Working Paper No 3
(July 1998)

Socio-economic Analysis of Villages in Relation to Aquaculture Potential in Raichur District, Karnataka, India

Aquaculture in Small-scale Farmer-managed Irrigation Systems
Funded by DFID Aquaculture Research Programme

Institute of Aquaculture
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List of Working Papers

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Project background

The arid and semi-arid tropics are areas in urgent need of development. As a home to a large proportion of the world's poor these regions face a future of scarcity of food and insufficient water for consumption and irrigation of crops. It has been predicted that India and Sri Lanka will face a fresh-water crisis in the near future, and as much water is currently wasted due to inadequate management and conservation practices there is a need for more integrated approaches to water management. The majority of India's surface water bodies are used primarily for irrigation. Although large-scale irrigation systems cover more surface area and supply a greater area of farmland, more farmers are dependent on small-scale systems for their daily livelihood. Irrigation systems are often very inefficient water distribution systems, and studies suggest that the efficiency of water use could be improved. The integration of aquaculture (which can be non-consumptive in terms of water use) has the potential to increase food production and improve the efficiency of the use of small-scale irrigation water resource.

These Working Papers are the first stage of the research project 'Small-scale farmer-managed aquaculture in engineered water systems' (DFID project R7064). The project aims to investigate the potential for integration of aquaculture into small-scale farmer-managed irrigation systems in arid and semi-arid regions of India and Sri Lanka. Intended beneficiaries include the rural poor, which in India belong to the Scheduled Castes (SCs)[1] and Scheduled Tribes (STs)[2]. This part of the project focuses on Karnataka State on the south west of the Indian peninsular.

During the research, the economic and technical feasibility and the social acceptability of the production of fish in such systems of arid and semi-arid regions of Karnataka were investigated. Field research took place from 6 April to 21 May 1998 and included a 'Rapid Rural Appraisal' of four villages in Raichur District, Karnataka, and semi-structured interviews with representatives from the Government Department of Fisheries, marketing organisations, academics and other relevant institutional sectors within the state.

All fieldwork was undertaken in collaboration with the NGO Samuha, an organisation undertaking wide-ranging activities in the arid and semi-arid areas of Karnataka State. Samuha has extensive experience within participatory development and its initiatives range across health, disabilities, women's development, HIV/AIDS, education, animal husbandry, drinking water and sanitation, irrigation and watershed development (Pradeep, 1994). The majority of the work of Samuha is carried out in the districts of Koppal and Raichur with a smaller project in Bangalore. The activities of Samuha are supported by a number of bodies: ActionAid; OXFAM; the Swiss Development Cooperation; the Government of Karnataka and the Government of India as well as individual donors.

The results and analysis are presented in the ten Working Papers listed above. For an overview of the content of each of the Working Papers, see the Summary Report. This series of working papers have been produced principally as a resource for a stakeholder workshop to be held in Coimbatore, 19th - 20th November 1998. Conclusions and the research agenda are therefore preliminary.

[1] SCs: lower castes identified by the Indian government as a means of classifying castes for the allocation of benefits.
[2] STs: all tribals. SCs and STs together constitute the 'socially and educationally backward classes of citizens'. The terms form the basis for policies of protection and positive discrimination.

Glossary

DFID	Department for International Development (formerly ODA).
Myrada	Mysore Rural Agri-cultural Development Agency
ODA	Overseas Development Agency (now DFID)
PRA	Participatory Rural Appraisal
RRA	Rapid Rural Appraisal
Rs	Indian unit of currency (Rs 60~£1).
SC	Scheduled Caste
ST	Scheduled Tribe
Taluk	Sub-administrative region
1ha	2.4 acres

Summary

1. All development is in some sense social, because all development is dependent on social actions and has social consequences. Social and economical analysis of local communities is essential because it increases the likelihood of selecting realistic objectives and appropriate activities to meet these objectives as well as reduces the risk of encountering unforeseen problems. Socio-economic analysis therefore aids sustainable development and as such is normally incorporated into initial project stages.

2. This Working Paper presents a socio-economical analysis of four villages in Raichur District, Karnataka, southern India. Villages were selected on the basis of the frequency of small-scale farmer-managed irrigation water bodies as well as on socio-economic characteristics such as caste-composition and literacy levels. Village research was carried out using participatory methods such as semi-structured interviewing, wealth ranking, mapping, diagramming, and ranking and scoring of key parameters.

3. India is a highly caste-conscious society where caste is directly linked to wealth. The target groups of the present project are the government designated lower castes, i.e. the Scheduled Castes (SCs) and Scheduled Tribes (STs) of the project area. In India higher caste individuals are commonly vegetarians, whereas fish and meat are consumed by the lower castes, and all SCs and STs eat both fish and other types of meat. The level of SCs and STs were high in all four project villages, and generally the caste composition of the villages was represented in the sample interviewed.

4. The literacy levels in the villages is low, and many farmers hold green ration cards (allocated by the government to households below the poverty line). Wealth groupings of the villages were identified from wealth rankings with individual villagers. The size of individual farmer's land holdings was found to be the most important indication of their wealth, and farmers owning irrigated land were identified to be richer than those owning only dryland in two of the four villages. Landless people formed the lowest wealth category in all villages.

5. Most villagers work their own land. Richer individuals may employ farm labourers on their land and poorer families may send one or more family members to work as labourers. Migratory work is common in the region, where both men and women travel to the irrigated regions to seek employment for the paddy harvest season.

6. Big differences were found between the different villages in terms of credit. In the richest village, Jumlapur, very few farmers borrowed money, whereas in the relatively poorer village, Mallapur, the majority of villagers were in debt for certain parts of the year. Most farmers borrow money during June, July and August for seed and fertiliser, and repay their loans after the harvest in September-October. Greatest indebtedness occurs at a time when inputs for aqualculture are most likely to be required.

7. Both institutional and non-institutional credit is available and used, although interest for the latter is more expensive by a factor of 3. The relative wealth of the villages was assessed to be related to infrastructure, with the more accessible villages, i.e. those closest to major roads, being richer.

8. Although farmers owning water resources are not amongst the poorest of the villages they are still commonly in deficit of resources (i.e. cannot meet their own needs from their farming activities) and therefore still lie within the project's poverty focus. Indeed the biggest constraint to the introduction of fish farming in the region was found to be the lack of resources for feed, fertiliser and initial investment. Overall, this preliminary assessment suggests that the project area is suitable for aquaculture development in terms of socio-economic characteristics. Recommendations for further research are made, including the targeting of landless groups for aquaculture development in community owned water bodies, and more detailed resource flow and cost-benefit analysis of fish production options in the project area.

Socio-economic Analysis of Villages in Relation to Aquaculture Potential in Raichur District, Karnataka, India

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1 Introduction

This paper presents a socio-economic analysis of four villages in Raichur District, with detailed descriptions of the caste-composition and wealth groupings of the local communities as well as an outline of the local economy.

1.1 The need for social analysis in development projects

For any development it is essential to consider carefully the social structure of the local community. The importance of local participation in development projects is being increasingly recognised, and more and more development programmes now place less stress on the transfer of technology and emphasise learning from and with rural people (Chambers & Richards, 1995). All development is in some sense social, because all development necessarily expresses social objectives, requires social mechanisms in order to achieve those objectives, and has social consequences. Social and economical analysis of local communities is important for sustainable development, and is as vital for project planning and implementation as technical, institutional and environmental analyses (ODA, 1995). In order to plan a development programme, it is necessary to understand the people who will be affected by the work. This includes social factors; economic activities and relationships; the roles of men, women, children, people with disabilities, and different ethnic groups; cultural attitudes; power structures; vested interests; levels of education and training; relevant statistics on population, health, and socio-economic status (Gosling & Edwards, 1995). Box 1 shows the benefits of social analysis in development projects.

Box 1 Benefits of social analysis in development projects. Source: ODA (1995).

- Increased capacity to identify whether and how a project can contribute to solving a developmental problem
- Increased likelihood of selecting realistic objectives
- Increased effectiveness in identifying appropriate activities to meet objectives
- Increased capacity to meet specific equity objectives
- Reduced risk of encountering unforeseen adverse consequences and negative impact
- Enhanced capability to manage problems that will inevitably arise during implementation
- Increased likelihood that development activities will be sustained

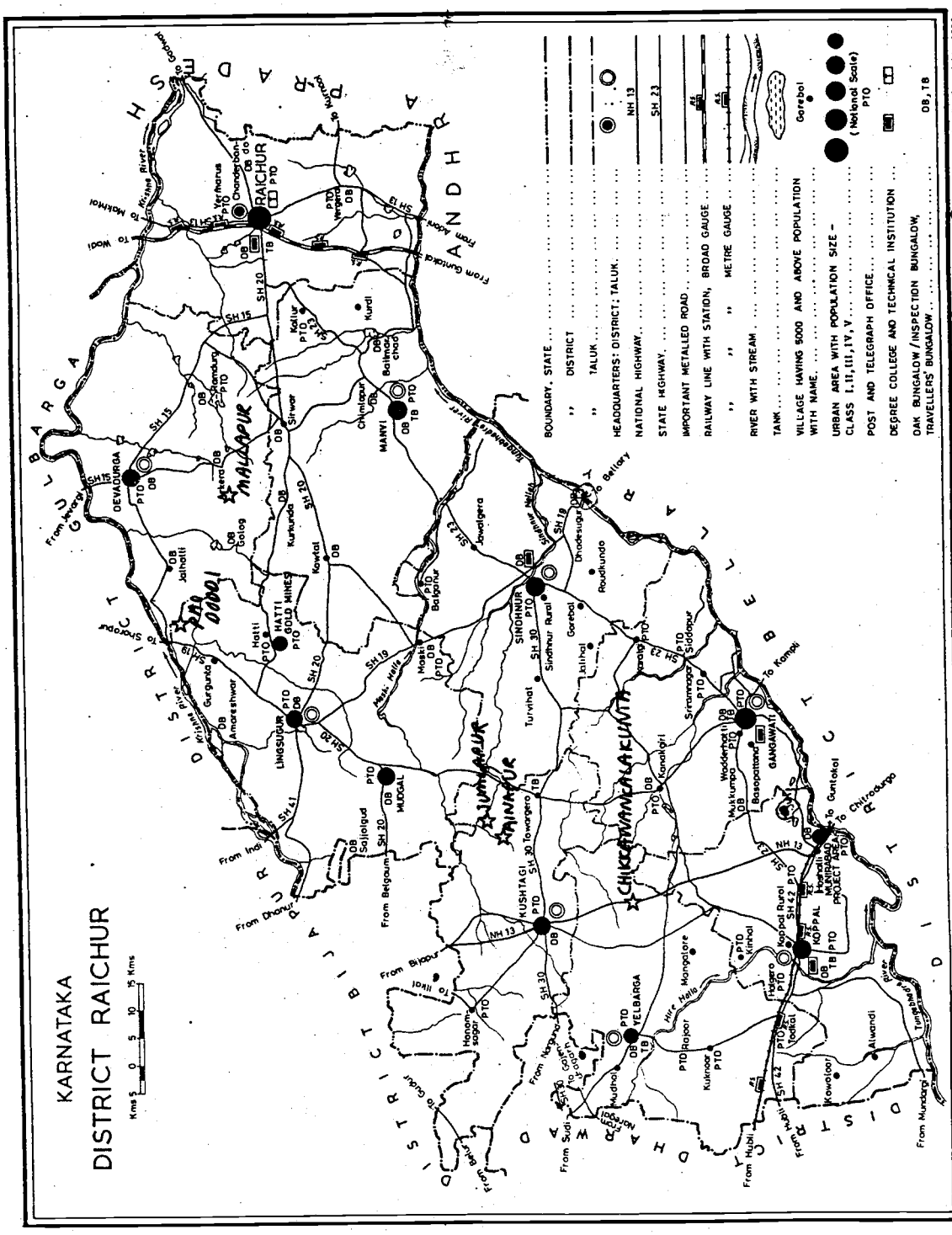
Another important function of socio-economic analysis is to ensure that the human and financial commitments, which make up development projects, do actually bring about the intended benefits (ODA, 1995).

As outlined in the project objectives, the target group of the project is the rural poor. In a caste-conscious society such as India, people of lower castes usually constitute the poorest sectors of society, and the first part of this paper is an outline of the caste-structure of Indian society. After this the wealth groupings of the different villages investigated are outlined and a classification based on land ownership presented. Key characteristics of the local economy are described, including patterns of work, migration and credit and expenditure. Finally the socio-economic suitability of the area for the development of aquaculture is assessed, and recommendations for further research made.

2 Methodology

Four caste study villages (see Box 2) were selected based partly on the number and types of water bodies present, and partly on the basis of socio-economic characteristics (see Working Paper 1 for a detailed outline of the selection of villages). The location of the villages can be seen in Figure 1.

Figure 1: **Map of Raichur District (source: Government of India, 1981)**



Box 2: Research villages in Raichur District.

Village name	Taluk[3]
Jumlapur & Ainapur	Kushtagi
Chikkawankalakunta	Yelbarga
Pai Doddi	Lingsugur
Mallapur	Deodurg

In individual villages the social structure of the village was determined from village social maps and wealth ranks[4] constructed by individual villagers. Participatory appraisal of village economy and resources was conducted, using techniques such as farm walks with individuals, and semi-structured interviews including key informant interviews with villagers as well as focus group interviews with women's savings and credit groups. For more detailed information about the analysis of the data collected, see Working Paper 2.

3 Castes

3.1 The caste system

One cannot consider the Indian population without paying attention to the concept of caste. Social stratification of the Hindu society into hierarchical caste groups has existed since ancient times, and caste still operates in almost every conceivable activity in social life (Rao, 1981). According to Havanur (1975) there is no possibility, at least in the foreseeable future, of the abolition of the caste system. Because of this castes are still considered in the political planning in India, where special benefits are given to people of lower castes.

The term 'lower castes' however is ambiguous, and many attempts to classify castes on the basis of their status have been made. Table 1 explains some of the terms used to denote 'lower caste' Indians.

According to the Constitution (Scheduled Castes) Order, 1950, and as modified by the Scheduled Castes and Scheduled Tribes Lists Modification Order, 1956, there are nearly 126 SCs in Karnataka State (Rao, 1981), and SCs constitute 17.2% of the total population of Raichur district. 7.8% of the district population belong to STs, as compared to the state average of 4.3% (Government of India, 1991).

Commonly Hindus of higher castes are strictly vegetarians and so do not eat meat or fish. Many Hindus of lower caste however eat both fish and meat, and according to Charsley (1996) the lowest castes eat even beef (not common in India where the cow is considered holy). In Karnataka there are some Brahmins, but the dominant higher 'caste' is the Lingayat. The Lingayats originated in an anti-Brahmin reformist movement dating back to the twelth century, and Lingayats commonly consider themselves a religious sect rather than a caste (Lakshmanna, 1973). Both Brahmins and (most) Lingayats are vegetarians, as are the Lingayat priests, the Jangamata (equivalent to Brahmins in terms of social status). People of middle caste mostly eat meat and fish, although there are some exceptions. Lower castes, including SCs, STs and OBCs[5] almost all eat both meat and fish.

[3] Taluk: sub-administrative region
[4] Social maps and wealth ranking: Tools commonly used in Rapid and Participatory Rural Appraisals (RRAs and PRAs respectively).
[5] OBC: Other Backward Castes: deprived castes not belonging to SCs or STs in receipt of special benefits.

Table 1: Various labels used for the lower castes in India with explanatory notes.

Term	Explanation
'Sudra'	The lowest kind of people ('varna') in Indian society as defined in 'The Laws of Manu'. According to these ancient scriptures, the varnas 'Brahmana', 'Kshatriya' and 'Vaisva' are the twice-born, whereas 'Sudras' are the once-born.
'Untouchable'	Group identified by the British in 1901 to refer to a sub-section to the 'Sudras', the 'Asprishya Shudra' (literally: 'not-to-be-touched Sudra'). These castes were thought to 'pollute' other (higher) castes with their touch. Furthermore they were (and still are in some places) not allowed to enter shops, restaurants and hotels or to use any common water source (well, tank, river etc.).
'Harijan'	'Harijan' – man of God – was a label coined for untouchables by Gandhi in 1931. Still in use today, but some confusion as to which castes are 'Harijans', as certain castes have adopted the name in favour of their original caste name, whereas others retain their original name. Thus a 'Harijan' caste exists in Karnataka, but this caste does not include all former untouchables.
'Depressed Classes'	Label used in the 1931 Census as means of classifying castes for the allocation of benefits.
'Scheduled Castes' (SCs)	Replaced 'Depressed Classes' under the Government of India Act, 1935. At this time official lists of castes were compiled in all states, to be used for electoral purposes and for the allocation of benefits. These lists were published as schedules attached to the Act (hence Scheduled Castes). SCs also encompass Christian and Muslim castes.
'Scheduled Tribes' (STs)	Introduced at the same time as SCs. Refers to all tribals (whether Hindu or of other religions). The Indian Government recognizes that SCs and STs are 'socially and educationally backward classes of citizens'. The terms form the basis for policies of protection and positive discrimination (e.g. allocation of land, loans under development schemes, financial support in education and reserved places in colleges, government jobs and representative bodies from national and state parliaments downwards).
'Other Backward Classes' (OBC)	Deprived castes not belonging to SCs or STs. OBCs have been granted political reservation and special benefits as well.
'Dalit'	Originated from a political and cultural movement amongst Buddhists and SCs in Majarashtra, and is now regarded as the politically correct term for lower caste individuals by the Indian media.

Compiled from Charsley (1996) and Havanur (1975).

3.2 Caste composition of sample villages

Table 2 shows a breakdown of the castes of the people interviewed in the 4 villages. In the sample of the population in Jumlapur and Ainapur, Lingayats, Gangamatasta, Walmikis and Kurrubarus were adequately represented, the Chalawadis were over-represented and the rest of the castes (who only occurred in small percentages) were not represented at all. In Chikkawankalakunta, the majority of the population is Walmiki, the only caste represented in the sample. For Pai Doddi only Walmikis and one Brahmin were interviewed. Both these groups are over-represented in the sample and the SCs and Maratha are not represented at all, giving an overall rather poor coverage of the different castes of the village. Similarly in Mallapur the SC population is not represented at all in the village sample.

As can be seen Jumlapur/Ainapur is by far the most heterogeneous society, with more than 15 castes present, compared to only 2 to 4 castes in the other villages. A great proportion of the population in Jumlapur is from the higher castes (Brahmin, Jangamata and Lingayat). The entire population of Chikkawankalakunta, Pai Doddi and Mallapur is Hindu, while in Jumlapur/Ainapur there is a small percentage of Muslims. In Chikkawankalakunta, Pai Doddi and Mallapur the population consists almost entirely of backward classes (100% of Chikkawankalakunta and Mallapur and 85% of Pai Doddi are SC or ST) which are the focus groups of the project.

Table 2: Overview of the castes present in the villages investigated compared to those interviewed.

Village	Castes in village	(% of population)	No. interviewed (% of total for village)
Jumlapur & Ainapur	Brahmin	0.6	0
	Jangamata	4	0
	Lingayat	22	5 (24)
	Panchala	1	0
	Gangamatasta (SC)	14	3 (14)
	Walmiki (ST)	17	4 (19)
	Kurrubaru (ST)	18	4 (19)
	Uphaars	0.3	0
	Bhajantri	3	0
	Harijan (SC)	10	0
	Dasa (SC)	1	0
	Chalawadi (SC)	3	6 (30)
	Hadapad	0.3	0
	Madivala	0.3	0
	Sajjan	0.6	0
	Hoogar	0.6	0
	Kalali (Muslims)	4	0
Chikkawankalakunta	Walmiki (ST)	98	19 (100)
	Harijan	2	0
Pai Doddi	SC	10	0
	Walmiki (ST)	75	12 (92)
	Maratha	14	0
	Brahmin	1	1 (7)
Mallapur	Walmiki (ST)	80	20 (100)
	SC	20	0

Source: semi-structured interviews with Samuha field staff.

4 Village characteristics

Table 3 shows the characteristics of the project villages.

Table 3: Key statistics for the project villages. J: Jumlapur; A: Ainapur; SHG: Self Help Group. Green and red cards are ration cards provided to the people below the poverty line (green) and of medium wealth (red). Figures in brackets denote the percentage of households that hold green or red cards (N.B. there may be more than one farmer in each household).

	Jumlapur & Ainapur	Chikkawankalakunta	Pai Doddi	Mallapur
Households	143 (J) 147 (A)	105	200	163 in village 276 in area
Schools	1 (levels 1-4)	1 (levels 1-4)	1 (levels 1-4)	1 (levels 1-4) 1 (nursery school)
Red card holders: no. of farmers (%)		10 (10)	50 (25)	120 (43)
Green card holders: no. of farmers (%)	239 (82)	95 (90)	120 (60)	180 (65)
Male literacy (%)	35	21	17	7
Female literacy (%)	7	3	3	2
Electricity	All households	Almost all households	15 households	25 households

Sources: village social maps for Jumlapur (1995), Ainapur (1995), Chikkawankalakunta (1996), Pai Doddi (1996) and Mallapur (1995), semi-structured interviews with Samuha staff and groups of villagers and 1991 Government Census for Raichur District.

4.1 Wealth

Government classification

The classification of farmers by wealth used by the Government of India is shown below.

Table 4: Indian Government classification of farmers into different wealth groups.

Description	Land-holdings (acres)
Marginal farmer	<2.5
Small	2.5-5
Semi-medium	5-10
Medium	10-25
Large	>25

Source: Government of Karnataka, 1996.

However this is only one classification of wealth groups, and it is likely that the different groups of people in a small village society do not fall into such standard brackets. In order to identify what wealth groups the farmers themselves recognise within a village, wealth ranking was carried out as described in Working Paper 2.

Jumlapur wealth ranking

Two wealth rankings were carried out in Jumlapur and Ainapur, both by men of the Lingayat caste. In general they showed good agreement (see Appendix 1). From these wealth rankings, a classification was made, which could be used to aid the analysis of data. This can be seen in Table 5.

Table 5: Wealth ranking for Ainapur and Jumlapur. Estimated percentages of villagers show the lowest and highest proportion of the village population thought to belong to the different wealth groups. Total number of persons interviewed was 21, of which one did not give information on landholdings.

Category	Land (acres)	Farm labourers	% of villagers (lowest and highest estimates)	No. of interviewees (%)
6	>30	Employ	1-2	0 (0)
5	21-30	Employ	5-9	1 (5)
4	11-20	Employ	5-24	3 (14)
3	5-10		36-58	9 (43)
2	<5	Work as	15-27	6 (29)
1	None	Work as	2-21	2 (10)

From semi-structured interviews with two men, Sherengouda and Ainarigouda (both Lingayat).

From both wealth ranks, it was evident that land holdings are not the sole indicator of wealth, but that whether the farmers work for or employ others is important as well as other factors (e.g. livestock). However both sources stated explicitly that land was the most important basis for the ranking, and so land may be used as an indicator on its own.

Of the 21 people interviewed in Jumlapur and Ainapur, one gave no land information (interviewed as part of a women's self help group meeting), and the rest belong to all groups apart from the richest in the two rankings. As can be seen from Table 5 the percentage of the total people interviewed from wealth groups 1, 3, 4 and 5 all fall within the range of the key informants' estimates, whereas a few more from wealth group 2 were interviewed and none from wealth group 6. Thus a fairly good representation of all levels apart from the most wealthy was obtained.

Chikkawankalakunta wealth ranking

In Chikkawankalakunta three wealth rankings were carried out, one by female key informants and two by male informants, all of which were Walmikis. The original wealth rankings can be seen in Appendix 1. Two of the classifications included distinctions between dryland and irrigated land and a mention of

whether the farmers work as, or employ, farm labourers. A classification scheme to be used for categorising people when analysing the village data was derived from the wealth rankings and can be seen in Table 6.

Table 6: Wealth categories used in analysis of ranks and scores for Chikkawankalakunta. Total number of people interviewed: 19.

Category	Dryland	Irrigated land	Farm labourerss	% of villagers (lowest and highest estimates)	No. of interviewees (%)
5	>20	>3	Employ	5-13	1 (5)
4	11-20	1-3	Employ	18-35	14 (74)
3	4-10	None		33-40	2 (11)
2	<4	None	Work as	7-40	2 (11)
1	None	None	Work as	13-35	0

Extracted from semi-structured interviews with Ballangouda, Malikarjun, Veeranagouda (males), and Yellamma and Ningamma (females).

From Table 6 it can be seen that the sample from Chikkawankalakunta is not very representative of the village as a whole. Thus the lowest wealth group is not represented at all, group 2 and 3 are under-represented, and wealth group 4 is grossly over-represented.

Pai Doddi wealth ranking

Two wealth ranks were carried out in Pai Doddi, one by women and one by a man (all Walmikis). Both distinguished to some extent between dryland and irrigated land and both mentioned whether the farmer works for or employs others as an important part of the classification. The agreement between the two sources was very good (see Appendix 1), and Table 7 shows a classification scheme derived from the information from the wealth rankings.
Both sources agree that the majority of the people in Pai Doddi belong to the poor category, and they agree quite well about the land-holdings corresponding to the different wealth groups.

Table 7: Wealth categories for Pai Doddi as used for the analysis of ranking and scoring data. A total of 13 individuals were interviewed in Pai Doddi.

Category	Irrigated land (acres)	Dryland (acres)	Farm labourers	% of villagers (lowest and highest estimates)	No. of interviewees (%)
5	>10		Employ	1	0
4	1-10	>10	Employ	0.5-1	8 (62)
3	None	5-10	Employ in season	11-31	1 (8)
2	None	<5	Work as	56-70	4 (31)
1	None	None	Work as	8-15	0

From interviews with the Sree Ganga (women's) Self Help Group and Gundappa (male, Walmiki tribe).

The majority of the people interviewed owned ponds or wells and used these to irrigate from a proportion (20% to all) of their land (wealth group 4), whereas the majority of the population of the village belongs to wealth group 2. Furthermore no landless people were interviewed, and so the sample is not very representative of the village.

Mallapur wealth ranking

Only one wealth ranking was carried out in Mallapur, by the village secretary (responsible for keeping records of land-holdings) a male Walmiki (see Appendix 1). Since this was the only wealth ranking for the village, it was used for classification of the villagers into different wealth groups as shown in Table 8.

Table 8: Wealth ranking Mallapur. A total of 20 individuals were interviewed in Mallapur.

Category	Land (acres)	% of villagers	No. of interviewees (%)
6	>10	2	4 (20)
5	7-10	9	5 (25)
4	4-6	20-30	7 (35)
3	1-3	55	4 (20)
2	<1	9	0
1	None	0.5	0

From interview with Shivanagouda, a male belonging to the Walmiki tribe (ST).

The lowest wealth groups are not represented at all in the research, and group 3 is under-represented. The majority of the people interviewed were from wealth groups 4 to 6, of which there are not many villagers, and so the sample is not very representative of the village population in terms of wealth. The ownership of irrigated land was found to be unrelated to wealth, and people owning irrigated land were present in all wealth groups interviewed.

Comparison of villages

Table 9 is a comparison of the land-holding categories used to assign different wealth groups for the different villages along with the estimated percentages of villagers belonging to these categories.

Table 9: Land-holdings of the different wealth groups in the research villages. Land-holdings are shown in acres for all land (L), irrigated land (IL) and dryland (DL).

Wealth group	Jumlapur & Ainapur		Chikkawankalakunta			Pai Doddi			Mallapur	
	L	%	IL	DL	%	IL	DL	%	L	%
6	>30	1-2							>10	2
5	21-30	5-9	>3	>20	5-13	>10		1	7-10	9
4	11-20	5-24	1-3	11-20	18-35	1-10	>10	0.5-1	4-6	20-30
3	5-10	35-58	None	4-10	33-40	None	5-10	11-31	1-3	55
2	<5	15-27	None	<4	7-40	None	<5	56-70	<1	9
1	None	2-21	None	None	13-35	None	None	8-15	None	0.5

Information derived from wealth ranking with villagers.

In all villages the poorest people are the landless. The classification of the other wealth groups differs only slightly from village to village, with the main exception being Mallapur, which has four groups of less than 10 acres where the other villages only have three. It is difficult to compare the relative wealth of the farmers interviewed because the criteria for the different wealth groups differ from village to village. However it is evident that there are very few people with more than 10 acres of land in Mallapur and Pai Doddi compared to in Jumlapur and Chikkawankalakunta. Furthermore 98% of the population in Mallapur and Pai Doddi are estimated to own less than 10 acres of land, compared to the largest estimate of 77% in Chikkawankalakunta and 89% in Jumlapur and Ainapur (calculated by subtracting the minimum percentages of villagers in wealth groups of more than 10 acres). Thus overall Mallapur and Pai Doddi can be regarded as 'poorer' in terms of land resources than Chikkawankalakunta and Jumlapur/Ainapur. These villages are also more developed in terms of electricity supply (Table 3), maybe because of their proximity to major roads and larger towns (see Figure 1). As outlined in section 3.2 there are more high caste individuals in Jumlapur/Ainapur than in the other research villages, and this may also explain the higher wealth status of these villages. However from Table 3 it can be seen that more farmers hold green cards in Chikkawankalakunta and Jumlapur and Ainapur than in Pai Doddi and Mallapur, which would indicate that the farmers from the former villages have lower incomes than those in the latter (or that they are better connected with the Development Officer who surveys and issues cards).

In India land is commonly passed on from father to son, and in the project villages land was often shared between all male members of the family. This is because legislation introduced in connection with land reforms in India puts an upper limit to how much land an individual farmer is allowed to own, and therefore many fathers register their sons as owners of part of their farmland, causing some ambiguity about who actually own what. Thus some farmers would respond with total family holdings when asked about the size

of their farm, whereas others would only mention the land they themselves cultivated. Thus the categorisation of individuals into the wealth ranks presented some problems.

4.2 Wealth groups and land ownership

The main wealth groupings differ somewhat between communities, mainly between Jumlapur/Ainapur and Chikkawankalakunta on one side (relatively large land-holdings) and Pai Doddi and Mallapur on the other (smaller land-holdings). Thus in Mallapur and Pai Doddi any farmer who owns in excess of 10 acres of land is considered 'rich', whereas in Jumlapur/Ainapur and Chikkawankalakunta there are two to three wealth groups possessing more than 10 acres of land. Similarly the estimated number of people belonging to the 'above-10-acres-category' is far bigger in Jumlapur/Ainapur and Chikkawankalakunta than in Pai Doddi and Mallapur. Thus in the former villages at least some individuals are relatively rich, and the social stratification of the community is more pronounced than in e.g. Mallapur where almost everybody own between 1 and 6 acres of land. However a great proportion of the population in Jumlapur/Ainapur and (especially) Chikkawankalakunta still own less than 5 acres of land. This indicates that Mallapur is the least wealthy village of the four considered.

The poorest individuals in all villages are those without land, and in two of the four project villages, individuals with ponds or wells on their land (for irrigation) are considered the richest in the community. The main water bodies suitable for aquaculture (see Working Paper 6) are used for irrigation (open wells and farm ponds), and the potential for the introduction of aquaculture is therefore greater amongst the landed than the landless, and greater amongst the wealthier groups of society than the poorer. However some communal water bodies exist, and it is possible that these could be used for fish production for landless individuals or other marginal groups.

For comparison of the different villages, it would have been easier if the wealth groupings for all villages were identical. However imposing outsiders' wealth categories on the villages is clearly against the philosophy of participatory research and furthermore only the villagers themselves can give an accurate picture of the actual wealth groups of their society. If all wealth rankings had had the same number of categories, they could have been compared statistically and their level of correlation determined (Fielding, 1997, unpublished). However this again may distort the results since villagers are forced to group people into a number of categories that may not exist in reality.

5 Local economy

5.1 Labour

Most people interviewed work in their own fields. Richer individuals may employ farm labourers to help them, either throughout the year or only at busy times, and poorer landowners commonly work for other people as well as on their own land. Landless individuals either work as farm labourers locally or migrate for work. In most households of poor farmers some family members migrate for work as well. Both men and women migrate to the irrigated taluks (Sindnur, Manvi and Gangawati) of Raichur for the paddy harvest. For this work they are commonly gone for about 20 to 30 days and earn Rs. 800 to 1400. Normally the pay for contract work is about Rs. 700 per acre for paddy harvesting. Furthermore men seek off-farm work in Karwar district (coastal Karnataka) or Goa State, doing construction work or go to Mangalore to work as pipe-layers. The majority of migratory workers in southern India are SC or ST (Dube, 1997), and as migratory work can cause great disruption of families this is recognised to further weaken the position of SCs and STs in rural Indian society.

5.2 Main sources of income

The main sources of income are the selling of crops and, less importantly, livestock and payment for labourer work. In each of the villages a few individuals had jobs outside the village (usually educated men of higher caste in government jobs) but these were a minority.

5.3 Credit and expenditure

In order for farmers to engage in engage in aquaculture a certain amount of credit is needed for investment. Information about income and credit was obtained from all villages apart from Pai Doddi. In the other villages the farmers were asked about what their main expenditures are, whether they borrow money and if so at what time of the year, how much and for what purpose.

Table 10: The number of people who borrowed money, obtained credit or did not borrow money in the preceding year. Not all interviewees asked in all villages.

Village	Borrow money	Obtain credit on seed or fertilisers	Do not borrow
Jumlapur & Ainapur	1	4	9
Chikkawankalakunta	2	1	3
Pai Doddi	4	0	1
Mallapur	15	1	0

From semi-structured interviews with villagers.

Table 10 shows that whereas the majority of the people asked in Mallapur borrow money, the situation in Jumlapur is the opposite. For Chikkawankalakunta and Pai Doddi it is difficult to make any generalizations as very few people were asked questions about credit at all. There are big differences between the farmers interviewed from the four villages in terms whether or not they borrow money. All farmers asked in Mallapur borrowed money or obtained credit for seed or fertiliser, compared to only little more than half the people asked in Jumlapur. This supports the general notion that the people in Jumlapur were on the whole better off than the people in Mallapur. The difference in relative wealth between the villages is most likely related to the ease of access to the village, and where Jumlapur was situated very close to a major road, Mallapur and Pai Doddi were far harder to access.

Table 11: Overview of the purpose of borrowing money of the villagers in Mallapur. N = number of people who borrowed money for the different purposes within the last year.

Money borrowed for	Money borrowed (Rs.)	N
Farm labourers	1,500-5,000	6
Seed	500-5,000	7
Fertiliser	400-3,000	7
Pesticides	500-3,000	9
Food	2,000-2,500	9
Clothes	2,000-3,000	6
Household items (stationary etc.)	1,000-2,000	4
Medicine	As needed	2
Weddings	As needed	2

From semi-structured interviews with villagers.

Typically sowing and application of chemical fertiliser takes place in June-August and December-January, whereas pesticides are applied July-September and January. Table 12 shows the number of people borrowing money in June-July and August (the only two seasons where the villagers borrow money). Farmers are most in debt in June to October, and at these times it may therefore be difficult for farmers to afford seed or fertiliser for aquaculture. Clearly differences exist between individual farms. Some farmers may only borrow money for seed and fertiliser (June-July) and others may borrow for farm labourers at harvest times (September-October).

Most money is spent on agricultural purposes (seed, fertiliser, pesticide and farm labourers) but some households borrow money for food. All families interviewed managed to pay back these smaller loans within 2 to 6 months after taking them out. Bigger loans such as for houses, wells or pumps generally took longer to pay off. The total amount of money borrowed per year varies from Rs. 1,000-20,000, but these figures may not be accurate estimates as there was a general feeling amongst the researchers that farmers would exaggerate their poverty because they were hoping to obtain support from the research team.

Table 12: The pattern of credit. Time of the year where money is borrowed and the number of people borrowing from village lenders and from banks in Mallapur (N).

Source of loan	N
From village lenders (3% per month)	12
From bank (1% per month)	5
Borrow in June-July	13
Borrow in August	10

From semi-structured interviews with villagers.

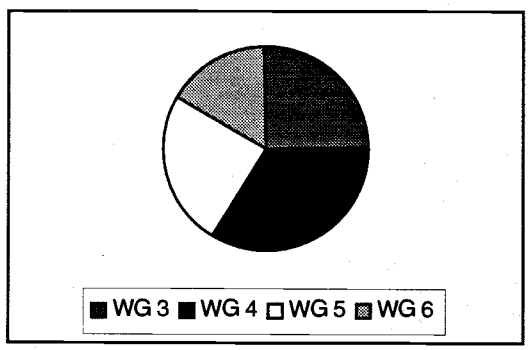


Figure 2: Wealth group (WG) distribution of farmers from Mallapur village borrowing money from village lenders at 36% p.a. N = 12. Source: semi-structured interviews from Mallapur village.

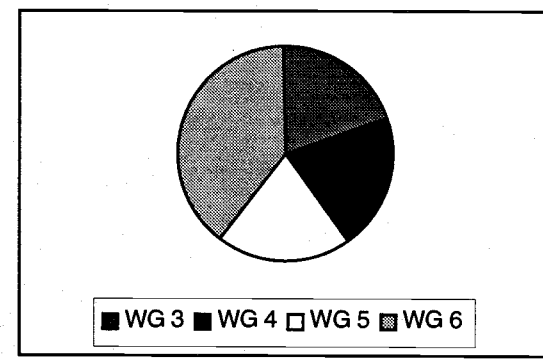


Figure 3: Wealth group (WG) distribution of farmers from Mallapur village borrowing money from banks at 12% p.a. N = 5. Source: semi-structured interviews from Mallapur village.

Money is borrowed either from banks at an interest rate of 1% per month, or from local moneylenders at 3% per month. The majority of farmers borrow money in June and July and pay it back after the harvest in October. Sometimes a smaller loan is taken out in August and paid back after the rabi harvest in February or March.

Most of the villagers borrow money from village lenders and not from banks. At interest rates of 3% per month, these loans are very expensive compared to bank loans (1% per month) but yet three farmers stated that they had never tried obtaining loans from the bank, mainly because they 'did not know how to'. The low education status (indicated by low literacy levels) of the poorer farmers may make them less aware of their opportunities than the wealthier farmers in Jumlapur. Thus it may be concluded that the farmers interviewed from Mallapur are disadvantaged because of lack of education. However of the five families borrowing money from the bank (Table 12), only one was literate. Figure 2 and 3 above show the wealth groups of farmers borrowing money from banks and local moneylenders, and as can be seen more farmers from the richest wealth group (wealth group 6) borrow from banks. Although institutional credit is cheaper, informal credit often has the advantage that it is easier to obtain and less security is needed.

It is hard to assess how much money farmers actually borrow annually and the year-to-year variability. As mentioned there was a general feeling that villagers in Mallapur were exaggerating their financial problems, but it is difficult to establish if this is true and if so by how much. The amount borrowed may be irrelevant, since it seems that all farmers manage to clear their debts every year, but even so it would be of value to know how much one 'disaster year' would set them back. It is recommended that more research be carried out to investigate the annual cycle of credit and debit for farmers in more depth. For a detailed account of credit schemes available to farmers, see Working Paper 9.

6 Socio-economic conditions in relation to potential for aquaculture

The target group of the current project is the rural poor of rainfed drylands. As explained in section 3, SCs and STs constitute the poorest classes of Indian society, and in the identification of suitable villages for the current research, the percentage of the population belonging to SC and ST was used as a criterion for

selection. Thus in terms of overall status of wealth, the villages investigated are all suitable as they all have a large percentage of fish-eating families from backward classes.

6.1 Constraints to the development of aquaculture in the region

The major social or economic constraints to the establishment of aquaculture in Raichur District would be the availability of adequate resources for aquaculture. The target groups of the project are very poor and have very limited means to invest into aquaculture. And although the ownership of water bodies is an indication of wealth in at least some of the villages, farmers using irrigation are still SC or ST (the least developed social groups in India), hold green ration cards (cards allocated to households below the poverty line by the Indian Government) and carry out subsistence farming. Obviously the level of investment and inputs required for aquaculture needs to be established before any conclusions can be drawn. However it is unlikely that the farmers of the present study will be inclined to put a great deal of resources at risk for the sake of experimenting with new farming systems. Indeed it is a recognised fact that risk avoidance, rather than profit maximisation, dominates household decision-making for small-scale farmers (Sen *et al.*, 1996).

Farmers from fish-eating communities (i.e. mainly ST and SC) were generally interested in fish production, but because there is practically no existing small-scale aquaculture in the area they do not have any experience of or knowledge about fish farming. The fact that there is no tradition of growing fish means that farmers would have to learn all aspects of aquaculture from basics, which may complicate the introduction process.

6.2 Possible impacts of the introduction of aquaculture

Aquaculture has the potential to provide a much-needed additional protein source in the project area. It is generally accepted that it is often advantageous to use innovative individuals who are reasonably rich in resources as participants in development projects (Okali *et al.*, 1994). This is because these have enough assets to carry some risk by participating in trials and by taking on risk they automatically become stakeholders with a strong interest in the success of the project. The poorest of the poor are often not the best target group for aquaculture development because they may lack access to basic resources and knowledge required for the rapid adoption of fish farming technology (Brummett & Haight, 1996). However the products of aquaculture may still reach the poorest, because increased supply will lower local prices of fish. Furthermore the poorest may benefit from increased work generated in the area by the establishment of aquaculture, such as fry trading and transport, and basket or net making, (Harrison, 1996). Another possibility is the leasing of government or privately owned water bodies to landless individuals. This has the potential to provide marginal groups with an income. In the present project farmers in the lower to middle wealth groups could certainly benefit.

Potential negative impacts of the introduction of aquaculture in the region includes the use of scarce water resources for fish production at the expense of human consumption or crop production.

6.3 Further research recommendations

The introduction of aquaculture would alter the farm resource flow patterns, as crops and organic fertiliser may be diverted from their present use to aquaculture purposes, whereas new resources such as fish are produced. This will change the seasonal patterns of food production as well as credit and expenditure on the farm.

- It is recommended that further research be carried out on the possible impacts of the introduction of aquaculture on the flow of resources within the farming system and on the farmers' seasonal pattern of credit and expenditure.
- Cost-benefit analyses of the different options for aquaculture in the region should also be carried out, so that the initial level of investment required etc. can be established.
- A further recommendation is to investigate the possibility for landless people to get involved into aquaculture by leasing government or privately owned water bodies.
- Research should be targeted towards the middle wealth groups, i.e. farmers owning less than 5 acres of irrigated land, since these are often ST or SC, commonly still in deficit, and therefore satisfy the project's poverty focus.

- Further information is needed about the history of villages, e.g. information about initial settlement etc. as this may provide insight into reasons for current distribution of wealth.
- Detailed semi-structured interviews should be carried out to provide a better understanding of socio-economic interactions determining the access to loans and other cash transactions.

References

Brummett, R. & Haight, B. (1996) Research-development linkages. FAO fisheries report no. 548: Report of the expert consultation on small-scale rural aquaculture. Rome, Italy, 28-31 May 1996. Compiled by M.M. Espinosa. Pp: 31-43.

Chambers, R. & Richards, P. (1995) Preface to: The cultural dimensions of development: Indigenous knowledge systems. Eds: D.M. Warren, L.J. Slikkerveer & D. Brokensha. IT studies in indigenous knowledge and development. Intermediate Technology Publications Ltd, London. Pp: xiii-xiv.

Charsley, S. (1996) 'Untouchable' – what is in a name. *Journal of the Royal Anthropological Institute* **2** (1): 1-23.

Dube, S.C. (1997) Tribal Heritage of India: Ethnicity, Identity and Interaction. Vikas Publishing House PVT Ltd, New Delhi. 123 pp.

Fielding, W. (1997), unpublished. Draft notes for ranking and Scoring Methods for PRA. 10pp.

Gosling, L & Edwards, M. (1995) Toolkits: A practical guide to assessment, monitoring, review and evaluation. Development manual 5. Save the Children, London. 255 pp.

Government of India. (1991) Census of India, series 11: Karnataka. Part XII-B. District Census Handbook, Raichur. Village and townwise primary census abstracts. Directorate of census operations, Karnataka.

Government of Karnataka (1996).Karnataka at a glance 1995-96. Government of Karnataka Directorate of economics and statistics Bangalore.

Harrison, E. (1996) Options for small-scale aquaculture development. FAO fisheries report no. 548: Report of the expert consultation on small-scale rural aquaculture. Rome, Italy, 28-31 May 1996. Compiled by M.M. Espinosa. Pp: 31-68.

Havanur, L.G. (1975) Karnataka Backward Classes Commission (constituted under the Commissions of Inquiry Act 1952) (Central Act 60 of 1952). Main Report. Volume 1, part 1. 134pp.

Lakshmanna, L. (1973) Caste dynamics in village India. Nachiketa Publications Limited, Bombay. 144 pp.

Mosse, J. C. (1993b) Half the world, half a chance. An introduction to gender and development. OXFAM, Oxford. 229pp.

ODA (1995) A Guide to Social Analysis for Projects in Developing Countries. HMSO, London. 248pp.

Okali, C; Sumberg, J. & Farrington, J. (1994) Farmer Participatory Research: Rhetoric and Reality. Intermediate Technology Publications on behalf of the Overseas Development Institute. 159pp.

Rao, N.J.U. (1981) Deprived Castes in India. Chugh Publications, Allahabad. 326 pp.

Sen, S; Mheen, H. van der; Mheen-Sluijer, J. van der (1996) The place of aquaculture in rural development. In: FAO Fisheries Report no. 548: Report of the expert consultation on small-scale rural aquaculture. Rome, Italy, 28-31 May 1996. Compiled by M.M. Espinosa. Pp: 15-19.

Appendix 1: Wealth ranking

Jumlapur & Ainapur

Table A1: Wealth ranking Jumlapur and Ainapur villages. Livestock refers to cows, buffaloes and oxen. From key informant interview with Mr. Ainarigouda, Lingayat, key opinion creator in Jumlapur village.

Category	Land (acres)	Livestock	Farm labourers	No. of families estimated
Richest	125 lease out land	12	Employ 20-25 in season	1 (1%)
Rich	15-25 lease out land	4-6	Employ 7-8 in season	5 (5%)
Medium	4-12 may lease out land	3-4	Employ 3-5 in season + work as farm labourers as well	60 (58%)
Poor	1-3 + may rent land		Work as farm labourers	16 (15%)
Poorest	None – may rent land			20-25 (21%)

Table A2: Wealth ranking Jumlapur and Ainapur villages. Villagers migrate to the irrigated taluks to carry out farm work or to the cities or the coastal states for construction work. From key informant interview with Mr. Sherengouda, (6 acres) Lingayat, key opinion creator in Jumlapur village.

Category	Land (acres)	Farm labourers	No. of families estimated
Richest	>30		5 (2%)
Rich	21-30		20 (9%)
Medium	11-20		50-60 (24%)
Poor	6-10		80 (36%)
Poorer	<6	Often migrate for work	60 (27%)
Poorest	None	Often migrate for work	5-6 (2%)

Chikkawankalakunta

Table A3: Wealth ranking Chikkawankalakunta. By Mr. Ballangouda Dalpati, Walmiki (ST), 24 April 1998

Category	Irrigated land (acres)	Dryland (acres)	Farm labourerss	No. of families
Rich	>3	3-4	Employ farm labourers	20 (13%)
Medium	None	5-15	Employ farm labourers	50 (33%)
Poor	None	1-4	Work as farm labourers	60 (40%)
Poorest	None	None	Work as farm labourers	20 (13%)

Table A4: Wealth ranking Chikkawankalakunta. By Mr. Mallikarjun Lingappa Roogi, Office Manager, Akanksha Yelbarga Team, and Mr. Veeranagouda, Secretary for Chikkawankalakunta, Akanksha Yelbarga Team, 19 April 1998

Category	Land (acres)
Richest	>20
Rich	11-20
Medium	4-10
Poor	1-3
Poorest	None

Table A5: Wealth ranking Chikkawankalakunta. By Yellamma, Walmiki (ST), member of self help group in Chikkawankalakunta & Ningamma, Walmiki (ST), 27 April 1998. In one major family there may be several individual farmers. Families in the middle category own either 1 acre of irrigated land or 3-10 acres of dryland.

Category	Irrigated land (acres)	Dryland (acres)	Work	No. of major families
Richest	>4	Some	Employ farm labourers	3 (5%)
Rich	2-3	Some	Employ farm labourers	10 (18%)
Medium	1 (or dryland)	4-10 (or irrigated land)	Employ farm labourers	20 (35%)
Poor	None	1-3	Work as farm labourers	4 (7%)
Poorest	None	None	Work as farm labourers	20 (35%)

Pai Doddi

Table A6: Wealth ranking Pai Doddi. By the Shree Ganga Swosahaya Gumpu, 1 May 1998.

Category	Irrigated land (acres)	Dryland (acres)	Work	No. of farmers
Richest	20	None	Businessman	1 (1%)
Rich	50	>10		1 (1%)
Medium	<10	5-10	Employ farm labourers in season	8-9 (11%)
Poor	None	1-4	Work as farm labourers	50 (70%)
Poorest	None	None	Work as farm labourers	10-12 (15%)

Table A7: Wealth ranking Pai Doddi. By Gundappa Walmiki (ST), Samuha volunteer in Pai Doddi, 2 May 1998.

Category	Land (acres)	Work	No. of families
Richest	>20 (both irrigated and dryland)	Employ farm labourers	2 (1%)
Richer	10-20	Employ farm labourers	4 (2%)
Rich	10-15 (shared by 2 brothers)	Employ farm labourers	1 (0.5%)
Medium	4-9	Employ farm labourers in season	50-60 (31%)
Poor	1-3	Work as farm labourers	100 (56%)
Poorest	None	Work as farm labourers	10-20 (8%)

Mallapur

Table A8: Wealth ranking Mallapur. By Shivanagouda, Walmiki (ST), 5 May 1998.

Category	Land (acres)	No. of families
Large farmers	>10	4
Big farmers	7-10	20
Medium farmers	3-6	50-60
Small farmers	1-3	120
Marginal farmers	<1	20
Poorest	None	1