a preference to lease rather than sharecrop. Still, in all of the watercourses, sharecropping contracts are more common than leasing contracts.

Let take a looking now at the amount of land under tenancy contract, sixty percent of the cultivated land in the three sample watercourses is actually cultivated by someone other than the owner, (see Table 5.3 and Figure 5.9). This is much more than the 27 % which the 1980 Pakistan Census of Agriculture found for the whole of Pakistan, or the 36 % for Punjab (Nabi *et al.*, 1986). In 1990, the Pakistan Census of Agriculture even found 28 % for Punjab (19 % under sharecropping and 8 % under leasing contract). A recent IIMI study found that 37 % of the land in the Chishtian Sub-division is under tenancy contract (Strosser 1997).

Where, in the Pakistan Census, 80 % of tenanted land was under sharecropping contract, in the sample watercourses, sharecropping remains more important than leasing (except in Mehmood 118), but is 60 % instead of 80 %.

That there is a trend from owner-cultivation to leasing and sharecropping out land, as the data suggest, is unlikely. Since the introduction of new technologies (tractor, HYV seeds, chemical fertilizer, etc.), cultivation became easier in terms of labor demand, thus, more farmers are able to cultivate their own land now. The alternative explanation, that more and more landowners found a job outside agriculture, can explain the difference only partially.

Tenancy has shown a declining trend over the last decades in Punjab. According to Nabi *et al.* (1986:36) it declined from more than 50 % of the land in the fifties to 36 % in 1980. The reasons for the different findings may be a difference in the way the data are collected, or that these three sample watercourses are not representative for the whole Punjab.

Table 5.3. Amount of cultivated area (in acres) under tenancy in the sample watercourses.

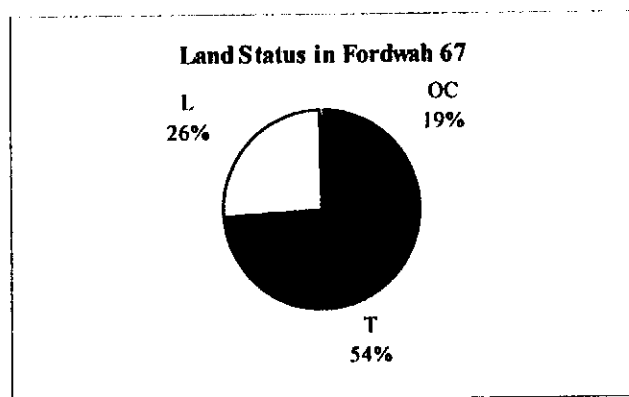
Watercourse	OC	leasing	Share-cropping	Total under tenancy	Total cultivated
Fordwah 67	69,72	96,27	197,82	294,09	363,81
Fordwah 84	77,28	65,88	108,71	174,59	254,87
Mehmood 118	253,12	81,87	55,45	137,32	390,44
Total	400,12	244,02	361,98	606,00	1009,12

The actual cultivators possess only 19 % of the land in Fordwah 67, while in Mehmood, this is 65 % (Table 5.4).

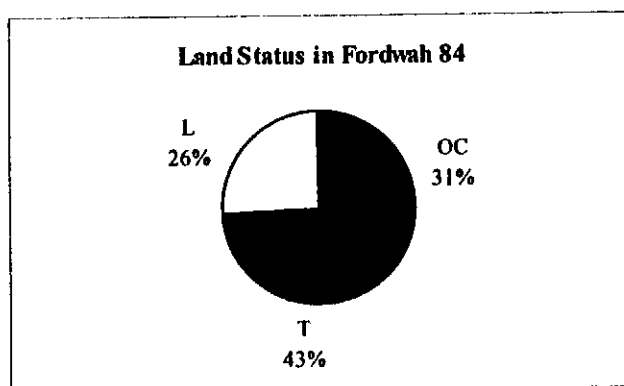
Table 5.4. Landownership per watercourse (in acres).

Watercourse OC	Mean landownership of landowners	Mean landownership of cultivators	% of land owned by cultivators
Fordwah 67	5,22 *	1,52	19
Fordwah 84	2,98	1,58	31
Mehmood 118	5,80	3,37	65

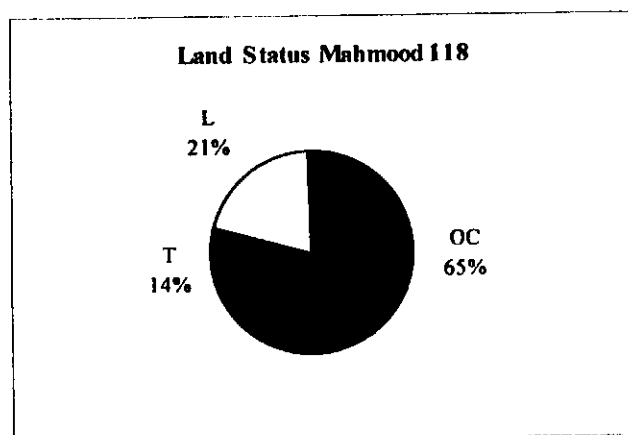
* Land belonging to big landowners along this watercourse is not taken in consideration. This would raise the mean landownership per landowner to 8,49 acres.



(a). FORDWAH 67



(b). FORDWAH 84



(c). MAHMOOD 118

Figure 5.9. Percentage of cultivated area under tenancy per sample watercourse.

Table 5.5. Physical variables that influence tenancy.

Variable	Fordwah 67	Fordwah 84	Mehmood 118
Amount of land under tenancy (%)	81	69	35
Mean size of landholding (owners)	5.22	2.98	5.80
Canal water supply	Everybody receives the same as the agreed upon warabandi	Most farmers receive less as the agreed upon warabandi, but 15 % receives more than 20 % more	Everybody receives slightly more than agreed upon warabandi
Tube well density (per 100 ha)	9.14	19.17	2.67
Groundwater quality (means) * (see also Map 2)	SAR 4.10 RSC 2.04 EC 1204	SAR 3.87 RSC 2.02 EC 1053	SAR 7.86 RSC 2.75 EC 1270
Soil quality (see also Map 3)	Non saline sodic; sandy soil	Non saline sodic; loamy soil	Non saline sodic; sandy soil with high water table. Tail: non saline sodic; sandy soil

* Groundwater quality is determined here by three factors. SAR means the capacity of the soil to store organic matter and to make it available for the plant as measured by sodicity (normal soils have a value below 6); RSC means the alkalinity of the soil (normal soils have a value below or equal to 0); and EC means the osmotic value the plant roots have to overcome to enable extracting the water from the soil (normal soils have a value below 4000).

Table 5.5 shows some physical factors that may explain the different tenancy strategies in the three watercourses.

Looking at groundwater quality, all watercourses have land with risky or bad tubewell water, which means that the water is risky or bad for agricultural production. About one-third of the sample tubewells in the sample watercourse command areas is considered fit for agriculture (Laboratory results, December 1997).

In Fordwah 67, a relatively large amount of land is under tenancy contract. This is a watercourse with sandy soil. Places are found with marginal groundwater quality, which may explain why landowners are not so very interested in cultivating land themselves, and why a lot of land is under tenancy contract as a result.

The amount of cultivators involved in tenancy contracts in Fordwah 84 is also relatively high. A reason for this might be that landowners' landholdings are relatively small. As there are many more landowners than cultivators, the latter tend to take land on tenancy from different landowners. Tenancy is a strategy to cultivate more land and to consolidate landholdings. Many landowners also have land outside the watercourse, which makes them less dependent and interested in the land in this command area. Also, most tubewells supply water that is unfit or marginal for agriculture, and the canal water supply is below average. This increases landowners' disinterest in the land, at the same time stimulating tenants to seek off-farm employment.

In Mehmood 118, tenants cultivate a small amount of the land. Landowners' landholdings are bigger, and there is an abundant canal water supply to grow sugarcane and rice. These factors seem to increase landowners' interest in the land, forming positive incentives for owner-cum-cultivation.

Apart from perceived physical limitations for cultivation, two other factors influence decisions that farmers make about whether to become involved in leasing or sharecropping contracts or not. One factor is the possibilities or constraints a farmer or a household perceives, especially with regard to financial resources and access to labor. The second factor is the farmer's or household's motivation to involve themselves in a contract of this nature. This may incorporate growing fodder for the cattle to 'earn money for the marriage of my son'. Motivations to become involved in tenancy contracts are discussed in Section 5.5. First, the different terms and conditions for sharecropping and leasing contracts will be described.

5.3 SHARECROPPING

Sharecropping for 50 % of the yield is the most common, even dominant, practice in sharecropping. Only some cultivators sharecrop for 25 %, or even for 1/6th or 1/8th of the harvest. Sharecropping for 50 % is an arrangement in which the cultivator provides labor, pays 50 % of the inputs, and has a 50 % share in the yield. Cultivators, who sharecrop for 25 %, provide labor, pay 25 % of the inputs, and get a quarter of the yield. Sharecroppers, for 1/8th, however, provide labor, get 1/8th of the yield, but do not pay for inputs.

In sharecropping, the whole household is involved in providing labor. The contract is made with a household or family, rather than with one person.

5.3.1 The Sharecropping Contract

Generally, sharecropping contracts are verbal commitments between a landowner and a cultivator. The parties do not always discuss a specific time period for the duration of the sharecropping contract. The norm is to commit for at least one year (one *kharif* and one *rabi* season). When relations between the landowner and the tenant are good, the contract will most likely to be prolonged. Some tenants work on the same fields for more than 20 years. Both parties have the option to cancel the contract at the end of the *rabi*

season, when the wheat is harvested. An unwritten rule prohibits ending contracts in this period, both for sharecropping and renting. This unwritten rule is hardly ever violated, except when serious conflicts between the parties arise. The party wanting to quit should inform the other party in time, in order for him to find a new tenant, or a new piece of land.

Terms and conditions for sharecropping contracts are more or less fixed. Normally, the costs of inputs, like fertilizers and pesticides, are shared on a 50-50 basis. When the tenant purchases inputs, he should get 50 % back from the landowner, and when the landowner purchases inputs, he has the right to claim his 50 % back from the tenant. The costs are balanced at the end of the season, either in cash, or in an equivalent (value) part of the harvest.

One hundred percent of the expenditures on seeds are paid by the tenant. Often, an exception is made for expensive seeds, like sugarcane, fodder and potato. The costs are then shared on a 50-50 basis. If tubewell water is purchased, the costs are shared. When the landowner has his own tubewell, the tenant can use this water if he arranges the fuel to run the tubewell. Mostly, the tenant has to pay for fuel; sometimes he gets 50 % of these costs back.

Hired labor costs the tenant about 100 %, as he is responsible for all the labor in the fields. Instead of hiring labor, many tenants prefer to exchange labor with neighbors and friends, or they make use of family labor. Sometimes, to earn more money, sharecroppers are (agricultural) wage laborers themselves. Only one case was found where the tenant paid only 50 % of the costs for hired labor. He said the reason was because he works very hard, and the landowner earns about Rs 8,000 to Rs 10,000 per acre, which is much more than from the tenant he had before.

Tenants also pay 50 % of *abiana* (water tax). When cultivators break the *mogha*, the Patwari (with the SDO's permission) imposes a penalty on landowners. As tenants benefit directly from the extra water, they have to pay 50 % of the fine back to the landowner. There are cases where Irrigation Department officials have been bribed to increase the size of the *mogha*, but tenants are exempted from paying a share. People see this as a more permanent arrangement to improve water availability, although it happens that farmers have to pay bribes every year to change the size of the *mogha*.

Normally, the landowner shoulders the costs of big expenditures, like lining the watercourse, maintaining the watercourse, and the installation of tubewells, but the tenant provides the labor. The tenant pays for the more common, or general, management activities, such as the cost of hiring equipment to level the fields, ploughing, harvesting, transporting manure and loading sugarcane and wheat.

In a sharecropping contract for 25 %, the landowner arranges all the inputs, as the tenant cannot afford these. The tenant does all the manual work, like weeding, irrigation and harvesting. In one sharecropping contract for 25 %, the landowner wanted a specific

sharecropper who was just like a laborer. This landowner paid all the expenditures in advance, and after the yield, 25% of the costs was subtracted from the yield. This family, thus, actually got less than 25 % of the harvest. The landowner also requested them to pay 25 % of big expenditures, like replacing parts of machinery or the pipe of a tubewell. As they could not pay these expenditures, they opted out of the contract. They are now living off money they earn from wage labor, although they hope to find a new plot of land to sharecrop, because they need fodder for their cattle.

5.3.2 Task-division and Decision-making

Sharecropper families are the actual contemporary cultivators. They bear responsibility for all cultivation activities that involve manual labor, like ploughing, irrigation and daily maintenance of the fields, maintenance and desilting of the watercourses, application of fertilizer and spray, making boundaries on the fields, harvesting, etc.. Tenants make decisions on daily management activities. For non-daily management activities, like leveling the fields, applying fertilizer or spray, growing a certain crop, or purchasing water for irrigation, they often need permission from the landowner. Applying fertilizer and spray is sometimes performed under the landowner's supervision

Generally, decisions are made through mutual discussion, especially important decisions like which crops to grow, although the landowner has the right to veto. Room for decision-making by the tenants differs in the following situations:

- Landowner does not involve himself; just takes part of the yield (e.g. absentee landowners and some big landowners);
- Landowner advises, but leaves room for tenants; and
- Landowner (or family) tells the tenants what to do and criticizes his work. Tenants perceive this as 'teasing'.

The degree to which a landowner leaves room for a tenant to cultivate in his own way, depends on three factors as described below.

1. Attitude of the landowner: A few landowners are not very interested in agriculture, and merely want their share of the yield. They will leave decision-making to the cultivator, who is more interested and experienced in agriculture. Some landowners allow their tenants to cultivate in the way they like, so as to avoid conflicts. Both the landowner and the tenant benefit if the crop grows well. If a tenant grows a crop that does not generate much yield, he knows for the next year that the crop is not suitable for that piece of land. He will then take advice from the landowner. Most landowners keep an eye on the tenants' work in order to maintain control over the crop, soil and water.

2. Socio-economic position: A tenant may have a higher socio-economic status than the landowner, as already pointed out in Section 5.2. The tenant will most likely be the principal manager of the land. A nice example is a landowner on 6 *kila* who sharecrops the land from a widow without sons. This person expressed his preference for a 'weak' owner, because, in this situation, he makes the decision about which crops to grow. The advantage for this widow to sharecrop is that she gets half of the yield at the end of the season. Landowners mostly like tenants who are poorer than themselves, because they are perceived to work harder and better to obtain a (fair) share. They should be able to bear the expenditures of sharecropping, though. In this way, the landowner also acquires a certain authority over the tenant, which would be hard to exercise if the tenant is richer. At the same time, tenants do not prefer rich or very big landowners, as the landowner might ask them to do extra work, like in the traditional landlord-*kammi* relationship. This decreases their honor, as well as the time they could have spent cultivating. Moreover, if the landowner has more-or-less the same socio-economic status, the tenant feels free to consult him about management activities. Sharecroppers often prefer smaller landowners because they cannot bear the expenses of cultivation on large fields.
3. Absentee Landowners: A tenant has much more decision-making power when the landowner is absentee; that is when he lives in a faraway village or town, or even abroad (Saudi Arabia). When the landowner is living nearby, he can often meet the tenant, like once in two or three days, or sometimes every day. They can then discuss whether to apply fertilizer or not, whether to purchase tubewell water or not, etc.. An absentee landowner might visit the fields now and then, or check the condition of the fields every year. Still, the tenants have much more responsibilities for maintenance and management of the fields and watercourses.

Landowners who sharecrop out for less than 50 % share, consider the tenant to be a permanent laborer to be paid in part of the yield, instead of in money. Landowners express their preference for these contracts in the following way:

1) In this way I can apply fertilizers according to my own choice. I work according to my own wish and will, and this person cannot say anything. I pay the expenses for fertilizers, spray, etc., and the person will do all the manual labor. Work with machinery I do myself, like ploughing with the tractor.

2) We have a lot of work on this field [sugarcane]. If we hire a permanent wage laborer, we have to watch him all the time [to monitor whether he works well, does not steal the crops, etc.]. Now the tenant is responsible.

5.4 RENTING

5.4.1 The Renting Contract

Renting land means that the renter is not only the contemporary cultivator; he is also the contemporary owner. The real landowner will still be the legal owner, but after paying the rent, the renter has full decision-making power over the land for the duration of the contract.

Factors that increase the rent of a piece of land are:

- Good condition of the soil--fertile land;
- Availability of tubewell water;
- Fields close to the main branch;
- Less available land to rent in the area; and
- Inflation.

Factors that devalue a piece of land are:

- Sandy soil;
- Bad condition of the soil in general;
- Problems related to waterlogging;
- Problems related to salinity; and
- Fields situated far away from the minor.

When the future renter and the landowner discuss the contract, the rent and the duration of the contract will be one of the most important points considered. In this area, a landowner can charge Rs 5,000 for one acre of fertile land on which a tubewell is available. On sandy lands where no tubewell is available, the rent rate is around Rs 2,000. Fields of bad quality, but with access to tubewell water, realize about Rs 3,500 per acre, and the same counts for fields of good quality, but without a tubewell (see also Table 5.6).

Table 5.6. Rent rates (in Rs per acre) in the sample watercourses.

Watercourse	# contracts	average	max. rate	min. rate
Fordwah 67	5	2810	3500	2100
Fordwah 84	13	3811	5000	1900
Mehmood 118	7	2900	5000	2000
Total	25	3356	5000	1900

The rent rate for a piece of land also depends on the bargaining power of the landlord and the tenant (e.g. a landowner who urgently needs money reduces the rent in order to find a tenant quickly).

Most contracts are for one or two years. There are a few exceptions, e.g. when the landowner is in urgent need of money, he might give the land for 3 or 4 years, since the money for the whole period is paid in advance. Among family members, the duration of the contract is sometimes above average. The contract can be extended after one or two years if both parties agree. Some renters have taken care of the same fields for 5 to 8 years, but these are exceptions.

People say the maximum duration for a renting contract is 5 years. The reason is not only because landowners want to increase the rent as often as possible. There are also examples of renters who have tried to occupy land that they rent by transferring it to their own names. Thus, people fear that once five years have elapsed, the renter might resist leaving the land. An exception is a person who first sharecropped land for many years, and then rented the land for eight years more. He says that the landowner knows he would not try to occupy the land, and this foundation of trust is the reason why the contract is extended each year.

Normally, the rent should be paid fully and in advance, although there are exceptions. Sometimes, the renter and the landowner agree that the rent can be paid after the *kharif* cash crop (cotton or sugarcane). In this way, the renter gets to earn the rent from cultivation, so his initial investment is minimal.

The rent is fixed until the end of the contract; the rent may increase or decrease once the contract expires. The landowner increases the rent before the renewal when the yield is good, there is more canal water, or a tubewell has been installed. Farmers say that landowners prefer short-term contracts lasting for one or two years, so that they can be free to increase the rent. When the yield is disappointing, the lessee may ask the landlord to decrease the rate. Renters often prefer longer term contracts than landowners for the same reason. They feel more secure when they know the land is theirs for more than one year; thus, they become more responsible for the land. After the first year or two, lessees also know which crops are suitable for that soil, and they can generate higher yields.

Another factor affecting rent rates is the bargaining power of the landowner and the potential renter. In the following example, the bargaining power of the landowner is so low, that he rented out his land for a very low price, and has become a sharecropper instead of owner-cum-cultivator.

A good, but tragic example, is a landowner who has 4.5 acres of good quality soil. This kharif, at Rs 1,900 per acre, he rented out his land to a neighbor for two years. He also sold two buffaloes. The reason was the urgent need to raise money for brain surgery for his son. Now, to provide food for his family, he sharecrops two acres of land some distance from where he lives. However, he is not allowed to grow the crops he needs for domestic consumption on this land. The family is still in debt.

At the end of the year, the owner normally visits the field to check the condition of the soil and the watercourses. He will then decide whether the renter stays on the land

another year or not. When the landowner is a woman, a brother or husband will supervise the land, and when the landowner is absentee, relatives living nearby the field look after this task.

5.4.2 Task-division and Decision-making

Once the rent is paid, all costs and benefits are the renter's. The owner has relinquished his concern with the land. If the owner thinks that the renter uses too much chemical fertilizer or too much (bad quality) tubewell water, he cannot ask the renter to change his way of cultivation. There are a few things that the landowner remains responsible for, which are:

- Matters related with the government, like changing the size of the *mogha*, taxes, and paying the fine when the *mogha* has been broken. Often, the renter has to pay these costs back to the landowner, as he is the one who benefits from the land;
- Planning the construction of a new watercourse;
- Paying for big long-term investments, like the installation of tubewells (which is the landowner's property), or lining the watercourse;
- Trees on the land or on the boundary remain the property of the landowner. Tenants cannot cut them (even a single branch) without his permission; and
- Making decisions about matters related to neighboring land, like straightening the boundary of a watercourse between two fields.

The landowner still maintains some tasks and decision-making power in a renting contract. The owner plans the big, long-term investments. If the owner wants the lessee to participate in activities like leveling the land, dig a new watercourse, or help to install a new tubewell, he should make these things clear before entering into the contract. When a lessee takes land for 4 to 5 years, these will be matters of interest for him. There is little advantage for him if he leases the land for only one year.

Some lessees also mentioned they needed permission to give or sell the *warabandi* turn to another person, and that the landowner contributes towards maintaining the watercourse and leveling the land.

The responsibilities of the lessee are:

- Full responsibilities for daily maintenance of the land and the watercourse;
- Decisions about non-daily management activities, like which crops to grow, whether to cultivate with oxen or tractors, how much fertilizer to apply, or whether it should be chemical fertilizer or manure, how often to spray, etc. Whether he leaves the land barren or not, it is of no concern to the owner;
- Bears all the costs of all inputs, and the whole yield is his; and
- He pays 100 % of *abiana*, bribes and penalties imposed by the Irrigation Department when the *mogha* is broken. The penalty would be registered in the

- official landowner's name, but the lessee would pay, as he is the sole beneficiary to the water during the warabandi turn.

Normally, if the landowner has a tubewell on the land, the renter does not have to pay for its use; he merely arranges the machinery and the fuel to run these.

Table 5.7 gives an overview of Chapter 5.3 and 5.4; mentioned terms and conditions or different tenancy contracts.

Table 5.7. Terms and conditions of sharecropping and renting contracts.

Sharecropping (50-50)		Renting	
Landowner	Sharecropper	Landowner	Lessee
Basis Share of yield or income from the yield		Fixed rent	
Type of contract Verbal		Verbal, sometimes written	
Duration 1 year		1 to 2 years	
Task division			
<ul style="list-style-type: none">• Costs inputs 50 % fertiliser, spray, tube well water, <i>abia-na</i>, seeds (only potato, sugarcane and expensive fodder seeds); 100% big expenditures, planned bribe (except in FW 67) and planned watercourse improvements.	50 % fertiliser, spray, tube well water, <i>abiana</i> and penalties from Irrigation Department. 100 % seeds, except expensive seeds, hired labour, transport costs and hiring tractor or oxen.	Big expenditures like installing tube well, lining watercourse.	All input costs, taxes, penalties and bribes.
<ul style="list-style-type: none">• Manual labour Nothing. Except in sharecropping less than 50 % share, owner often handles machinery.	All tasks that involve manual labour: irrigation, ploughing, levelling, weeding, harvesting, water-course cleaning etc.	Nothing.	All tasks. Lessee can also sharecrop the land out, in this case he is not involved in manual labour.
<ul style="list-style-type: none">• Responsibilities Main planner and manager, advising, discussing or ordering the sharecropper, division of shares, representing interests to other landowners and officials. Sometimes, also arranging	All daily soil and water management activities and providing all the labour input. In case landowner is absentee: responsibilities move to the sharecropper.	Remains officially responsible for paying taxes and penalties to Irrigation Department. If not absentee, checks the quality of the soil and the condition of the watercourse every	Full responsibility for all soil and water management activities, including selling and exchange of canal water. If he has a sharecropper daily responsibilities are for the sharecropper.

Sharecropping (50-50)		Renting	
Landowner	Sharecropper	Landowner	Lessee
inputs like fertiliser and tube well water.		year.	
<ul style="list-style-type: none"> Decision Making <p>Long term and short term decisions. Veto right in discussions with the sharecropper. Involved in collective decision making on watercourse level. If the landowner is absentee, the decision making power of the sharecropper increases.</p>	<p>Mutual decision making with the landowner. Often needs permission for non-daily management activities (including selling and exchanging canal water). Depends on the landowner whether to what extent he can make decisions on soil and water management. Mostly not involved in collective decision making on watercourse level.</p>	<p>Not involved in short term management of land and water. Loses his water rights and usufruct for the duration of the contract. Property rights remain in his hands. Not involved in collective decision making.</p>	<p>Full short term decisions power concerning crop- and water management. Exception: he is not allowed to cut the trees, or remove the subsoil and change of the boundaries of the field without permission of the landowner.</p>
<ul style="list-style-type: none"> Motivation <p>Save labour, while maintaining in control over the soil, the crops and water management. Share costs and risks with sharecropper.</p>	<p>More land, more income, share costs and risks of cultivation with landowner. Grow Fodder for cattle.</p>	<p>Earn money, save manual labour.</p>	<p>More land, more income. Independence from the actual landowner, full yields and profit. Less chances on conflicts with landowner. Fodder for cattle.</p>
<p>Ideal characteristics</p> <p>Fair, pays expenditures of the inputs, provides inputs, installs tube well, and does not disturb the sharecropper.</p>	<p>Hardworking, honest, takes care of soil and watercourse properly, has big family, owns cattle, experienced.</p>	<p>Not angry when the rent is paid later.</p>	<p>Pays rent in time, hardworking, takes care of the land, honest.</p>
<p>Subjects of conflict</p> <p>Division of the yield, equal share in costs, mutual decision making on cropping pattern, and management of soil and water resources.</p>		<p>Paying the rent too late.</p>	

5.5 MOTIVATIONS

Landowners' and tenants' motivations for involvement in tenancy contracts can differ from person to person. The contractors' socio-economic status and economic viability can limit the choice for a certain contract. The image of a person among his neighbors also plays a role, whether he is considered honest or not. Family relationships can also influence tenancy contracts, in that some landowners prefer to give the land to a family member instead of an 'unknown' person. An incentive for this might be to 'keep land within the family'.

This section describes different motivations from farmers' points of view. Motivations of parties to get involved in tenancy relationships show what kind of benefits they expect from the contract. Both, expected advantages and disadvantages, influence landowners' and tenants' choice for a certain contract. Decisions are made on the basis of perceived needs. If a landowner cultivates 6 acres, and his family is small, he will not have a quick need to rent or sharecrop more land in. A farmer with a plot of 1 acre and a big family will have to search for additional means to provide his family with food.

5.5.1 Motivations for Different Tenancy Strategies

People who are sharecropping in land, generally, do not have resources to rent land. They are also unwilling to risk losing a harvest, while being responsible for paying all the costs of inputs. The financial advantages of sharing costs and benefits with the landowner is a major incentive for sharecropping in land.

The motivations for both parties in either sharecropping or renting are cited in Tables 5.8 – 5.11.

Table 5.8. Motivations for taking land on sharecropping.

Advantages

- When a financial loss is experienced (if the harvest is spoiled), the landowner shares the burden;
- Enough wheat for the households;
- Enough fodder for the cattle;
- Not enough money to take land on rent; and
- A source of income.

Disadvantages

- Dependency on decision-making; the landowner tells the tenant how to cultivate, so they cannot implement their own methods. This often causes frustration;
- Conflict over the division of the share can arise, like the right to graze cattle on the fields, etc.;
- Gets only 50 % of the yield, while 100 % of the labor is provided;
- Some tenants also have to perform household chores for the landowner's family (they are considered to be *kammis*);
- If the yield is low, the expenditures on agricultural inputs are wasted; and

When there is no canal water, tubewell water has to be purchased, which makes sharecropping much more expensive.

Table 5.9. Motivations for renting in land.

<p>Advantages</p> <ul style="list-style-type: none"> • When the yield is good, the lessee reaps the entire profit; • The lessee can cultivate according to his own wishes, thus, has independence in decision-making from the landowner; • The rent and expenditures are paid from the cash crop (mostly cotton), while the rest of the money they earn is pure income; • Enough wheat and fodder for household needs, which saves purchasing at the market (fodder, especially, is expensive); • The benefits of all the labor invested will be the lessee's; • If a lessee also has his own land, he can use both warabandi turns for any of his fields, especially if the fields are nearby each other; and • Less chance of conflicts with the landowner compared with sharecropping. <p>Disadvantages</p> <ul style="list-style-type: none"> • When the yield is disappointing, all expenditures and debts are the renter's responsibility, while he has paid for the land as well. This is perceived as a double loss. The economic risks are larger compared with sharecropping; and • A canal water deficiency means that more loss is likely, as tubewell water has to be purchased.
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Table 5.10. Motivations for sharecropping out land.

<p>Advantages</p> <ul style="list-style-type: none"> • Gets a part of the harvest; • Maintains decision-making power over the land; • Saves all manual labor, so the landowner has more time for other activities; • Shares responsibility for the fields with the sharecropper; if the landowner would hire a permanent wage laborer he would have to watch that person all the time. A sharecropper feels more responsible for the land; • It is a source of income; and • Sharecropping out a small plot in a part of the land that is difficult to watch. In this way the sharecropper can protect the land against thieves, especially if the sharecropper lives nearby. <p>Disadvantages</p> <ul style="list-style-type: none"> • When a loss is experienced, the landowner pays 50 % of the expenditures, in which case leasing out the land would have been more beneficial; and • On land less or equal to one acre, the landowner pays 100 % of the costs for harvesting, and if more than one acre is under sharecropping, the tenant shares the costs.
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Table 5.11. Motivations for renting out land.

<p>Advantages</p> <ul style="list-style-type: none"> • This is a source of income, whether the crop is good or not. In sharecropping there are chances of loss, and there are expenditures also. The fixed rent obtained from the lessee can be used for household needs, or be invested in another business; • No work in the fields; some landowners earn money while sitting at home; • Does not need to maintain the fields, which is especially beneficial for landowners who live far away; and • Fields of bad quality can be leased out, e.g. where there is less canal water, bad quality tubewell water, land with sandy soil, to insure income from the fields. <p>Disadvantages</p> <ul style="list-style-type: none"> • The soil can be spoiled when a tenant uses an excess of chemical fertilizer or bad quality tubewell water, but the landowner cannot object; and • Conflicts arise when the renter cannot pay the rent in time.

Often, a farmer or a landowner has a body of motivations or incentives for choosing certain strategies. An example of a body of motivations is the following:

The advantage of renting land out is that I get all the rent in advance. In sharecropping, there is the chance of loss, and there are expenditures also. Moreover, I cannot cultivate alone, so I need extra labor. The fields are also situated far away from my house.

Farmers are not always interested in intensifying their agricultural activities. Again, it depends on possibilities and constraints they perceive, and consequently, their motivations to seek off-farm employment, or to continue as cultivators. Many farmers go in search of off-farm employment, because expenditures on agricultural inputs have become too high for them. Compared with the financial risks they take, the profit is still too low at the end of the cropping season. Some families are so strongly attached to their traditional family occupations, agriculture, that they feel ashamed and embarrassed doing anything else.

5.5.2 Motivations for a Certain Landowner or Tenant

When landowners have decided to lease or sharecrop out (part of) their land, the next step is finding the right tenant to cultivate that land. A good sharecropper has to satisfy more conditions than a good lessee.

Characteristics of the 'ideal' sharecropper are:

- Hardworking;

- Fair and honest (should not steal the harvest or canal water, should not create conflicts with neighbors);
- Take good, proper care of the land;
- Experience in spraying, fertilizing, and irrigating the fields in time, as well as to maintain the watercourses and field boundaries properly;
- More family members who can help the sharecropper in the field (especially men above 15 to 16 years);
- Owns cattle (oxen for cultivation, and other animals for manure); and
- Facilities and equipment, like a tractor.

A landowner expressed his preferences in the following way:

If the tenant has a tractor, I can expect him to cultivate one square of land or more, because he can handle the land properly. If the tenant does not have a tractor, he should have two oxen, and two more people from the family to help him cultivate half a square of land. One of them can take care of ploughing, while the other maintains the watercourse, and the third weeds.

A lessee has fewer interactions with the landowner, but still, some landowners watch the following characteristics:

- Pays the rent on time;
- Hardworking;
- Takes care of the land, especially the condition of the soil (e.g. uses manure instead of chemical fertilizer); and
- Honest and fair.

Tenants also look for specific characteristics in the landowner. The differences between sharecroppers and lessees are striking. Lessees, above all, watch the quality of the soil and availability of irrigation water. Renting contracts are short, and hardly any interaction with the landowner takes place. The characteristics of the landowner are not that important. In sharecropping, however, the characteristics of the landowner are as important as the condition of the field.

According to sharecroppers, the 'ideal' landowner has the following characteristics:

- Fair and honest (should distribute the yield fairly and on time);
- Pays expenditures during the season when the tenant does not have money;
- Provides tubewell water, pesticides, fertilizer, etc.;
- Does not 'disturb' the tenant unnecessarily;
- Installing tubewells when necessary; as asking other tubewell owners for water can delay irrigation which can damage the crop; and
- Respects the tenant's family.

For lessees, it is important that the landowner is flexible with rent dues (after a few months, or at the end of *kharif*). A tenant expressed that the character of the landowner does not really matter:

I do not care from whom I lease land, even if from a thief. But I do see the type of land and the irrigation. I see the warabandi once or twice, and if it suits me, I take the land.

The following paragraphs discuss two important factors influencing the choice and motivation for a certain tenancy type; these are cattle and labor.

5.5.3 Cattle: A Motivation to Take Land on Sharecropping or Leasing

Within sharecropping contracts, a certain part of the land is always available for fodder, no matter which other crops the landowner wants to grow. Both, the landowner and the tenant, determine how much fodder they want to grow according to the amount of cattle they have. It varies from 0.5 of an acre to 2.5 acres. For two buffaloes, a household needs 6 *kanals* of fodder per season. This means that they cultivate 1.5 acres, as the landowner will deduct his share from this. The general norm is that 0.5 of an acre should be available for the tenant.

According to the 1990 Census of Agriculture, 67 % of the farms in Punjab grow fodder. The percentage of cropped area of all farms reportedly growing fodder, is 20 %. There is a linear relationship between the farm size of households who report growing fodder, and the percentage of area cultivated with fodder (Table 5.12)

Table 5.12 Fodder area (in acres) as percentage of total cropped area

Farm size	Fodder area
< 1.0	61
1.0 to < 2.5	36
2.5 to < 5.0	26
5.0 to < 7.5	23
7.5 to < 12.5	21
12.5 to < 25.0	19
25.0 to < 50.0	17
50.0 to < 150.0	14
> 150	10

Source: 1990 Census of Agriculture

The average amount of cattle in the households of the sample watercourses, is 8.5 animals (in Mehmood 118, people tend to have some more animals, and in Fordwah 67, some less). The amount of oxen and buffaloes owned by households differs significantly per caste (ANOVA, $p = .030$). Khokhar, Joyia and Bhatti tend to have more cattle than, for example, Lobana and Arain.

An average household has about 3 buffaloes (including offspring), which are kept mainly for milk (and milk products like yogurt, *lassie* and *ghee*). Cattle, especially buffaloes, are also a source of capital, as these are sold in times of need. Oxen are important for agriculture as these provide tractive power for ploughing, leveling land, etc.. Cattle are also important for manure, used to increase the fertility of the land, and is

also less expensive than chemical fertilizer; this is also considered better for improving soil conditions. The disadvantages are the intensity of labor sharecroppers have to pay for transportation.

The number of buffaloes in a household shows a linear relationship with the amount of acres one owns or cultivates within the watercourse ($r = .33$, and $p = .016$ ($N = 54$)). This is because the amount of land sharecropped or leased in correlates positively with the amount of buffaloes and cows in the household (Figure 5.10).

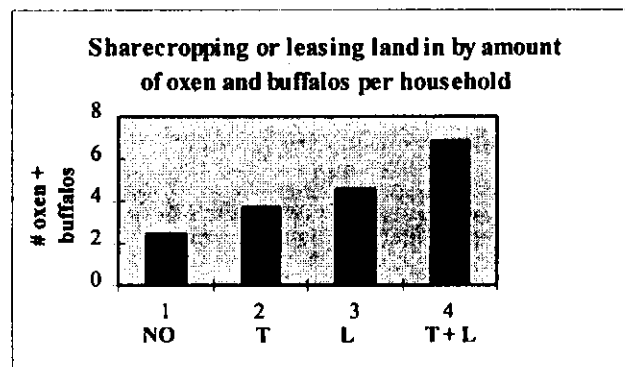


Figure 5.10. Amount of oxen and buffaloes in the household (mean) by sharecropping or leasing in land ($n = 56$).

There is a clear relationship between the amount of buffaloes a household has, and whether they rent or sharecrop land in. The differences among pure owner-cum-cultivators, sharecroppers, renters and farmers who both sharecrop and rent land in, are significant (ANOVA, $p = 0.11$). The relationship is even significantly linear. If the count for oxen and buffaloes in one household are combined (Figure 5.10), the relationship becomes even stronger (ANOVA, $p = .005$, and a significant linear relationship).

This relationship may be explained by the need to grow more fodder for the cattle. If people do not have (enough) land to grow fodder for their cattle, they have to buy it from the market, which is quite expensive. The alternative is to cut fodder in bushland. The fact that cattle form an important integral part of agriculture as a source of food, tractive power, and capital, make growing fodder an important aspect of tenancy contracts.

When other cattle are included in the analysis (goats, sheep, camels and donkeys), the relationship between the need to lease or sharecrop in more land becomes less clear. Goats and sheep mostly graze in the bush or along railway tracks, so there is less need to grow fodder.

Conflict with a landowner may occur when a tenant's main motive to sharecrop or lease in land is to grow (more) fodder for his cattle, especially in sharecropping relationships. An example is some landless Khokhar farmers in Fordwah 67, who are

dependent on landowners who sharecrop or rent their land out to grow fodder for their cattle. Their primary interest would be for the fodder crop. Indeed, some landowners complain about it, as the following statement displays:

My tenant is more interested in fodder and weeds for his cattle. He has 12 to 13 animals. He is not hardworking, but I had no choice when taking him on as a tenant.

5.5.4 Labor Availability: A Limiting Factor for Tenancy

Normally, there are more than one adult man working on the farm. Labor requirements depend on the cropping pattern and the time of year. Some crops, like sugarcane and vegetables, need extra permanent laborers. Fodder is a crop that requires less water and labor.

Wage Labor. People growing fodder in both *kharif* and *rabi* seasons, make significantly less use of hired labor (t-test, $p = .009$). Sometimes, they hire casual wage labor for other crops (mostly cotton). Those people not growing fodder often make use of hired labor, and often hire a permanent wage laborer as well.

Apart from the use of (casual) wage labor, there are forms of unpaid labor. There are three main types of relationships important for access to unpaid labor, which are:

- Close relatives (sons, brothers) and friends;
- Neighbors whose fields are close together, and who have a combined water turn, cultivate approximately the same amount of land, or have good relationships with each other; and
- Tenancy can be a strategy for landowners to gain extra labor (by sharecropping), or to save all labor (by sharecropping), or to save all labor (by renting out). Tenants and cultivating landowners, or tenants with cultivating relatives of the landowner, often also work on each others' fields.

Characteristic for these forms of unpaid labor is that relationships between the actors are good (except in renting contracts). Labor exchange between relatives, neighbors, and between tenants and landowners, is reciprocal. This means that if one farmer helps another with a specific task, he can expect help from that person (with this task) when he needs it.

Family Labor. Some farmers cultivate alone, but instances like these are a minority (see Section 5.1). About 80 % of the sample farmers cultivate with other family members. Basically, this can mean two things: 1) cultivation with son(s), or 2) cultivation with brother(s). Almost all cultivators make use of family labor. There is no significant differences in use of family labor between owner-cum-cultivators, lessees and sharecroppers.

Frequently, women help with cutting grass and fodder for cattle, and sometimes taking care of the cattle, weeding, and picking cotton and chilies. For the last two tasks, women often work for a share in the harvest (1/20th to 1/8th). Furthermore, they carry food to the field, especially when it is a bit further away from the house.

Children often help with these tasks. Rarely do women in the Punjab handle ploughing with oxen or camel, or help in irrigation. Women involved in practical irrigation management activities are non-existent, even when they are landowners through inheritance. In this case, they only receive the rent or the share. A husband or a brother takes over regular management tasks.

Men are the main actors involved in land and irrigation management activities. Most cultivators work with their sons or other male family members. There is a high reflection on the lifecycle of the household to which a cultivator can make use of family labor. When boys are above a certain age (13 to 15), they can help their fathers with ploughing, irrigation and other manual tasks. When they are older, they may leave the household or the family occupation. Besides losing their labor on the farm then, they lose connection with the land they will inherit one day.

After a father's death, brothers may continue to cultivate commonly, but they will mostly cultivate separately, albeit helping each other whenever necessary. Sometimes, one or more brothers sharecrop or lease out part of their land. In this case, it is likely that the other brother(s) who is owner-cum-cultivator, will work in cooperation with the lessee(s) or sharecropper(s) on a reciprocal basis. In practice, this means that for one field, there is not one owner-cum-cultivator, one lessee, or one sharecropper involved. An appeal can be made on sons and brothers at different stages in a family life cycle.

Labor Exchange. Reciprocal labor, or labor exchange, can be used for specific labor-intensive tasks, like planting rice, harvesting wheat, or loading sugarcane, or on a more regular, even daily basis. Poorer families often use labor exchange for specific tasks as a means to obtain more labor force.

There is also a very clear relationship between the extent of farmers' cooperation among each other and the extent to which they make use of casual wage labor and permanent wage labor. Some people do not make use of hired labor at all, because, as they say, they cannot afford it. Almost without exception, they ask relatives, friends and other people known to them for help on a reciprocal basis in times of high labor demands. This traditional form of labor exchange between households tends to give way when farmers hire casual or permanent wage labor to temporarily fill in labor shortages. From the people who, in times of need, hire casual wage labor, only 40 % sometimes collaborates with friends or family. The group of farmers who hire a permanent wage laborer, is 33 %.

The extent to which farmers make use of mutual cooperation differs highly in each watercourse. In Mehmood 118, more than 90 % of the sample farmers help each

other. In Fordwah 84, farmers have the least incidence of cooperation; only 33 % of farmers sometimes ask friends or family to help them. In Fordwah 67, 56 % of the sample households exchanges labor now and then; notably, the members from the poorer Khokhar *baraderi* make use of this resource.

Taking a closer look at Mehmood 118, the main village within the watercourse is Rumi Wala. Most people live here, but a few live in a *dera* nearby their fields. Thus, it is relatively easy to find family members, neighbors and friends who can help in times of need. Still, the people who help each other on a sustainable and a reciprocal basis are people who are neighbor-cultivators, and not neighbor-villagers. In this *mogha*, there are four such groups consisting of about three to four cultivators. They are unrelated and have different landowners, but their relationships are good. One group of three owner-cum-cultivators also has a combined water turn. Another group of two owner-cum-cultivators and lessees borrow canal water from each other.

Tenancy. Another form of labor exchange is found in tenancy relationships. For example, if a landowner has two or more tenants, whether sharecropping or leasing, they are likely to cooperate with each other and share the same water turn. In that case, cooperation for irrigation is required. Also, when part of the land is cultivated by the landowner and another part by his tenant, they are more likely to assist each other whenever necessary.

Off-farm employment. About 46 % of the survey sample farmers has a job outside agriculture. The most common off-farm jobs on the watercourses are wage laborers in agriculture or in the cities (16 % of the sample), cattle trading (also 16 %), and shopkeeping (7 %). The poorer households can hardly make a living out of farming, often opting to work as wage laborers in their spare time, or when a son is old enough to take care of the fields.

The farmers who trade cattle are mainly Khokhar and Joiya. They can make a living out of agriculture, thanks to cattle. These farmers mention that both the cattle and their crops are important sources of income. The farmers in this sample are mostly Arain. Their shop has become the most important source of income. Shopkeepers often provide (goods on) credit for farmers who know him and are in need of money.

There are absentee landlords who live elsewhere or abroad. Family members (wife, uncle, brothers) supervise the land, and when sharecropping, they take care of the division of the yield. Landowners with off-farm employment more often give their land on lease or sharecropping to a family member (t-test, $p = .004$).

Landowners with off-farm employment in the sample never grow vegetables, while 30 % of farmers without off-farm employment are growing vegetables (t-test, $p = .046$). This is probably due to a lack of labor, or in the case of a sharecropper, lack of supervision. They are more likely to grow fodder, which requires less labor input (t-test, $p = .023$).

Food for domestic consumption is no longer the main aim of agriculture. Farmers want profits, or at least, no losses (e.g. once every few years they require a big profit in order to pay back debts). When a farmer is intent on optimizing his yield, the following factors are important:

- Being able to calculate the costs and benefits in advance, for which security is needed. From farmers' points of view, the irregular canal water supply means uncertainty about whether water will be cheap and of good quality (canal water), or expensive and of worse quality (tubewell water). This is a risk calculation farmers have to make every year.
- Bribing the department all the time to get enough canal water reduces the amount of money that can be invested in other inputs.

The virus disease last year has resulted in some cultivators' reluctance to sow Norma cotton this year. A higher proportion of farmers sow *desi* cotton, sugarcane, or simply choose to leave the land barren. *Desi* cotton needs less canal water, but during the growth stage, sugarcane needs more. Because of this year's canal water deficiency, the sugarcane crop is in danger if people neglect purchasing tubewell water on time.

This attitude was observed in all three watercourses. Virus destruction in both watercourses in Fordwah Distributary equaled more than 35 % of the crop. However, in Mehmood, only 25 % of the sample landowners and cultivators complained about the disease. In Fordwah, cotton is a more important crop. Cultivators in Mehmood, with its high water table and above average canal water supply, are more oriented towards cultivation of sugarcane and rice.

5.6 CONFLICTS IN TENANCY RELATIONSHIPS

Differences in motivations and interests for landowners and sharecroppers entering into tenancy contracts could potentially lead to conflicts. Leasing contracts tend to have less conflicts, as the task division is very clear. In sharecropping contracts, there is normally much more communication between the landowner and the actual cultivator, thus, more chance that differences between them lead to misunderstanding or distrust. When the relationship between the landowner and the sharecropper runs smoothly, it means that they communicate well. As a sharecropper expressed it:

The relationship between a tenant and a landlord is like that of a husband and wife. You have to discuss all the things and take care of each other. If one of them says that he will be making the decisions, it is very difficult to cultivate properly. Everything is done with mutual discussion by the Malik and me. If the Malik does not talk to me with good manners, I leave the contract.

The most common conflicts pertain to decision-making and task-division. In these topics, there is the widest variation in contracts, and thus, the topics where unwritten rules are not always applied. Problems arise when one party feels that the yield (or the

money earned from the yield) has not been fairly distributed, or when the costs for inputs are unequally divided. For example, if the landowner has the idea that the tenant bought twice as much spray as he used on the field, and stole the other half for his own field, then it is likely that he will distrust the tenant.

Conflicts about cattle grazing also arise. As cattle may disturb crops, the landowner and tenant have to agree where cattle are allowed to stall and graze. Another common subject for small conflicts is the prohibition on cutting trees, unless the landowner's permission is obtained. Exchanging canal water without the landowner's permission can also lead to petty conflicts between landowner and tenant, especially in sharecropping relationships.

Sharecroppers also have problems when their landowners have conflicts with neighbor-farmers. In the following example, this even leads to the non-availability of tubewell water.

A few years ago owner-cum-cultivator K and my landowner L exchanged two kila of land. L got two kila here, and K took two kila of L's land in another watercourse. Owner-cum-cultivator K installed a tubewell and claims that the tubewell is on his land. L claims that the piece of land is his, and that K should either shift the tubewell, or give the piece of land (with the tubewell) back.

After this conflict, L sharecropped his land to me, as he lives far away and also has to attend to a business. Here, we have a canal water deficiency. I feel uneasy, because K refuses to give me access to tubewell water. If I would lease the land in, then K would give me tubewell water. Now, the matter can only be sorted out when K and L confer with other people.

Small conflicts are often solved between the tenant and landowner, without the interference of third persons. With more serious conflicts, other people can act as mediators, or a small *Panchayat* can be held.

6. STRATEGIES TO ADAPT THE IRRIGATION TO LANDOWNERS' AND TENANTS' NEEDS

The last section discussed the present tenancy relationships and people's motivations to become involved in tenancy. This section will focus on how landowners and tenants adapt the irrigation system to their needs. If farmers want to irrigate their fields on time, and with the proper amount of irrigation water, then access to water and flexibility in water use are crucial. Both, access and flexibility, are not only determined by the design of the physical system itself, but also by the 'room for maneuver' tenants or landowners have to create in terms of water acquisition, water distribution and in water markets.

6.1 WATER ACQUISITION

The irrigation system was originally designed for an 80 % cropping intensity; 32 % in *rabi*, and 48 % in *kharif*. Presently, the cropping intensity in Chishtian Sub-division is 64 % in *rabi* and 91 % in *kharif*, thus 155 % per year (Strosser, 1997). Together with the introduction of cash crops, such as sugarcane, the demand for water has increased rapidly. This is a major reason why farmers perceive a canal water deficiency for irrigation. Another reason is that there was more water in the distributaries about 10 to 15 years ago. The Irrigation Department used to maintain the canal banks properly, and was cleaning the distributaries during *salanabandi* (interviews with farmers, November 1997).

To cope with this perceived deficiency of canal water for irrigation purposes, farmers adopted a new irrigation technology through the use of tubewells. The first tubewells in the sample watercourses were installed in the early 1980s, and became popular after 1983. So, next to canal water, tubewell water has become an important source of irrigation water.

While most farmers perceive a lack of canal water, coping strategies differ from farmer to farmer. Every farmer has his own coping style, according to his financial circumstances and the options he has, or creates, for himself. Tenancy influences farmers' perceptions of their opportunities and choices to cope. Strategies to achieve more water can be individual and collective. When farmers have the same objective (increasing the availability of canal water), more potential to develop collective strategies to achieve their aim exists. Also, here tenancy has an influence, as, through task-division, tenants can be included or excluded in these activities. In this section, water acquisition through individual and collective action is discussed.

6.1.1 Individual Action

- Individual strategies farmers can undertake to acquire water include:
- Using tubewell water;

- Installing a pipe leading to their own fields through the bank of the watercourse;
- Stealing water from someone else's water turn;
- Breaking the bank of the watercourse;
- Using water for common land, like village or forest land; and
- Bribing the Irrigation Department's lower officials (Patwari, gauge-reader, or Baildar) to exchange water turns in times of need, or buy canal and tubewell water from others.

According to the Canal and Drainage Act, 1873, some of these strategies are illegal. These include stealing water through illegal pipes, breaking watercourse banks, and bribing officials. Exchange or sale of canal water is also prohibited (with the exception of transferring water rights to a lessee or sharecropper). In practice, customary and local law, or local unwritten rules, determine which strategies are acceptable, and not the Canal and Drainage Act.

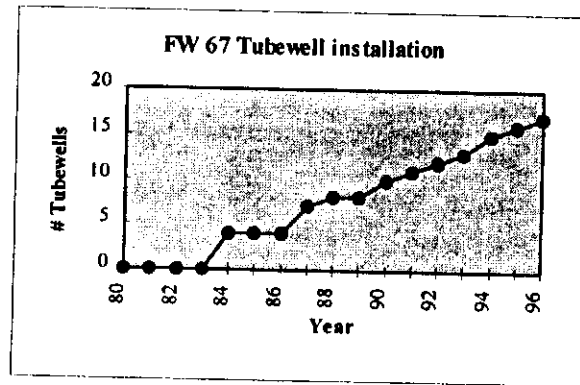
6.1.2 Tubewell Water

Farmers prefer irrigation with canal water above irrigation with tubewell water, as it is cheaper and better for the land. When fields are irrigated with canal water regularly, the soil becomes more fertile, and less irrigation is needed, as the water stays in the soil longer. Using saline tubewell water can stop and diminish the growth of plants, and not always does tubewell water suit soil types. Even good quality tubewell water lacks the good qualities of canal water.

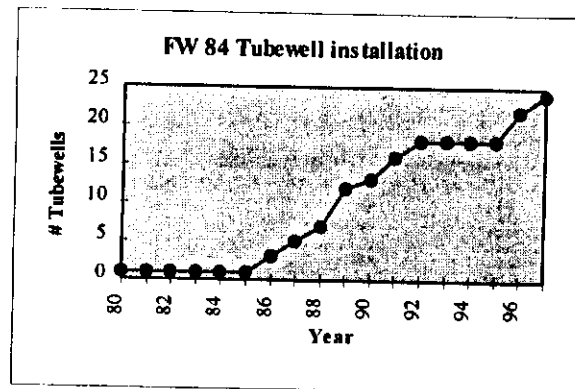
The first, or preferred, option to cope with the lack of canal water according to demand, is using tubewell water. Also, for farmers who have their own tubewells, canal water is cheaper, as fuel is needed to run the tubewell. When the warabandi turn is not enough to irrigate the whole plot, it is often mixed with tubewell water. When the quality of the tubewell water is bad, it is also mixed with canal water to diminish its hazardous effects. Some people, who do not have their own tubewell, exchange canal water rather than arranging tubewell water.

Tubewells always remain the property of the landowner. Rights to use the tubewell and to make decisions about its distribution are temporarily shifted to the lessee, but mostly, sharecroppers have no decision-making rights. Not all tubewells belong to one landowner. Tubewells can be the common property of, for example, a group of brothers or other family members, who are then shareholders of one tubewell. Lessees and tenants hardly install their own tubewells, as they cultivate land temporarily. Installing a tubewell is too big an investment if the land does not belong to them. Often, the lessee bears the costs of maintaining the tubewell, otherwise, shared with the sharecropper. Land with a tubewell increases strongly in value, currently about Rs 1,000 per acre higher than the same land without the tubewell.

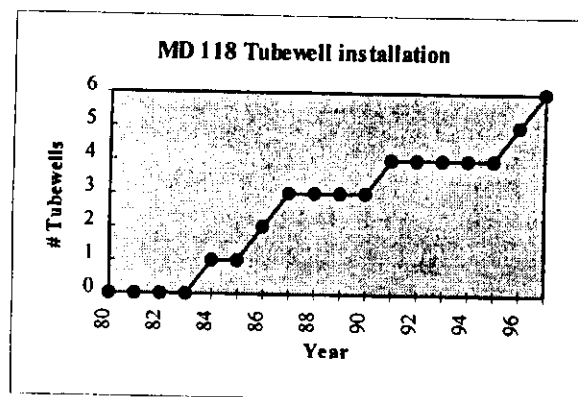
The amount of tubewells installed in a watercourse runs parallel with the amount of canal water available. In the sample watercourse of Mehmood 118, where there is often excess water, there are only 6 tubewells. In Fordwah 67, there are 17 tubewells, and more towards the tail of Fordwah 67, while in Fordwah 84, there are 30 tubewells. The graphs in Figure 6.1 show the development of tubewell installation over the years in each watercourse.



(a) Fordwah 67



(b) Fordwah 84



(c) Mehmood 118

Figure 6.1 Tubewell installation trend for sample watercourse

Installing tubewells as a strategy to cope with the perceived water deficiency is, thus, most obvious in Fordwah 67 and Fordwah 84. In Fordwah 67, a big landowner initiated the installation of a tubewell in 1984, and after seeing this, more and more farmers started installing tubewells. In this way, the big landowner started a tubewell installation 'scheme'. Farmers borrowed money from relatives and friends in order to pay for the tubewell. In Fordwah 84, a similar trigger-effect took place, starting with a group of four brothers who installed a tubewell, and also sold tubewell water.

In Fordwah 84, farmers state that only 25 % of the fields are irrigated by canal water; some, more in the head, and even less in the tail of the watercourse. As for the balance, land is irrigated with tubewell water. There are also some plots where canal water does not reach the fields, because of the absence of a watercourse leading to their plots. Neighboring farmers refuse to provide land to dig a watercourse. These farmers have to pay *abiana* for water turns they have no benefit of, but they are still bound to irrigate the fields with tubewell water.

Although Mehmood 118 has enough canal water, the wheat crop is irrigated with tubewell water during *salanabandi*.

Farmers who do not have their own tubewell can purchase tubewell water. Sometimes, tubewell owners supply tubewell water to other people if they provide the fuel to run it. No money is involved for the use of the tubewell water itself. Others sell their tubewell water. The diameter of the pipe (discharge), the price of fuel, and the quality of the water determine the rate of groundwater. It differs from Rs 20 to Rs 100 per hour. The highest prices are fetched in Mehmood 118, where tubewell density is low and a sudden urgent demand for tubewell water (when there is no water in the distributary as happened frequently during the *Kharif* 1997 season) to irrigate the sugarcane and rice fields, has pushed up the rate.

Tubewell water costs the least in Fordwah 84, where tubewell density is high, groundwater quality is sometimes very bad, and where the main cash crop is cotton, which needs less water compared with sugarcane and rice. These data support the findings of a previous study of tubewell water prices by Tahir (forthcoming), although tubewell water prices are higher now. Sometimes, tubewell water is not bought, but exchanged for canal water, or vice versa, on the basis of water quantity. In this way, people who exchange canal water (owner-cultivators, lessees, and owners of land sharecropped out) can acquire more canal water which is of better quality than tubewell water.

Lessees can use and sell the landowner's tubewell water. When they lease the land for longer periods, they might consider installing a tubewell themselves, especially when none is available. The official landowner can pay for it when the contract concludes. A lessee can also use this water on other fields he cultivates. Mostly, where a tubewell is available, sharecroppers are allowed to run the landowner's tubewell at any time. Either the sharecropper or the landowner arranges the fuel, with the costs often being shared.

When sharecroppers want to use tubewell water for other fields they cultivate, they have to arrange and pay for fuel themselves.

Whether tenants prefer to lease or sharecrop land with, or without, a tubewell available, depends on the circumstances. The most important factors are canal water supply and the tenant and landowner's economic circumstances.

When canal water supply is good and canal water approaches the field properly, tenants care little about whether tubewell water is available or not. As described in Section 5, this case is rare, as canal water supply is very irregular and uncertain. This is of importance for lessees to look into before they start the contract, as they bear full cultivation expenditures

Where a lot of irrigation with tubewell water is required, this notably increases the cost of cultivation, and, where a tubewell is available on the field, the rent rate increases. Thus, not all lessees prefer a tubewell on the land; they would rather purchase tubewell water in times of need. When a lack of canal water is perceived, most sharecroppers hold the landowner responsible for either installing a tubewell, or purchasing tubewell water. Sometimes, landowners ask tenants to purchase tubewell water and pay the costs in advance, and the balance is calculated at the end of the harvest. However, most tenants prefer a landowner who is financially sound to bear these costs of tubewell water during the season, so that they balance with the landowner after the harvest. Only the more well-to-do sharecroppers do not care about who pays the costs for tubewell water.

According to farmers in Fordwah, the need to steal water or bribe the Irrigation Department to increase the size of the *mogha*, has become less with the introduction of tubewells.

6.1.3 Stealing Water

Stealing water from people in the watercourse is not only prohibited by law; farmers along the watercourse also do not appreciate water theft, as this decreases their access to water directly. Especially, farmers at the tail end suffer. Stealing water is more likely in times of water scarcity, when farmers follow the warabandi turns strictly to prevent conflicts. Farmers say that bigger or wealthier landowners get away with stealing water.

Stealing water using a pipe, was, and still is, a means of water acquisition, although people seldom admit that they steal water. Tail-end landowners or tenants sometimes have the courage to inform a lower officer from the Irrigation Department (Patwari, Baildar and Overseer), or the police, about illegal pipes upstream in the watercourse; or an officer might even find out himself. The accused is then fined. However, frequently, the accused pays money, or in kind with fodder or wheat, to the official and the case is dismissed.

For example, a farmer who used to steal water until 1976 used to pay 20 kg of wheat per acre to the Patwari. However, this practice seems to lose importance when tubewell water becomes available. When farmers face water deficiency, they prefer to use the legal method of purchasing tubewell water, or running their own tubewell, above stealing water from another farmer. This also counts for tenants, as well as owner-cum-cultivators.

When a farmer steals a water turn from someone else, the sanctioning method is called a *Panchayat*; a meeting in which respected or elder village or watercourse members gather to discuss the matter in the presence of both parties. The *Panchayat*'s three permanent members are the *numberdar*, the chairman and another member, who are the final decision-makers, and function like mediators and 'judges'. The person who stole the water will be asked to forfeit his next water turn to the person who was deprived of his water right. When the parties fail to reach a compromise, the police can be informed, and if necessary, the case can go to court.

According to an informant who is often involved in *Panchayat*, as he is considered to be an honest man, people who have money (the bigger landowners and owners-cum-cultivators who lease a lot of land) more often disobey the decisions they take. When the case is submitted to the police, these people bribe the police to have the case decided in their favor, although the *Panchayat* may advise them not to waste the money of both parties in this way. The police do not always clear cases. Often, after taking a hefty sum of money as a bribe, they say they cannot solve the case, and it is submitted back to the *Panchayat*. If the case is submitted to court, the *Panchayat* members can send a written statement to the court, and often, the court considers their opinion.

An advocate from the Additional Sessions Court, Hasilpur, (interview 02/09/97) confirmed that decisions made by the *Panchayat* could be used as evidence in a dispute. The weight given to the case is up to the court, and this might be quite arbitrary. The *Panchayat* system is not incorporated in national law, and since Partition, it has not been encouraged through legal practice. But in practice, it is quite successful.

However, rarely do farmers submit a conflict about water rights between farmers to court. When farmers act as complainant against water stealers, they are mostly requested to deposit the case with the relevant department first, i.e. the Irrigation Department, and the I.D. will file the case. There is another reason why farmers are reluctant to approach a court to solve such cases. The procedures are lengthy, several years are not exceptional, complicated, and cost a lot of money. Especially smaller landowners and sharecroppers, who are generally poorer than lessees, have no means to fight for their water rights in court. Most of the cases, about 50 % to 60 %, are dismissed before a decision can be taken in court.

Court files of the Additional Sessions Court, Hasilpur, show that conflicts about water rights and land rights are not at all absent in this area. The responsible canal officer

files almost all cases, and, after inspecting the canal, accuses a cultivator, or a group of cultivators, of tampering with the *mogha*, or breaking the canal bank. Accused farmers are unlikely to be the more influential or wealthier ones, otherwise they would have paid a bribe to dismiss the case. Often, poor farmers say that they were never informed about the case, until they have to pay the fine, which is in the name of the official landowner. In practice, the owner-cum-cultivators, lessees or sharecroppers (50 %) pay these fines. This disfunctioning of the national-legal system is illustrated by the following case:

A sub-divisional canal officer ordered a penalty against nine farmers for illegally cutting the canal bank. However, the individual canal officer accused these farmers. The defendants personally filed petition to an additional commission, with the prayer that the defendants should not be enforced to pay the fine, as they did not have money to pay the fine. The arrest officer, Bahawalnagar, called the defendants and granted the case status quo (i.e. to remain as such). In the end, the applicants were dismissed, and the defendants did not proceed, because they were tired of proceeding. They went to court five or six times, but no result was forthcoming. The case was still in the initial phase of the proceedings. The defendants will have to pay the fine now, but they have not paid yet.

An individual farmer can use both, the customary *Panchayat* method of conflict resolution, or the newer institutions of the police and court, to get a case dissolved in favor of himself. This is a form of 'forum shopping' (Benda Beckmann *et al.*, 1997). Clearly, the bigger or wealthier people in the watercourse have better access to these institutions, and small landowners and lessees, and almost all sharecroppers, are the ones likely to face injustice.

When there is a conflict between landowners and tenants, an additional problem to getting justice through law, is that most contracts between landowners and tenants are verbal. There seems to be a growing awareness to the advantages of putting contract terms and conditions on paper, especially in leasing contracts for larger areas. Often, people say that both sides prefer such contracts, but practically, hardly anyone possesses one. A reason is that people already know each other before entering into the contract, and putting things on paper implies distrust. In the near future, however, more people may choose written contracts, and, if necessary, use it in court.

6.1.4 Bribing Lower Officials from the Irrigation Department

Apart from paying lower officials to install illegal pipes, as described before, there are also other methods to bribe lower officials from the Irrigation Department for more water. One method is the registration of land, a task entrusted to the Patwari. Each cultivable acre in the command area is allotted a certain amount of minutes per acre for irrigation, according to this registration of water rights. To provide for these water rights, *abiana* is collected. When more land than actually exists is registered, more water is acquired against less *abiana*.

Example 1

Landowner X has land in two watercourses. The land is situated on the boundary of these watercourses. He registers all the land in both watercourses by bribing the responsible Patwari. In this way, he manages to get twice as much water. Other farmers are not happy about this, but they say there is nothing they can do.

The same is done by using water allotted for forests, orchards, mosques, or for land that was formerly under cultivation, but is now part of a village or *dera*.

Example 2:

In the warabandi list, there is a water turn for a basti where six brothers live. Landowner Y, the richest person in this basti, used their water turn, in addition to his own, in his fields by force. When the brothers needed to use their water, landowner Y complained to the Patwari about it, who told the brothers that the water turn should be reduced. According to the brothers, the basti was not planned as part of the village, so the water turn for that land should not be decreased, because officially, it remains cultivable land.

The case was heard by the deputy collector. Nothing happened, and the case was dismissed 8 months ago. The brothers have the water turn for their lands, but landowner Y says that the water should be available for all cultivators.

In one of the watercourses, a farmer managed to change the warabandi turns permanently, so he got more water, and his neighbor less.

Example 3:

A landowner sold his holding to two persons; A and B. The land had one warabandi turn that was divided into parts after the sale. According to the allocation of the Irrigation Department, person A's water turn should come first, but A managed to get his water turn after B's by paying money to the Patwari. His benefit from the arrangement is that when he starts irrigating, the water is already in the watercourse, thus, he loses no water. But B was losing out, because water had to travel for a longer distance before it reached his field, thus, part of his turn was wasted. Only when A sold his land, was B able to change the turns back to the right order, but the reversal cost him 6 minutes out of his warabandi time.

These examples show that the warabandi system does not always mean that landowners have equal water rights. This affects tenancy, because tenants try to get land with better water rights and possibilities for irrigation, whether obtained through illegal means or not. Before taking land on lease or share, they inspect the condition of the field and monitor irrigation for a while. When these factors do not suit them, they will not take the land. Again, this case also shows that the economically or politically stronger people have a stronger bargaining power than other farmers and the Irrigation Department officials. They have more 'room for maneuver' to acquire more water through legal and illegal means.

Farmers along Mehmood Distributary have an extra possibility for water acquisition. They are living relatively closer to the heads of Azim, Mehmood and Fordwah Distributaries. Individual farmers are able to approach the gauge reader to ask for more water in the distributary, especially when their water turn is due. According to the farmers, he would 'sometimes agree, as he is somewhat greedy'. They pay him in fodder or wheat. Any owner or cultivator can arrange this, although some sharecroppers are of the opinion that it should be the landowner's responsibility. Sometimes, it happens that the landowner is 'lazy', and the sharecropper decides to 'save his fodder and wheat'. Owner-cum-cultivators and lessees, thus, make more optimal use of this strategy.

6.1.5 Exchange of Water Turns

Exchanging canal water turns is another strategy to acquire more water, albeit temporarily. The farmer in need of irrigation water would ask another farmer to use his water turn. The water turn is then returned at another time, creating a reciprocal relationship between the water exchangers. Most farmers often refrain from exchanging water turns with a third person, but it may happen from time to time. Canal water is exchanged between farmers whose plots are in close proximity with each other, in order to prevent the loss of water remaining in the watercourse. Most convenient is to exchange canal water with the farmer who has the next water turn; thus, the water does not have to travel further. More about exchanging water turns will be discussed in Section 6.3 about water distribution.

6.2 COLLECTIVE ACTION

Farmers' individual strategies for water acquisition were discussed in the previous section. In this section, farmer strategies requiring collective action are reflected upon. When farmers organize themselves, they have an expected common interest or objective. This section will look at those farmers actually involved in common decision-making and the kind of strategies they follow to acquire more water. Strategies requiring collective action and an increase in the availability of canal water for farmers, are:

- cleaning the watercourse;
- lining the watercourse; and
- increasing the size of the *mogha* by bribing Irrigation Department officials.

6.2.1 Watercourse Cleaning

Watercourse cleaning is necessary to increase the velocity of water in the channel, enabling more water to reach the fields within the same period of time. Weeds are removed, and the main watercourse is desilted. For proper watercourse cleaning, the length of the watercourse is divided among farmers according to the amount of acres they cultivate. The day on which the watercourse should be cleaned is also decided and communicated to farmers one day in advance via a mosque loudspeaker, or by dispatching messengers. The actual watercourse cleaners are owner-cultivators, lessees and sharecroppers, or their representative, like a family member. They can even hire wage laborers to do their portion of the cleaning on that day.

The person responsible for watercourse cleaning is respected by the other farmers. He usually has superior agricultural knowledge (thus, not the big landlords, who sharecrop or rent their land out). He is likely to be a landowner, whose presence in the watercourse is practically permanent, and not someone who is only leasing or sharecropping land in. Sometimes, this responsibility is passed on from father to son, as in Mehmood 118. Most likely, this person's land will be in the tail of the watercourse, thus, he will feel the need to take responsibility for organizing watercourse cleaning on time.

There is one sample watercourse, Fordwah 84, where cleaning does not go smoothly; in other words, it is difficult to organize farmers to clean the watercourse. The problem exists from where the watercourse splits into two main branches. Watercourse cleaning on the right branch is going well; a farmer respected by the others is responsible for organizing the four cleaning sessions each year (thrice in *kharif* and once in *rabi*). When a shareholder is absent, they would leave that part of the watercourse for him. Farmers say that before watercourse cleaning, they used to irrigate 3 to 4 *kanal* per time-unit out of one acre, but that afterwards, 5 to 6 is irrigated. Therefore, the common benefit is high.

Problems exist on the left branch, where farmers do attempt to clean the watercourse, but unsystematically. Some clean on the day decided upon, and others clean a few days later, or not at all. The tail and head portion farmers give cleaning their best shot, but middle portion farmers do not show up.

There is more than one reason for this. One of the main reasons deals with the social structure of this watercourse. Most farmers who have their land on the left branch are from the Lobana *baraderi*. On the right branch, mostly Arains inhabit the land. The Lobanas are all related to each other; their families have smallholdings, and many of them supplement their income with off-farm employment. Consequently, they have to divide their time between cultivation and their 'other' job. With Partition, this *baraderi* was allotted land in three or four different watercourses, thus, many of them have small plots in different watercourses. That they are members of one family means that a domestic problem, like conflict about a marriage, will inhibit others from participating in common activities like watercourse cleaning.

The land they cultivated in India was *barani* land; devoid of available canal water, a reason some Arains use to excuse themselves from cleaning the watercourse. Some farmers also reason that a few bigger landowners (who own 8 to 10 acres) desist, thus, smaller landowners (owning 2 to 3 acres) become demotivated. Another reason might be that people are ashamed to be seen cleaning the watercourse, as there is not much water anyway. Whatever the real factor, or group of factors, is for this failure to organize collective action, those who are sharecropping and leasing in land on this branch also suffer from the situation. They try their best to help clear conflicts between families, and seek reasons from farmers who did not show up for watercourse cleaning, but to this day, the situation remains largely the same.

6.2.2 Watercourse Lining

Watercourse lining is an acquisition strategy, as it prevents water losses through seepage and leakage. Another advantage is that it saves the time necessary for watercourse cleaning. The sample watercourses differ significantly in lining status - Fordwah 67 is completely lined, Mehmood 118 is partly lined, and Fordwah 84 is not lined at all.

The farmers of Fordwah 84 are trying to line the watercourse, but to date, procedures remain incomplete. In order to acquire assistance from the Irrigation Department or a Non-government Organization (NGO), 50 %, or more, of the farmers need to agree. Farmers should be willing to contribute in cash as well as in kind, by volunteering their labor. Bricks, cement and a technical advisor are often provided.

In the beginning of 1997, a *Panchayat*-type meeting was held for this purpose. Most farmers were present, who all unanimously decided in favor of lining the watercourse. However, not all farmers have been able to fulfill the financial commitment, and the general opinion now is that the procedure might take a year or two longer.

Mehmood 118 was lined in 1988 / 89 under the supervision of On Farm Water Management (OFWM). The lining of the watercourse lasted for four months, in which period the farmers lined 6 acres. The watercourse digging was organized in a similar manner as watercourse cleaning. Landowners who rent or sharecrop their land out do not contribute manual labor; their tenants do the actual digging. When any farmer did not show up, he needed to send somebody else, or pay the wage for one laborer for that day. All money was paid in the form of *abiana*, in premiums ranging for up to 5 years. These are all long term investments, thus, the landowners pay in full. Lessees and sharecroppers do not pay a single rupee, but they still provide labor for construction.

A big landlord who has his land (about 150 acres) in the tail of Fordwah Distributary initiated lining the watercourse. This landlord has a genuine interest in agriculture, and he feels it his duty to provide water to his tenants (both lessees and sharecroppers). As his land is situated in the tail, he was among the first to install a tubewell, initiating a tubewell 'scheme', as described in Section 6.1.2. Employing the assistance of a respected ex-Patwari, he motivated people to line the watercourse. In cooperation with OFWM, which provided cement and bricks, the lining started in 1995 and was completed in *kharif* 1996. Thirty-nine acres have been lined during this period, which leaves another 39 acres at the tail of the watercourse unlined. The frequency of watercourse cleaning has declined drastically, saving time for all cultivators. Before lining the watercourse, cleaning was necessary once every 15 to 20 days; but now, once a year suffices.

With almost the entire watercourse lined, a new discussion arose among the farmers. A few farmers whose land is situated in the next watercourse want part of their land included (about 35 to 36 acres) in this watercourse. They are plying for an extension

of the command areas where the watercourse is now lined, as the next one is completely unlined. In this way they could diminish the loss of water through seepage. A *Panchayat*-type meeting to discuss this issue was held in July 1996, where it was discovered that most farmers were against the plan. One group of important people (including an ex-Patwari and others responsible for watercourse cleaning) is in favor of increasing the command area, against almost all the other farmers. The big landlord does not appear to favor either group. Whether the command area is extended or not, the amount of water will remain the same in the end.

Farmers who resist the extension say that the size of the *mogha* will increase, as well as the amount of land to be irrigated. Moreover, each farmer's warabandi turn will become shorter; dropping from 26 minutes to 20 minutes per acre. They feel it is a double loss, while technically, there will no difference in the amount of water allocated to them. They have informed the XEN about the plan, but not enough farmers have agreed to proceed.

In both discussions, landowners made the same decisions. People who have tenancy contracts are considered less important; thus, they are not invited to these meetings. They do not have to pay, regardless of whether the watercourse is lined or not, or whether the command area increases or not. Tenants can always find another plot of land for cultivation.

6.2.3 Representing Farmers' Interests to Officials

Whereas both national and local law prohibits water theft, acquiring water for the benefit of the whole watercourse is a widely practiced method, although it affects water availability for users downstream. With the introduction of tubewells, more and more farmers express less interest in collective action. They are reluctant to spend money on bribes, and would rather use their own tubewells when water deficiencies are perceived.

When a single person breaks the *mogha*, all farmers of that outlet will be compelled to pay the penalty. Farmers normally do not complain to the Irrigation Department to accuse those farmer(s) who actually break the *mogha*, as everybody potentially benefits from the extra water, and it would create a conflict in the village. The penalty is divided among landowners according to the amount of acres they cultivate in the watercourse. When landowners lease out their land, then lessees pay 100 % of this penalty and sharecroppers pay 50 %.

When farmers organize themselves to bribe Irrigation Department officials,, those who have (temporary) water rights, thus landowners and lessees, pay the bribe (*rishwat*). The difference between an Irrigation Department penalty and bribing the Irrigation Department (a commonly planned activity) is thus clear. Sharecroppers normally do not have to pay the bribe. This has consequences for the way in which farmers organize the meetings.

Normally, only landowners and lessees are invited to the meeting. Landowners are expected to be there, as landowners are considered to care more about these things, and as the land belongs to them for life. Lessees are the owners for one year. Moreover, they are responsible for paying the *rishwat* to increase the size of the *mogha*.

Sharecroppers, more often, are not invited to these meetings, they do not have to pay this kind of *rishwat*, although criteria differ per watercourse. Furthermore, sharecroppers tend not to have time to attend these meetings. When sharecroppers do turn up, they can offer advice, but landowners and tenants make the actual decisions. Sharecroppers feel compelled to attend these meetings, especially when a landowner shows little interest in the land and condition of the crops.

The exception, Fordwah 67, is where sharecroppers do have to pay to increase the size of the *mogha*. The reason behind this might be that each year the size of the *mogha* decreases (through bribes) and diminishes again (during *salanabandi*), so that all cultivators benefit from this type of collective action for a whole year. As tenancy contracts are often for one year, sharecroppers are expected to pay 50 % of these returning costs. In the other two watercourses, sharecroppers do not pay *rishwat*. Sharecroppers in Fordwah 67 often join meetings at the big landlord's house, but the influential users ultimately make decisions. Landowners are of the opinion that sharecroppers, because they only have the land for one year, are unwilling to pay part of the bribe.

These meetings, normally held in the house of any influential person, are to discuss the amount of money landowners are prepared to pay to increase the size of the outlet. They also decide who will represent their interests to officials, normally landowners, as the *warabandi* turn is legally registered in their names. Financially strong landlords have 'contacts' with officials. Big landlords, ex-Patwaris and *numberdars* can be excellent key figures in representing farmers' interests to officials. They can also choose to talk to officials on their own; in which case, no meeting is held.

6.2.4 Successful Collective Action - Case Study, Mehmood

The following case illustrates how farmers create room for maneuver to acquire water, and the roles that financial and political power play. Farmers react to decisions taken by lower and higher officials, using the existing system to reach their own objectives. The following events took place between July and September 1997, and are reconstructed from interviews with farmers.

The Visit of the Prime Minister

The tail of Azim Distributary is always very dry. Except when there is rainfall, farmers upstream would cut the distributary illegally, resulting in farmers upstream shutting their outlets. Then, tail farmers get all the excess water, which

damages their crops. They have complained to the Chief Superintendent Engineer (SE; in charge of Bahawalpur Division, I.D.), but no response had been forthcoming. Tail end farmers remain unable to take canal water properly.

In July 1997, a tail-end farmer from Azim went to sector Punjab Irrigation, Lahore, to complain once again about the situation. The sector ordered the SE to allow water to the tail portion of Azim. The chief SE also visited Azim during this time, and made sure that the tail farmers took canal water properly.

Until upper- and mid-stream farmers cut the distributary again. This time Azim's tail-end farmers went to the Member of the Provincial Assembly (MPA), member of the National Assembly (MNA) and sector Punjab. Together (especially MNA) they invited the Prime Minister, Nawaz Sharif, to visit and see the situation. The Minister of Agriculture accompanied his visit on July 22, when they showed him an illegal cut at 72-R Azim. The Prime Minister ordered that the sector Punjab arrest the person who cut it, which was duly done. He also ordered the suspension of the SE (responsible for whole Bahawalnagar sub-division), SDO and Overseer (both responsible for Chistnian Sub-division in Mehmood and Azim Distributaries).

The arrested person is a big landlord from the middle portion of Azim. After 3 days, an MPA (who supports the Muslim League, like the big landowner himself) bailed him out. This MPA told the police that if the big landowner would cut the distributary again, he would personally hand him over. When the landowner was released, he told the people, "I am cutting the distributary again, now you call your Prime Minister!"

The suspended SDO and Overseer went to the High Court, telling the judge that they were suspended illegally and unlawfully. The Chief Justice approved their rights and pronounced them not guilty. Now they are back at work again, but at another station. The Irrigation Department appointed a new Overseer and SDO for Mehmood, Azim and Fordwah.

In August the new Overseer visited Mehmood Distributary for the first time, and saw many illegal pipes, illegal cuts and excess water at the tail. The water at the head was running over its designed capacity, which is 9 cusecs. His measure registered at 29 cusecs.

During this visit he met an influential farmer from Mehmood who had installed an illegal pipe. When the Overseer found out about it, the farmer brought the Overseer to the tail to see that the watercourses were running over their capacities. The farmer paid Rs 6,000 or more to the Overseer, saying that he would remove the illegal pipe during the night. Another farmer, also using an illegal pipe, also gave money to the Overseer. They agreed that the Overseer would close the distributary during the night so that the pipe could be removed.

The New Overseer Suspended

The Overseer told them that he was determined to take action against anybody taking water illegally. During the closure of the distributary that night, the Overseer reduced the size of three outlets on Mehmood Distributary. He also installed some bricks over the tail structure walls, and installed a gauge, ordering the gauge-reader to permit only the design amount, which is 9 cusecs, into the distributary.

The farmers of the whole outlet were very angry with the Overseer, because they got much less canal water than before. They need more canal water for sugarcane and rice crops (there are not many tubewells to compensate for the loss of canal water in these watercourses).

Within these circumstances, the farmer who bribed the new Overseer told some farmers and the gauge-reader: "We will collect money from each outlet to give to you." The gauge-reader asked for Rs 5,000 to Rs 6,000 from each outlet. The Overseer wanted Rs 40,000 per outlet.

A few days later, about 100 tail-end farmers and farmers from other watercourses gathered at the head of the distributary. They had also invited two or three Executive Engineers (XENs). Farmers related the story against the Overseer to them, and farmers from the tail portion threatened to kill if they would see him at the tail again. The Overseer continued his visits, guided by police.

Green Light for Tampering With the Mogha

Farmers were disappointed in ID officials (XENs); thus, a group of farmers went to the MPA (who had bailed the big landowner of Azim out of jail) in Bahawalnagar, and told him the whole story. The MPA tried to contact the Overseer, but the Overseer told him: "I do not have time for you, I am not your subordinate." Again the MPA called him and invited him to his home, but the Overseer told him that he was on his way to Hasilpur, where the Chief Engineer was visiting. The MPA rang the Chief up, and discovered that the information was false. The MPA told the Chief Engineer about the Overseer's attitude, asking him to suspend the Overseer, and to supply water to Mehmood according to the farmers' demand.

The Chief Engineer ordered that the Overseer be suspended at once. The XEN visited Mehmood head, and transferred or suspended the Overseer. The XEN told the farmers: "Break your outlet and use illegal pipes according to your demand until the new machine [for the size of the outlet] is installed. But do not cut the bank of the distributary." [The farmers did not get this in black on white, so basically it is still illegal.] For a while, there was no Overseer, only an SDO.

The farmers broke the outlet, and the distributary was running at over 20 cusecs once more. After a few days, on August 25, the new machine was installed, which decreased the amount of canal water in the distributary. Some farmers asked the

SDO and the gauge-reader why they decreased the amount of canal water. The reason, according to them, is that because the tubewell was installed low in the canal, the farmers could have easy access to canal water.

On the night of August 31, farmers at the head of the distributary broke the outlet again. However, a few days later, the new machine was installed, and the XEN and SDO ordered water according to the designed allocation. A gauge, controlled regularly to make sure that the water is allocated according to design, was installed at the tail. The farmers are worried and angry as they get much less water than before.

6.2.5 Factors Influencing Successful Collective Action

Collective action seems to be successfully organized most of the time in Mehmood 118 and Fordwah 67.

In general, the farmers in Mehmood seem more active in organizing themselves than in the other watercourses. Groups of 10 to 100 people, landowners, owners-cum-cultivators, lessees and also sharecroppers, go to the officials to represent their interests. In the other two watercourses, the more powerful members of the watercourse are involved in, or take initiatives, to mobilize collective action. In Fordwah 67, collective action is quite successful because a big landlord has his land in the tail of the watercourse. Mostly, he and a few other influential persons would go to the Irrigation Department. In Fordwah 84, however, farmers do not seem to manage increasing the size of the *mogha*. The size is exactly according to design, although many farmers think it is two to three centimeters smaller than it ought to be.

A factor that facilitates the organization of farmers in Mehmood 118 might be that almost all farmers live in the same village situated in the watercourse command area, so communication between farmers is easier. Also, Mehmood Distributary is fairly small, which facilitates communication between farmers at the distributary level. Discussions in *Panchayat*-like meetings are easy to arrange. More than in other watercourses, there seems to be a feeling of unity among farmers. People from different outlets more often cooperate, and solve conflicts among each other, despite the fact that in the head of the *mogha* mainly locals are living, and in the tail, mainly migrants from India. This watercourse also shows a diverse social structure, in the sense that there are many different castes and *baraderis* represented in the command area. The presence of various castes diminishes the potential for conflicts among castes.

Another factor that influences their possibilities for collective action is that all the watercourses of this small distributary are relatively close to the gauge-reader. This gives farmers extra room for maneuver, as they have easy access to the gauge-reader to ask for information, like why there is a deficiency of canal water, or, if necessary, to threaten him. Individual landowners and cultivators can ask him to let more water into the distributary during their night water turn. This strategic bargaining position might be the reason why Mehmood Distributary is getting relatively more canal water. The distributary

is mostly full (above design discharge), and the tail is often overflowing. Excess water is often diverted to the *budh*, a waterlogged area where only some farmers are cultivating.

That there are relatively many owner-cum-cultivators might also explain why farmers in this area easily organize themselves. They have a direct bond with the land and the water, as they are water users and beneficiaries at the same time. The canal water supply is so good, that most farmers prefer to grow rice and sugarcane, instead of cotton. People can more easily make a living, and they also have slightly more cattle than farmers in the other watercourses. Farmers along this distributary seem to prefer cultivating their land themselves; sharecropping and leasing out land is practiced by only 20 % of the landowners.

In a way, collective action has become more difficult after Prime Minister Nawaz Sharif's visit, mainly because officials have become more cautious about accepting bribes. To be more specific, officials changed the rate to increase the size of the *mogha*. For example, if they had demanded Rs 25,000 before, they now ask for Rs 40,000. Also, farmers expressed that they are exhausted of bribing newcoming officials. The costs and energy are too high, and the outcome of the procedure remains uncertain.

In the beginning though, the farmer in the area were happy with the Prime Minister's visit. Especially in Fordwah 84, where suddenly there was water according to design, and people could use their warabandi turn for a few days. The new Fordwah 84 Overseer told farmers that he would increase the size of the *mogha* according to design, without a bribe. Normally, XEN, Baildar or SDO are responsible for reducing the size of the *mogha* in Fordwah 84 and Fordwah 67 each year during *salanabandi*. They say they do this because the canal water has to reach the tail of the distributary, but according to the farmers they do this to get *rishwat*. A month after the Prime Minister's visit, a farmer of this watercourse expressed his feelings about the Irrigation Department as follows:

Nawaz Sharif suspended the officials, but the newcomers are of the same type. Again, there is no water in the canal, but we cannot run to the officials all the time to ask what is going on. We have to work on the fields as well; our daily schedule is very tight. We are fed up with the Irrigation Department; sometimes there is water, sometimes not. The quality of tubewell water is bad in some areas, so we are dependent on canal water for proper irrigation. We have fear of the Irrigation Department. The size of our *mogha* is too small, but if we say something about it, they simply stop the water completely. If we raise this problem, we will get more problems. Sometimes, we are angry with the Irrigation Department, because we cannot do anything due to these practices. People are not relaxed anymore, mentally and financially. We want to break peace and protest. The department spoils the country; they should work according to the law and the government should use force.

Although farmers did lose the high discharge they are used to, the way the farmers organized themselves was quite successful. In a watercourse like Mehmood 118, where

most farmers are owners-cum-cultivators, collective action is easier to organize. The reason might be that there are direct and long-term benefits at stake for owner-cum-cultivators, whereas, tenants always have insecurity about how long they stay on one plot of land.

6.2.5 Failing Collective Action In Fordwah 84 - Case Study of Shifting the Mogha

Previously, watercourse cleaning and organizing farmers to line the watercourse were described as being problematic in Fordwah 84. There is another problem in this watercourse that needs collective action. Although no official meetings have been organized, almost all farmers want to shift the *mogha* 2 acres downstream. At the moment there are twists in the beginning of the watercourse, so that the water loses its speed in the very beginning, and the watercourse silts up very quickly.

When the watercourse was designed, the land was still barren, and plots for cultivation were dispersed. At the head of the watercourse there were some big heaps of sand, so the cultivators twisted the watercourse according to their demand at the time. Nowadays, farmers want to shift the outlet 2 acres downstream. In this way, the length of the watercourse will diminish drastically (See Figure 6.2), the velocity of the water will increase, and the time necessary for watercourse cleaning will be less.

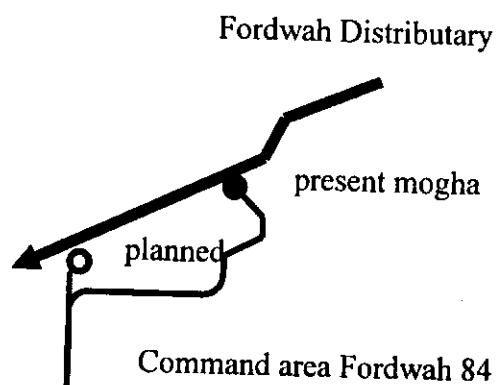


Figure 6.2. Map of the present and planned location of the mogha in Fordwah 84.

Some farmers went to the Irrigation Department to discuss the matter, where they were told that it would cost them Rs 50,000 to shift the outlet, an amount only landowners pay. However, only one influential landowner at the head of the present *mogha* is in favor of the plan. The new outlet would be 2 acres away from his land, so he would take more time to irrigate his fields. Some farmers were courageous enough to discuss the matter with him, promising to construct a very fine watercourse to his plots. This farmer is thinking about it now. Meanwhile, the money should be collected, but like with collecting money to line the watercourse, they have been unsuccessful until now.

Fordwah 84 is typically a watercourse with a high percentage of people who have tenancy arrangements. Collective action is difficult to organize, as a big proportion of

farmers seem disinterested. In Mehmood 118, collective action is well organized and here most farmers are owner-cum-cultivators. Other studies (Sinha, 1996) also suggest that the percentage of tenants plays an important role for collective action to succeed.

6.3 WATER DISTRIBUTION AND TENANCY

The Irrigation Department allocates water to land according to the amount of acres cultivated. The strategies farmers use to obtain more water and who (landowners or tenants) are involved in these strategies, are described in the previous section. The following section discusses how landowners allocate water to tenants, and how lessees or sharecroppers can or cannot use water rights according to their own wish and will.

According to farmers, water exchange happens more often in times of water scarcity. When there is rainfall, or when there is enough canal water for everybody, farmers sell or exchange their water turn sooner. Farmers who need more water in those times are, for example, those who cultivate rice or sugarcane. When there is a water shortage, both owner-cum-cultivators and tenants want to keep their water turn, and stick closely to the official warabandi. This is also one of the conclusions from another study on water allocation and distribution (Chemin and Ali, 1997).

6.3.1 Water Rights

Official warabandi is the only written form of water rights to farmers (Bandaragoda and ur-Rehman, 1995). All the water rights to tenants are verbally discussed and agreed upon. Local customary, or unwritten, rules form the guidelines for these water rights, which are widely accepted as they do not differ from watercourse to watercourse. So, *de facto* water rights form a pluralistic concept, combining norms of both bodies of laws. Different actors can interpret water rights in different ways.

Usually, the lessee gets the full amount of water for the land they cultivate, as allocated by the Irrigation Department. After paying the rent, they have the same water rights as the landowner, unless other agreements are made before the contracts start. Sharecroppers can normally use the water allocated to that plot according to the official allocation. However, it varies according to the attitude of the landowner, and whether the landowner has more than one sharecropper or not. Sharecroppers do not have the right to irrigate the field they want to irrigate, or to exchange or sell canal water. They need permission for almost all water distribution activities. Again, there are exceptions, which are highly dependent on the landowner's attitude as to what extent the sharecropper gets freedom to make decisions about water distribution and exchange, or to what extent the landowner imposes decisions upon him.

6.3.2 Water Rights in Leasing Contracts

Lessees, as contemporary landowners, have the right to use the warabandi turn for that land for any purpose. They can exchange canal water according to their own needs, and basically, they can sell the whole warabandi turn to any third person without the

official landowner's permission. Some landowners prohibit their lessees to sell canal water as it might decrease the fertility of the soil. However, with the exception of big landlords, they cannot ask the lessee to change his irrigation practices. If they are really concerned with the condition of the soil, they can ask the lessee to leave the land after the duration of the contract, which is mostly one year.

The lessee obtains the water rights, which means that he can allocate the water to any other plot without asking permission from the landowner. Thus, if the lessee also has his own land, and / or is sharecropping in land, in the same watercourse, he can freely use this water turn for his own land, or for the land that he sharecrops. This gives the lessee flexibility in canal water use; that is, he can irrigate better according to the needs of the crops.

Suppose a farmer grows fodder on a small plot of land he leases, and is growing rice on a plot that he owns himself. He wants to irrigate the fodder once in 16 days, while the rice plot constantly needs water for a period of 60 days. In this case, he saves two warabandi turns in two weeks, and this extra canal water can be diverted to the rice.

The flexibility in water distribution is only valid if a few conditions are met, which are:

- Distance: The distance between the plots should not be too far. When the distance is longer, then there are more conveyance losses for the diverted water turn. Too much water is wasted in this way.
- Duration of the warabandi: When the water turn period is longer (those for bigger plots) exchange of water is easier. The reason is that when the water reaches the other plot, still a lot of water is in the watercourse, and the speed of the water is still enough to irrigate well. If the water turn is short, it cannot reach another plot easily, and the water would stay unused in the watercourse.
- Slope of the watercourse: If canal water reaches a certain plot with difficulty, because of the slope, it is easy to divert the water turns to lands that are lower. Diverting a water turn to the higher land will be difficult.

Farmers who have land under owner-cultivation or a leasing contract, and have more than one plot in different places of the watercourse, thus, have the great advantage to 'play' with their water turns. They have to run the tubewell less often, or purchase less tubewell water or canal water, saving them money and making them less dependent. When the warabandi time of the land that is owner-cultivated and the land that is leased in is the same (when the fields are close together), it becomes very easy to combine irrigation turns. Especially in times of water shortage, it can be easy to combine two water turns to irrigate at least one field properly. The irrigation practices of an individual farmer, thus, becomes more efficient and more adapted to his needs. However, free exchange of canal water can lead to problems for other farmers, possibly implying that the farmer who has his water turn after the water turn of the farmer who diverted the

canal water, has to wait for a longer time before his water approaches the field. A farmer from Mehmood Distributary gave a good example of such a situation:

The person who has his warabandi turn before me, nearby the land I rent, disturbs my warabandi turn. We both have fields that are rather high. If he irrigates his own land with that warabandi turn, the water is already in the watercourse, and I can easily irrigate my fields. My neighbor is growing sugarcane on his land, and the crop is almost ready. If he irrigates more now, the roots become weak, and the crop might fall if there is wind. When he needs to irrigate, he runs his tubewell, as he does not need much water, and he gives his water turn to his relatives, who have some land two or three kila upstream. That land is much lower, so the water takes more time to reach my fields now. It has to travel farther, and my fields are higher, so I lose water.

In this way, exchange of water between different plots under different tenancy contracts, and between different cultivators, has an impact on the performance of the irrigation system at the watercourse level. While it is beneficial for the fields and people involved in the exchange, it may be harmful for another farmer.

6.3.3 Water Rights in Sharecropping Contracts

In sharecropping, normally, both the landowner and the tenant are involved in decision-making about cropping patterns, together with soil quality, determining the amount of water needed for irrigation, and irrigation practices. While the owner has the water rights, and basically can determine water distribution, the sharecropper (or his sons) is the actual irrigator, and sometimes he has to make decisions on his own.

If the landowner has a field with one warabandi turn and one sharecropper who is responsible for that field, then, without exception, the sharecropper gets irrigation water according to the official allocation.

If a landowner has more than one sharecropper on the same land, he can distribute the water turn between them in two distinctive manners. Either he can distribute it according to acres (method of the Irrigation Department), or he makes ad hoc decisions on the basis of the crop needs. In the first case, he would either distribute the water strictly according to timing, or leave it up to sharecroppers to divide the turn between themselves. In the second case, the landowner is closely involved in decision-making. He can optimize the production per unit of land by water distribution according to the cropping pattern, and thus give more water to one tenant, and less to another. No instances of this leading to severe conflicts, as water is distributed according to the needs of the crops, have been reported.

If a landowner who sharecrops part of his land out is also owner-cum-cultivator on the rest of the land, he has to make decisions about water distribution. Most owner-cum-sharecroppers are very careful not to distribute less water to the land they give on

sharecropping, because 'the sharecropper might feel bad about it'. Sometimes, the sharecropper is also expected to irrigate the landowner's plot of land, because there is one warabandi timing for both fields, although normally it would not be his responsibility.

A case in one watercourse illustrates that decision-making on water rights by the landowner can be unfair. Here, the farmer is owner-cum-cultivator, and sharecrops part of the land of his brother. The second brother is sharecropping the other part of the first brother's land. The farmer has his own tubewell. His brothers took the water turn for the land he sharecrops by force, saying that he could cultivate the land with his own tubewell, and now his second brother is using the whole water turn. In this case, the sharecropper was deprived from even the right to use canal water, and of course, he is quite upset with this decision of his landowner and brother.

Most sharecroppers are unable to make decisions about the exchange and sale of canal water. If they want to exchange canal water with a third person, he has to take permission from the landowner first. If the landowner is absent, they often can do it without his permission. Most landowners will agree with the exchange if his own field does not need irrigation; in other words, when there is excess water, or when the fields need more irrigation, and this can be obtained by exchange. The landowner would certainly not agree if the person whom the sharecropper wants to give water to has bad relationships with him.

Sharecroppers can never sell canal water. If they inform the landowner that there is excess water, and the landowner wants to sell it, he is not likely to share in the benefits of selling this water, although exceptions are existent. When the sharecropper wants to use this water turn for other fields he cultivates (e.g. as lessee or as owner-cum-cultivator), then the landowner might decide to sell it to him. In this case, the relationship between landowner and tenant is commodotised and the sharecropper can just as well purchase water from another person.

If a sharecropper needs more water for irrigation than the water that is distributed to him, he can buy canal and tubewell water. When he discusses this with the landowner, or at least informs him in advance, he can be sure that the expenditures are shared. When the landowner has money and purchases tubewell water, the sharecropper has to pay half of it back at the end of the season. The landowner also balances his share at the end of the season when the sharecropper has money and arranges the necessary payment.

When the sharecropper also has his own land or rents other land in, there is another possibility to obtain more canal water for the field that he sharecrops. He can use the water rights from his own fields for irrigation of the land that he sharecrops. This happens quite often. Landowners do not object to this practice. The sharecropper has to get permission to divert the warabandi turn for the plot he sharecrops, but he can contribute his own water rights as much as he likes. Sometimes, the sharecropper can get half of the canal water rate back from the landowner, if he discusses it in advance, but

this is not the norm. An example of a sharecropper who happily diverts canal water from his own plot to the land that he sharecrops is the following:

Many times I used my warabandi turn for the land that I sharecrop, mainly if there is no need to irrigate my own land. I have an emotional attachment with the landowner, because he is my brother, so that is why I irrigate that plot with my turn quite often. If we are able to irrigate that field with canal water, then why would we spend so much money on tubewell water?

Some landowners give their sharecroppers full water rights. This only happens when the landowner has a huge trust in the sharecropper; that he is sure the sharecropper will take good care of irrigation, and sometimes also, when the sharecropper is a relative. Only in this case do sharecroppers have the same flexibility as lessees. Normally, sharecropping does not favor exchanging or selling canal water as in other contracts.

6.3.4 Irrigation Preferences

To gain insight into the extent that flexibility in water distribution can be obtained by tenancy, farmers who have different fields under different tenancy relationships were asked which plot has priority for them. Taking care of land means good management of the soil and of irrigation practices. Both, landowners and tenants, were asked questions about management priorities.

Many cultivators say that usually, owner-cum-cultivators take better care of the land than a tenant. A tenant is uncertain how long he will cultivate the land for, and the owner knows he has it for the rest of his life. About three-fourths of tenants admit they would take better care of the land if it would be their own. They would, for example, plough more often, use farmyard manure or mulching to make the soil fertile for a few years, only use chemical fertilizer when necessary, level the fields properly and irrigate on time.

When a tenant knows he will have a contract for a longer time, say for 5 years, then he would take better care of the land. Sharecropping and leasing contracts for one year stimulate the tenant to focus on rapid and high yields. Instead of the preferred farmyard manure, he uses (cheap) chemical fertilizer, of a type that stays in the soil temporarily. If the tenant knows that the landowner wants him to leave the land after the next season, he will also be less interested in maintaining the land and the watercourse in a better way. He may start neglecting the fertility of the soil and good irrigation practices.

Tenants who indeed have their own land give similar responses. On the land they do not own themselves, they tend to go for general cultivation, and try to get high yields within one year, using an excess of fertilizers and pesticides. When he has his own cattle, he prefers to use his farmyard manure on his own land, rather than on the land that he leases or sharecrops.

In sharecropping contracts, sharing costs also play a role. The costs of chemical fertilizers are shared, but if the sharecropper applies his own farmyard manure, the landowner does not pay him for that. When the landowner supplies farmyard manure, paying costs for transportation to the fields may become an expenditure.

Sharecroppers are responsible for all cultivation practices and provide manual labor, while they only get half of the yield. They get the whole yield from the same time spent on their own plot. Lessees who have their own land not too far away from the plot they lease, can easily irrigate their own lands according to the needs of the crops, by diverting water turns. This happens when their own land is of a better quality than the land leased in; the land that is under leasing contract is more neglected, as it is less profitable.

Still, one-fourth of the tenants give a different response, stating they take better care of the land they sharecrop or lease. They do not tend to be tenants who have contracts with relatives or close friends. For land under sharecropping, the reason is that sharecroppers are 'under pressure' from the landowner to take good care of the land. If they do not work hard, or take better care of their own land, the landowner can say that they do not take proper care of his fields. They risk losing the land after the contract expires. Also, sharecroppers who have their own land state that they have to work on the land that they sharecrop for this reason. Threat of eviction from the land is a strong motivation for sharecroppers to invest their full attention to maintain the land under sharecropping, and keep the landowner happy.

The reason for taking better care of land under a leasing contract is that the lessee has invested in the land by paying rent, and pays all the costs of providing inputs himself. If they do not work hard on this land, they are afraid of incurring a double loss; loss of the rent and all expenditures.

There was a thought that tenants might take care of the land in a better way if it belongs to relatives or friends. This cannot be concluded from the data. The cultivators, who say they take better care of the land under contract, have close relationships with the landowner. The landowner might be a close relative, cultivating land of different members from another family, or a close friend, or a close neighbor. However, this does not mean that relationships between the landowner and the tenant are good.

In one case, the landowner, who is a brother of his sharecropper, does not give him any canal water at all, which caused a conflict between them. In another case, a sharecropper started cultivating for a friend, but after a conflict about the division of the yield, their relationship cooled down. Still, these farmers say they take more care of the land under tenancy contracts, because of the reasons mentioned in the last paragraph, and not because of an emotional attachment to the landowner.

To prevent their land from degradation and decrease in value for renting and selling purposes, landowners prefer tenants who are hardworking and take care of the

irrigation and soil properly. The landowner can check the condition of the soil in his fields under leasing and sharecropping contracts at anytime. If the soil looks fertile, he might be able to increase the rent rate and selling rate. If he notices that the yield decreases compared with the last yield, or the last tenant, he can ask the tenant to leave the land after the contract expires. For sharecropping, it is essential to find a good sharecropper to prevent the system from degradation.

Leasing seems to have become more popular, as the landowner earns cash money, while his required inputs and responsibilities for maintenance of soil and watercourse are almost zero. The danger is that the lessee counts on having the land for a short period, and thus chooses short-term strategies for getting a lucrative yield and income. He can leave the fields in any condition, as the landowner cannot force him to take care of it. To increase sustainable land use under leasing, contracts should be for longer than one year, according to lessees, but this means that the landlord cannot increase the rent during that time. As his main interest is the rent, this is not an obvious strategy, although he risks degradation of his field and watercourse.

7. CONCLUSIONS

Of all the cultivators in the sample watercourses, 40 % are pure tenant. Another 14 % are owner-cum-tenant. This shows that tenancy is a very important strategy to get access to more land and water for agriculture. Sharecropping is more popular in the sample watercourses than renting. Thirty-seven percent of actual cultivators are involved in sharecropping contracts, while only 24 % are involved in renting in land.

The choice for a certain tenancy type (pure landlord, owner-cum-landlord, owner-cum-cultivator, pure owner-cum-tenant, and pure tenant) depends on different social, economic and physical factors. These factors also influence each other on different levels. Table 7.1 gives an overview of these factors and their influences.

There is a difference in interests between leasing and sharecropping tenants. Lessees have more short-term economic interests that influence water management activities. In sharecropping, economic interests of both the landowner and the tenant play a role. In this kind of contract, social relations also play a more important role.

Table 7.1. Social, economic and physical factors influencing motivation for tenancy types

Type Factors	Effect on motivation for a certain tenancy type
Social factors	
• Relationships with neighbors	If relationships are good, there is more cooperation in terms of labor exchange; if relationships are bad, minor conflicts escalate quickly. This can be a reason to lease or sharecrop out the land; e.g. when the neighbor refuses to sell tubewell water to the sharecropper instead of directly to the landowner.
• Amount of adult in the family	The more adult men, the bigger the family, and the more food men for domestic consumption is needed. Also, more men means greater potential access to family labor, and the easier it is to sharecrop or rent in extra land.
• Attitude of cultivator	Preferences for a certain type of contract and certain characteristics in a tenant (e.g. should obey all his orders or be able to cultivate independently).
• Landownership (in or out of command area)	If a landowner has plots along different watercourses, it may be practical to lease or sharecrop some land out and pay more attention to cultivation of land in one or two nearby watercourses.

- Legal rights (security of tenure) One-year tenancy contracts do not give security to the tenant, and promotes short-term economical interests above long-term interests in maintenance of soil and watercourse.

Economic factors

- Off-farm employment Possibilities for more profitable employment outside farming, or the need to supplement household income by off-farm employment influences the interest that people have in the fields they own or cultivate. Absentee landowners and part-time cultivators are not fully dependent on their lands for a livelihood.
- Economic circumstances Poorer families tend to sharecrop in land, as most expenditures are shared with the landowner. More well-to-do families can more easily choose to rent in land, as they can afford to take the higher economic risks. The advantage is that they take 100 % of the yield, and can farm independently of the landowner.
- Rent rate The higher the rent, the more beneficial for the landowner to lease out the land, but the less attractive for tenants.
- Household needs (including cattle) The more money or yield for domestic consumption is needed, more land has to be cultivated. The bigger the family, the more land is needed, and the more cows and buffaloes, the more fodder should be grown. Depending on the amount of family land, extra land has to be sharecropped or rented.

Physical factors

- Distance of residence from the field Land far away from the residence will be more likely to be rented out, or, if nearer, sharecropped out. Likewise, it is easier and more beneficial to take land on sharecropping or rent that is close to the residence and the fields that are already cultivated.
 - Size holding If the size of the holding is too small due to the division of plots with inheritance, it is likely that the owner either rents or sharecrops it out, or tries to consolidate land by renting or sharecropping in nearby land.
 - Soil quality If the quality of the soil is bad, the landowner may be more inclined to sharecrop or lease out the land, because it is not that beneficial to him. Lessees and sharecroppers may have a preference for good quality soil.
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|--|---|
| <ul style="list-style-type: none"> • Availability of Canal water | <p>influences which crops can be grown and how much money may be spent on tubewell water.</p> <p>Good and secure availability canal water increases the value of the land, and does not stimulate landowners to give their land under tenancy contract.</p> |
| <hr/> | |
| <ul style="list-style-type: none"> • Availability and quality of tubewell water | <p>Increases options for irrigation, when canal water is insecure or not enough, increasing the value of the land. Tenants have preference to lease or sharecrop land where a tubewell is installed or nearby. (Small) landowners are less inclined to make big investments, such as installing a tubewell, if they do not cultivate the land themselves.</p> |

Looking at the amount of land under tenancy contract, there are big differences between the watercourses. In Mehmood 118, owner-cum-cultivator is the dominant practice, as 65 % of the land is under owner-cultivators. In Fordwah 67, only 19 % of the land is cultivated by owner-cum-cultivators, and in Fordwah 84, this is 31 %. The rest of the land in these two watercourses is under tenancy contract. The majority of the actual cultivators do not own the land.

Factors that influence how much land in a watercourse command is under tenancy are the following:

- Mean size of holdings: If the landholding size is small, like in Fordwah 84, owners show less interest to cultivate the land;
- Labor supply: In watercourses where relationships among farmers tend to be good, there is more cooperation in agriculture in the form of exchanging labor between family members, friends, neighbor-farmers, and landowners and tenants. For example, in Mehmood 118, farmers tend to make use of labor exchange, which makes it easier to cultivate a farm as an owner-cum-cultivator;
- Canal water supply: If canal water supply is sufficient for the present cropping density and cropping pattern, owner-cum-cultivator becomes attractive;
- Tubewell density: Installation of tubewells as a strategy to overcome irregular canal water supply helps cultivators to achieve better water management;
- Groundwater quality: If the quality of groundwater is bad, groundwater irrigation forms a risk factor for agricultural production; where there are fewer incentives for long-term sustainable management of the soil, like in short-term leasing contracts, there are more chances of problems with salinity or sodicity; and
- Soil quality: Where quality of the soil is bad, owners are more inclined to lease out land; in sharecropping, the quality of the soil may be guarded by the landowner, who knows that he has the land for the rest of his life, and after that, his children will benefit from the land.

The three sample watercourses show differences in the importance of tenancy. This can be explained by different socio-economic and physical factors.

In Fordwah 67, relatively a lot of land is under tenancy contract (81 %). There is one big landowner that sharecrops and leases all his land out. This landowner stimulates development of irrigation practices through lining of the watercourse, using his political influence to increase the size of the outlet, and installing tubewells for his tenants. The average landholdings of both landowners and cultivators are not small, despite the fact that about 30 % have off-farm employment. The landowners are mainly from the Arain caste (but not the same *baraderi*). This diminishes the potential for conflicts between castes within the watercourse command area. Both, landowners and tenants, are concerned about collective action, which again increases tenants' involvement in the land they cultivate.

In Fordwah 84, many landowners give their land on tenancy; and only 31 % (partly) cultivate their own land. Tenants tend to take land from different landowners, thereby increasing their access to land. Interest in the land seems to be less than in the other watercourses, especially on the left branch of the watercourse. Canal water supply is perceived to be insufficient and the average size of landholdings is small compared with the other two watercourses. This makes it more difficult to get profitable farms. Forty-six percent of tenants have off-farm employment.

Because there are groups of farmers who do not pay the amounts of money agreed upon, it seems very difficult for landowners and cultivators to organize themselves for collective action, for example, when lining the watercourse or bribing Irrigation Department officials. There are two main landowning castes in this watercourse (Fordwah 84); the Arain and Lobana *baraderis*. Most Arains have land on the right branch of the watercourse, and Lobanas own land on the main and left branches. Most Lobanas also have land in other watercourses, which diminishes the interests they have in this watercourse. There also seems to be conflicts within this *baraderi*, which may be a cause for lack of maintenance of the left branch.

In Mehmood 118, there are a relative amount of owner-cum-cultivators. Seventy-six percent (partly) cultivate their own land, which corresponds with 65 % of the cultivated land. Most landowners are also the actual water users. The average sizes of plots and the average amount of cattle are higher than in the other two watercourses, which makes it easier to earn a living from agriculture. Only 16 % of the owner-cum-cultivators have off-farm employment, which shows their interest in their land. Because farmers of this watercourse tend to live together in one village, landowners and cultivators can easily communicate with each other. These factors make it easier to organize collective action, in spite of the diverse social structure in terms of castes and *baraderis*. Moreover, the watercourses are close to the head of the distributary and the gauge-reader, so it is easy to get information about canal water supply, and to, individually or collectively, try increasing the amount of water diverted into the distributary.

The main research question was: **How do tenancy arrangements influence irrigation management activities?** The following conclusions can be drawn from the field research:

I Negative Influences

1. Seventy-five percent of the tenants tend to take less or equal care of soil and irrigation management practices on the land under tenancy contract, when compared with land that they would own themselves. This means that they would take better care of their own land (if they had their own land) than for the land under a leasing contract.
2. Leasing tends to increase degradation of the irrigation system, as lessees aim to get high yields and income on short-term. During the time of the contract, the landlord does not have influence on the lessees' water management practices. This may change when tenants get longer and greater security of tenure.
3. Sharecropping contracts do not have favorable conditions for optimal use of water markets. Sharecroppers often need permission from the landowner (if not absentee) to purchase, or to exchange, canal and tubewell water. Often tenants want the landowner to arrange and pay for it, because it enables them to delay paying their share until after the harvest.
4. In watercourses where a relatively high amount of land is under sharecropping contracts, these have implications for communal decision-making for collective action. Sharecroppers are not regarded as full water users with full water rights, and they are thought to be less interested in protecting or increasing these water rights. Joining meetings are considered to be the duty of the landowner. Exclusion of sharecroppers means that the persons who are actually irrigating the fields, and know best what is going on, are not involved in decision-making at the watercourse level. An exception is Fordwah 67, where sharecroppers are invited to the meetings. This can be explained by the fact that sharecroppers in this watercourse are supposed to pay 50 % of the bribes to officials from the Irrigation Department, whereas in the other watercourses, landowners pay these kinds of bribes. In the end, still the more powerful and influential farmers or landowners take decisions about collective action.

II Neutral Influences

1. Tenancy does not have an impact on maintenance of the main branches of the watercourse. As cultivators benefit directly from cleaning the watercourse through increased an velocity of canal water, they are motivated to join the collective activity. Problems exist, when the canal water supply is perceived to be inadequate, so that it is hardly worth the effort to clean the watercourse, or when a few big owner-cum-cultivators, or a group of cultivators, refuse to clean the

watercourse (free-riding), other cultivators become demotivated to clean the whole watercourse.

2. Landowners potentially can divide water turns among their tenants according to their own wish and will. This can lead to inequality in water distribution. However, most landowners distribute water according to the size of the plot, like in the official warabandi system. Tenancy seems to have little impact on the distribution of water rights.

III Positive Influences

1. Involvement in tenancy arrangements offers more flexibility in terms of canal water supply to farmers. Water can be diverted from one plot to another. Water management becomes easier, especially when plots are nearby and have the same or consecutive water turns. Leasing offers more flexibility than sharecropping. Diversion of a water turn, can, however, disrupt the warabandi turn of the next cultivator, as the water might have to travel further to reach that plot.
2. Taking land on tenure is a way to consolidate land and water rights. Through inheritance, land is divided each generation, and farms tend to get smaller and smaller. Landowners with small plots, especially with sizes under 1 acre, can either increase their farm by renting or sharecropping land of family members, or other landowners, or give their land under tenancy, thereby creating possibilities for family members, farmer-neighbors, or landless cultivators to increase their farm size.

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