NATURAL RESOURCE MANAGEMENT PAPER SERIES

Number 6 November 1987

SOCIOECONOMIC CONSEQUENCES OF LAND OWNERSHIP POLARIZATION IN NEPAL

Case Study of Nemuwatole Village

Prakash Dev Pant

HMG-USAID-GTZ-IDRC-FORD-WINROCK PROJECT

STRENGTHENING INSTITUTIONAL CAPACITY IN THE

FOOD AND AGRICULTURAL SECTOR IN NEPAL

FOREWORD

This Natural Resource Management Paper Series is funded through the project, "Strengthening Institutional Capacity in the Food and Agricultural Sector in Nepal," a cooperative effort by the Ministry of Agriculture (MOA) of His Majesty's Government of Nepal and the Winrock International Institute for Agricultural Development. This project has been made possible by substantial financial support from the U.S. Agency for International Development (USAID), the German Agency for Technical Cooperation (GTZ), the Canadian International Development Research Centre (IDRC), and the Ford Foundation.

One of the most important activities of this project is funding for problem-oriented research by young professional staff of agricultural agencies of the MOA and related institutions, as well as by concerned individials in the private sector. This research is carried out with the active professional assistance of the Winrock staff.

The purpose of this Natural Resource Management Paper Series is to make the results of the research activities related to natural resources available to a larger audience, and to acquaint younger staff and students with advanced methods of research and statistical analysis. It is also hoped that publication of the Series will stimulate discussion among policymakers and thereby assist in the formulation of policies which are suitable to the development of Nepal's agriculture.

The views expressed in this Research Report Series are those of the authors, and do not necessarily reflect the views of their respective parent institutions.

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SOCIOECONOMIC CONSEQUENCES OF LAND POLARIZATION IN NEPAL

Prakash Dev Pant*

INTRODUCTION

The economy of Nepal is heavily dependent on agriculture, which contributes 61 percent of GDP. It is also the most important sector in terms of employment: 91 percent of the labor force is involved in agriculture. It accounts for about 80 percent of export earnings (Sixth Plan, Mid-term Evaluation). However, Nepal's arable land covers only 31,268 sq. km. or 22 percent of all land (NPC, 1980).

Nepalese agriculture is structurally traditional and backward in nature. The land ownership pattern is skewed; while 68.5 percent of households own 10.5 percent of the total cultivated land area, 10 percent households hold 59.5 percent. As agriculture engages over 90 percent of the population, there is tremendous pressure on land. Per capita holding of land is around 0.22 ha, illustrative of undesirable land fragmentation.

There is a substantial difference between maximum and minimum landholdings in the Tarai and in the hills. Only seven percent of the hill population are in the the highest landholding category, but in the Tarai, it is 27 percent. On the other hand, landless in the Tarai make up 23 percent compared to one percent in the hills.

As population pressure increases, competition for titles to land and tenancy becomes more intense. Farmers who own large areas of land need extra labor to cultivate their land. The landless are a source of labor. The timely supply of labor is an important consideration for the land owner, whereas for the landless, security of employment in the slack agricultural season is important. In such a situation, various contractual arrangements need to be made, involving land, labor and/or credit facilities.

This polarization of land ownership could also effect technological decisions, such as the introduction of farm mechanization. As a labor saving device, mechanization would have serious implications for the welfare of the landless. It would further the process of polarization. Land leasing, labor hiring arrangements, and credit relations could become heavily biased in favor of land owners.

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Statement of the Problem

Where land plays a pivotal role in the production system, land ownership is a prerequisite to vertical mobility in terms of both asset acquisition and income generation. Moreover, there are few alternatives in a country that has an underdeveloped capital market and shortage of investment opportunities. Accumulation of land by those who have the ability to do so can therefore be expected to increase over time. Landlessness is a known phenomenon in Nepal and has rapidly increased in recent years. The massive depletion of Nepal's forests, resulting from the desperate need for more cultivable land, the migration of hill people to the Tarai in search of land, and the existing informal modes of land tenure, such as share cropping, are all indications that landlessness is on the increase.

The implementation of land reforms did not affect the land distribution pattern much. A survey done in 1973 shows that 83 percent of all households cultivated less than 25 percent of the cultivated area, mostly on holdings of less than three ha. Large farmers cultivated over ten ha, and accounted for only 4 percent of all farm households while owning 47 percent of the cultivated land (Ram Bahadur K.C., 1980).

The average landholding is now 1.1 ha per family; 0.56 ha in the mountains, 0.74 in the hills and 1.63 in the Tarai. The per capita figures are 0.09 ha, 0.12 ha, and 0.27 ha respectively, with an average of 1.14 for the country per household. Ninety-eight percent of the farms in Nepal are under three ha. Fifty-five percent are owner-cultivated, 21 percent are owner/tenant-cultivated, and 11 percent are tenant cultivated. The remaining 13 percent are unclassified (CDS, 1980).

Resources available in the rural areas have been least exploited for productive purposes. Land is not distributed equitably. A few families own unmanageable portions of land while many in the rural communities are either marginal farmers or landless laborers (NPC, 1978).

Differences in contractual arrangements among landlord, tenants and laborers affect agricultural output, which directly affects the overall economic environment of the country. Various measures have been applied but without much success. Income disparity and poverty are becoming more widespread. Almost 40 percent of the rural population live below subsistence level. Per capita annual income in Nepal is US $140 (Rising Nepal, July 22, 1982).

As the agricultural sector contributes the most to exports, it supports and generates investment in other sectors. Nepal must either create employment opportunities within the agriculture sector or explore new areas that absorb the excess labor force. Development of other sectors of the economy is not possible while this sector is neglected.

Objectives

This study of the land ownership pattern and its effect on the socioeconomic situation in rural areas was carried out to:

- document the existing land ownership pattern, including rent charges and wages, and changes in land ownership over time;

- examine the causes of the polarization and the effect it has had on the welfare of rural communities;

- document and analyze land leasing, labor hiring and credit arrangements in relation to the land ownership pattern;

- study the effect of the land ownership pattern on the development of farming technology.

Hypotheses

The polarization of land ownership may lead to an increase in the number of landless labor households. Certain biased relationships could develop between the landless and the land owners which could be manifested in contractual arrangements involving land, labor and credit. To ensure a labor supply especially in the peak season, land owners may enter into labor-tying agreements by providing plots of land to the laborers to be cultivated on a share basis. Similarly, credit facilities would act to bind labor to land owner. Such relationships have been documented in Katwal (1982), and Sharma and Katwal (1983). There may also be a tendency by landowners to introduce labor saving mechanization to reduce their dependency on hired labor. Hence, it is hypothesized that:

- labor attachment contracts that bind the landless to work exclusively for one employer throughout the year or as and when required could be directly associated with polarization in landownership; and

- land polarization leads to an increase in labor saving farm mechanization.

METHODOLOGY

Research Design

Both descriptive and analytical research was carried out for this study. The first objective is to document and describe the land holding pattern of the studied area based on the response of the sample households. The facts and figures collected were tabulated and analyzed. They were collected through surveys of reports and other secondary data.

Primary data on the specific field area was also gathered through interviews of selected households based on structured questionnaires prepared according to the objectives of the study.

Sample Size and Selection

One hundred sample households were selected from Nemuwatole village, in Dhanusha District in the central Tarai region of Nepal.

After testing several other villages to find out if a viable sample could be taken, Nemuwatole was finally chosen. The other villages were either too small or too large, or so underdeveloped that none of the households used even a pumpset or tractor. Systematic sampling was used

instead of a complete enumeration. The sample size, originally intended to be between 70 and 80, was expanded to 100 households: 50 from ward no. 8 and 50 from ward no. 9.

Field Area

Dhabauli Panchayat lies to the northeast of the headquarters of Dhanusha District. The village is one hour's journey from Janakpur to Mahinathpur by train, followed by a ninety minute walk north.

Dhabauli Panchayat comprises the four villages of Taratole, Gotoli, Dhabauli and Nemuwatole. Namuwatole is divided into two wards, with a population of 1309. It is the second largest village in the Panchayat. Ward no. 8 has 126 households and ward no. 9 has 98. There are 665 males and 644 females, living on a total village area of about 374 ha.

ANALYSIS OF DATA

General Characteristics of the Respondents

The number of male and female members of the selected households were 270 and 237 respectively. Forty percent were under 15 years of age, and all but six members of the remaining population were under 60. Only 18 percent were literate, and 52 percent worked in the agricultural sector. The average household size in the sample was five; 69 percent were economically active.

Table 1. Land Holding Pattern of 1975-85

Holding Size (Kattha)*	1985			1980			1975		
	HH	Area	%	HH	Area	%	HH	Area	%
Landless	35	-	-	34	-	-	32	-	-
1 - 40	45	521	16.6	44	457	13.8	48	535	15.5
40 - 80	9	635	20.2	10	577	17.4	10	446	12.9
80 - 120	2	269	8.6	3	291	8.8	3	184	5.3
120 - 160	6	565	18.0	6	863	26.0	4	963	27.8
Over 160	3	1148	36.6	3	1130	34.0	3	1334	38.5
Total	100	3138	100.0	100	3318	100.0	100	3462	100.0

* One kattha equals 0.084 acres.
Source: Field survey

Land Ownership Pattern

Of the 100 households surveyed 35 had no agricultural land and 22 of these had barely enough land for their homestead. These households were categorized as landless. They were the main source of hired labor to landlords of the area. The number of land owners is declining; most of the land is owned by a few landlords. Only three households fall onto the highest landholding category, that owns 36.6 percent of the total land available. There is a wide gap between the biggest land holders and the second biggest. After them, the differences in holding size are not very large. This pattern clearly reflects the economic disparity and

highly skewed land distribution of Nepal. The number of landless households has increased by only one in the last five years, but the number of households with holdings of over 120 katthas (20 katthas equals 0.67 ha) has not changed at all in the last five years, and has increased by two in the last decade.

Changes in land ownership patterns in Nemuwatole village have been studied, which revealed major change among small and medium landholders. Although the percentage of the total land owned by these households has increased, the actual area has decreased because the area available for cultivation has fallen from 3462 katthas ten years ago, to 3138 katthas in 1985. Despite this, the three households that have over 160 katthas now own a larger total land area than in 1980. Landless houses spend the little they earn on basic needs and have nothing left to invest in land.

Causes of Change in Area Owned

The respondents, most of whom are middle level farmers, said that they had had to sell some of their land to meet household, festival and medical expenses. Almost 90 percent had been forced to sell land for these purposes which shows that there is no other way for them to generate income except through agriculture production and property sale.

Another cause of decreasing land ownership is the practice of dividing up the land between the sons of the family. This has had more effect on the larger land holders (Table 2).

Table 2. Causes of Land Holding Changes

Holding Size (Kattha)	Purchases			Inheritance			Sales		
	HH	Area	%	HH	Area	%	HH	Area	%
Landless	-	-	-	-	-	-	3	9	4.2
1 - 40	19	147	29.2	3	33	3.8	10	82	38.5
40 - 80	5	130	25.8	2	160	18.3	-	-	-
80 - 120	2	59	11.7	-	-	-	2	22	10.3
120 - 160	1	20	3.9	-	-	-	1	100	47.0
Over 160	1	148	29.4	2	680	77.9	-	-	-
Total	28	504	100.0	7	873	100.0	16	213	100.0

Source: Field Survey

As Table 2 shows, the families with over 160 katthas have not parted with any of their land outside of the family. They have, in fact, increased their holdings by purchase. Families with small land holdings have not only continued to divide it up among sons, but have also had to sell an average of 8.2 katthas per family, to meet some of life's other expenses. Although the area of land purchased by farmers in this group seems high, it averages only 7.7 katthas per household. In the top bracket, the 148 katthas was purchased by one family.

Landholding Pattern

Total land holdings of the sample households, and the breakdown into own-cultivated land and rented-cultivated land is shown in Table 3. The figures in brackets are percentages.

Table 3. landholding Pattern

Holding (Katthas)	Owned & Cultivated HH	Owned & Cultivated Area	Rented & Cultivated HH	Rented & Cultivated Area	Total HH	Total Area	% of Total*
1 - 40	45	463 (55.3)	20	375 (44.7)	65	838	34.3
40 - 80	9	563 (85.8)	6	93 (14.2)	15	656	19.0
80 - 120	2	201 (77.0)	1	60 (23.0)	3	261	7.6
120 - 160	6	520 (85.4)	2	89 (14.6)	8	609	17.6
Over 160	3	1088 (100.0)	-	-	3	1088	31.5
Total*	65	2835 (82.1)	29	617 (17.9)	94	3452	100.0

Source: Field Survey

Rent payment by farmers to their landlords are made in one of three ways (Table 4). Some tenants pay fixed rates regardless of production, fixed by HMG. In Nemwatole, 14 percent of tenants paid rent in this way, fixed at 15 maund (one maund equals 37.32 kg) per bigha (1.68 acres).

Tenants are now protected by legislation and tenancy rights to land have been made hereditary. They cannot be bought, sold, or transferred outside the family, as with ownership rights. The most common form of rent payment is 50 percent of the total yearly crop. This is not fixed by the government, but exacted by powerful landlords. It is a clear illustration that government measures to regulate the rent system have not been successfully implemented.

Table 4. Rent Payment Methods

Rent	No. of Tenants	Percentage
50% of main crop	9	31.0
50% of all crop	16	55.2
Legally fixed rate	4	13.8
Total	29	100.0

Source: Field Survey

Cultivated Area and Labor Use

The main crops grown are paddy, wheat, millet, and potatoes. Small quantities of tobacco, jute, and oilseeds, are also grown but have not been included in the analysis due to the inaccuracy of the data on them.

Table 5. Cultivated Area and Labor Use

Holding Size (Katthas)	Cultivated Area (Katthas)	%	Laborers (people)	%	Laborers per Kattha
1 - 40	901	23.6	5550	22.3	6.2
40 - 80	881	23.0	7734	31.1	8.8
80 - 120	279	7.3	1625	6.5	5.8
120 - 160	621	16.2	6645	26.7	10.7
Over 160	1142	29.9	3337	13.4	2.9
Total	3824	100.0	24891	100.0	6.5

Source: Field Survey

The quantity of labor used is much higher among the families with small land holdings, but most of them are family members or friends that share the work in return for the same favor. The 3337 people who cultivate the land in the top bracket, are all hired. Family labor use decreases as size of holding increases. The large land holders prefer mechanized cultivation, because it takes less supervision. Intense cultivation can be maintained without increasing the quantity of hired labor. An alternative for large land holders who wish to avoid the trouble of cultivating their own land, hiring labor, or buying machines, is to lease some land to tenants and demand 50 percent of the produce as rent. Responsibility for the land is passed completely onto the tenants.

Labor/Wage System

In Nemuwatole, landlords mainly hire family labor on a daily wage basis. Labor exchange systems are also used (Table 6).

Table 6. Type of Labor Employed

Type of Labor	Number of Households	Percentage
Family Labor Only	15	22.0
Hired Labor Only	17	25.0
Family & Hired Labor	22	32.4
Family, Hired & Exchange	14	20.6
Total	68	100.0

A labor exchange system is one where a group of families in a village work together on one farmer's land, and then move to the next. Each farmer supplies labor on someone else's land, in return for their labor on his land. No wages of any kind are involved.

The daily wage laborer receives payment at the prevailing wage rate of the village. The rate varies according to the crop being cultivated and the type of work. In this situation, wages are generally paid in kind. Men, women, and children all get paid at the same daily rate.

The daily wage rate for full-time laborers is five kilos of the crop, or three kilos plus lunch. Workers who work for the first half of a day get the same. Those who work the latter half of a day, however, only receive two and a half kilos of crop. No one is paid on a monthly or yearly basis. The wage given to attached laborers is a little less: four kilos of crop, or two and a half kilos with lunch, and they have to work for two or three hours longer than the others. Generally, attached laborers get only half a day's wage for full time work.

At harvest time, a piece wage system is used to pay the harvesters. The rate differs according to the crop and the wage is paid in the crop which is being harvested. The piece wage rate for paddy, wheat, millet, pulse and onions is one bundle for 16 harvested bundles. For harvesting oilseed, the workers get one bundle for four bundles harvested and for potatoes, one kilo for every 16 kilos dug from the land.

Half day jobs and full day jobs are pre-determined by society and tradition. Some tasks take several full days, such as irrigation, transplanting, harvesting and tilling the soil, and others are obviously part-time chores, such as weeding, sowing, and scattering fertilizer. This has become the norm of the community.

To earn a full day's wage, the laborers start work at 7 am, take breakfast for half an hour at 9 am and lunch for an hour at 2 pm, and work on until 4:30 pm. Half a day is from 7 am to 12 noon.

Labor Used Per Kattha

Farmers who own between 120 and 160 katthas of paddy land use the most labor per kattha, a maximum of 14 people. The largest farmers utilize the least, mainly because the families themselves do not contribute labor so all those who work have to be hired, and because machines are often used instead. This is particularly true where wheat, millet, and potatoes are being grown. All farmers within the 120-160 kattha group, utilize fourteen, three, twelve, and ten people per kattha on their land to produce paddy, wheat, millet and potatoes respectively. For millet and potato production, the 40-80 kattha group uses nine, and five people per kattha respectively.

Contracts Between Landlord and Laborers

There is another system of employing labor in Nemuwatole village. A certain number of laborers are hired to be available when they are needed by the landlord. A contract between the laborer and the landlord will be drawn up stating that the landlord gets labor as and when he requires it (particularly in the peak season, when it is difficult to secure workers as they are in high demand), and the laborers get a piece of land free to cultivate. This practice is spreading to other sectors of the economy. The number of attached laborers is increasing with increasing land holdings. The households that supply such labor are mostly landless or own between one and forty katthas and therefore have

excess labor. The land given for cultivation, in return for the labor, varies from two to six katthas per person.

Labor attachment relations, in which labor either works exclusively for one employer throughout the year or as and when required by the various landowners, appears to be positively associated with polarized land ownership. Landlords are not able to employ the laborers they require as their land area increases because of the ongoing cost, and they can afford it only up to a point. Beyond that, they may consider investing in machinery and other modern technology.

Table 7. Number of Seasonal and Full-Time Agricultural Laborers

	Full-Time		Seasonal		Total
	Male	Female	Male	Female	
Landless	17	4	12	7	40
1 - 40*	20	2	12	7	41
Total	37	6	24	14	81

* Other groups have been omitted because they do not hire out labor.
Source: Field Survey

Women are mostly engaged in seasonal work rather than working full-time, because they also have domestic chores. The latter takes priority, unless there is a serious problem in the fields. At peak times, such as transplanting and harvesting, everyone lends a hand.

It was found that the inputs and wages for all farming operations (except for harvesting expenses on share-cropped land) were borne by the tenant himself. On share-cropped land where the harvest is divided 50/50 between landlord and tenant, the costs are also shared in that ratio. When hired labor is required, tenants and landlords contribute an equal proportion of their half as wages for the laborers.

Credit Arrangements

Credit arrangements play a major role in agriculture. Sources of credit, though, are still limited due to poverty. The government implemented various measures, such as compulsory saving schemes and a cooperative bank (now the Agriculture Development Bank or ADB) to teach the people to save money at more affluent periods of the year for use in harder times. However, one can only save if one earns more than one consumes. For most Nepalese in the agricultural sector, this is not possible. At present ADB is the main source of institutional credit for agriculture. Sajha Sansthan, Nepal Bank Ltd. and Rastriya Banijya Bank are other sources.

The practice of rural borrowing from landlords, businessmen and professional money lenders is widespread, although they often charge very high interest rates. Over 40 percent of all loans are taken from landlords and local money lenders. The latter is still a very important part of a rural society whose economy is based totally on agriculture,

whether landholding or landless labor households. Their importance is increasing because it is not necessary to take out a mortgage on property or any other valuables; local money lenders simply provide the cash or seed at 25 percent interest. The commercial banks charge 18 percent, but getting the loan is a much more complicated process. Villagers also prefer to be able to take a loan at any time according to their needs, without any complications.

Table 8 shows the level of borrowing compared to the size of household and landholding.

Table 8. Loans Taken According to Landholding

Land Size*	Households	Total Loan (NRs)	% of HH	% of Loan
Landless	22	13,670	34.8	13.5
1 - 40	33	35,013	52.4	34.6
40 - 80	4	11,650	6.4	11.5
80 - 120	1	1,650	1.6	1.0
120 - 160	2	35,000	3.2	34.5
Over 160	1	5,000	1.6	4.9
Total	63	101,983	100.0	100.0

* Katthas
Source: Field Survey

Some villagers do borrow money from banks. These villagers mortgage their land to ADB or a commercial bank. Most use the commercial banks.

Loans are repaid, both local and bank, in the same form in which they were taken. A few laborer households provide labor to the lender when he needs it instead of repaying the loan. Of the 63 respondents who had taken loans, nine were providing labor in lieu of the debt.

Table 9 indicates the purpose of loans taken by the sample households. Most loans are taken for consumption, which highlights the economic condition of rural people engaged in agriculture.

Table 9. Purpose of Loans

Purposes	Loan (NRs.)	%
Consumption	49,620	49.0
Production (to buy seeds, fertilizer, a bull or plough, etc.)	7,713	7.6
Purchase of Agriculture Machines and Tools	27,700	27.3
Religious/Social	16,300	16.1
Total	101,333	100.0

Source: Field Survey

Use of Pumpsets and Tractors

As the size of landholding increases the demand for labor also increases. The supply of labor during the peak seasons is insufficient and the cost high, which creates problems for the landholders. They will not use family laborers for field work because they are high caste and therefore have social status so alternatives have to be found.

Some farmers have started to use tractors and pumpsets. The three top landholders in Nemuwatole own one pumpset each. One farmer owns a tractor and the other two hire them when they are needed (Table 10).

Table 10. Pumpset and Tractor Use

Land Size (Kattha)	Pumpset Self	Pumpset Hired	Tractor Self	Tractor Hired	Paddy Area	Wheat Area	Millet Area	Potato Area
1 - 40	1	4	-	-	33	25	4	2
40 - 80	-	3	-	-	102	34	10	-
80 - 120	-	1	-	-	70	10	7	4
120 - 160	3	-	-	-	260	60	9	19
Over 160	3	-	1	2	1020	100	16	-
Total	7	8	1	2	1435	229	46	25

Farmers who use pumpsets generally cultivate four crops per year and those who use tractors cultivate only three crops a year. All of them grow paddy on most of their land. After paddy, in order of descending area, wheat, millet and potatoes are grown. Use of a tractor and/or pumpset has definitely improved crop yields. However, very few can afford the technology.

The increase in landholdings has motivated owners to change farming practices to include the use of modern technology. The three households who have done this said that their labor requirements and farming expenses have fallen while production has improved. Of the 15 households using a pumpset for irrigation, 13 said the same thing, and the other two said there had been no change in expenses, but it was now more convenient for them to rotate two or three crops per year.

CONCLUSIONS AND RECOMMENDATIONS

Conclusions

The vast majority of Nepal's rural population makes a living from the land. Nevertheless, a growing number have to do so indirectly because they cannot afford land of their own, or because they have so little that their income must be supplemented from another source. A few families own large portions of land and continue to expand.

Rural poverty is increasing. Some families collect fallen crops on harvested land or roadsides that have been rejected by the landowners. Many small farmers sold their land, bit by bit, over the last decade to meet their basic needs, and they now have to work on other people's land for a daily wage or a piece of land to cultivate for themselves.

Tenants pay rent in one of three ways: 50 percent of the main crop, 50 percent of the year's crop, or--as specified by the government--a fixed monetary rate.

Hired labor is usually by family or individual. When they need the labor, the top landowners prefer to hire individuals. However, it is cheaper in the long run to buy a tractor and/or pumpset as crop production increases. Wages are either paid in cash, in wheat or rice, or in return for a loan of money or a bull and plough for use on the worker's own land. If the wage is in the form of part of the crop, it is generally the same crop that is being worked on. Wages are paid either daily or, particularly during the harvest, on a piece work basis. Laborers can work a full day or half a day, and will be paid accordingly.

Contractual agreements are also used to employ attached labor. The landlord ties a person to work for him when he requires it, and in return, the laborer gets a small piece of land to cultivate for himself. This, and direct hires, are taken from landless households or those with less than 40 katthas of land. Men, women and children are all available for employment, and all get paid the same. Women tend to work as direct, seasonal hires for a daily wage, because they do household chores.

The total amount borrowed in the last decade by the 63 households from the sample who had taken loans was NRs. 101,333. As landholdings increase, more money is borrowed to buy machinery or pay labor. The landless households borrowed just to fulfill their consumption needs. The main sources for loans are ADB, certain commercial banks, and local landlords and money lenders. The complicated procedures required by the banks force many people to borrow locally, despite the substantially higher rates of interest. There is also no need to mortgage any property or possessions in order to receive a local loan and they are usually available as and when they are needed. The loan can be repaid in cash, crop, or as labor.

Tractors and pumpsets are the most commonly used machines. Of the 100 sample households, seven owned a pumpset and one owned a tractor. Eight others had hired pumpsets and two had hired tractors. Many farmers said that their labor requirement and agricultural expenses had fallen since they started to use the machines, and production had increased. They had begun to plant two or even three crops a year. Labor was still required, but for different tasks and as output began to rise, demand for labor inevitably increased, although the landowners had adopted modern technology in order to reduce their labor requirement.

Recommendations

Various land reform measures have been taken by the government since 1951, but the problem of landlessness or near landlessness has always been neglected. One of the major reasons for declining land ownership is land fragmentation by sale or by division among heirs of the family. The relevant authority must consider the landless and take steps to improve their economic situation. If appropriate measures are not taken now, economic deterioration will continue, becoming more and more serious, and it will be very difficult to control later. Furthermore, population pressure on the land is causing deforestation at an alarming rate, and mass migration to parts of the country that still

have agricultural land available. Other sectors of the economy, that could provide alternative employment should be developed.

The rent system fixed by the government is good but must be properly implemented and maintained. Various output-sharing practices which are still used should be discouraged if they are found to be detrimental to the interests of informal tenants. To motivate the farmers to increase cropping intensity, the necessary seeds, fertilizers and credit should be made easily available to any needy farmer. Fertilizer is being sold on the black market, which illustrates need and scarcity.

The tradition of taking credit from landlords and village money lenders at such high interest rates should be stopped because poor farmers are being exploited. ADB should make a serious effort to encourage the farmers to take loans from institutions. Credit should be made easily available. This will only be possible when ADB reduces the margin of security, which is beyond the capacity of the small farmers. Furthermore, the lengthy paperwork involved, which inconveniences the farmers and encourages them to go elsewhere for their money, should be simplified. Loans should be measured in terms of progressive attitude and the potential economic returns to both the lending agency and the farmer.

The main reason for mechanization in rural Nepal is so that the few rich families that have accumulated large areas of land can manage it. They have a higher labor requirement especially in the peak season, and double or even triple cropping. Better yields are being obtained and their dependency on seasonal labor decreased with the introduction of mechanized farming methods. The use of tractors and pumpsets has protected the welfare of both the labor households and the big farmers. Thus mechanization should be encouraged, and put within reach of the average farmer. Further research needs to be carried out to determine the extent of the need and the complete impact on the socioeconomic life of the rural people.

Landholdings are declining because of fragmentation. Fragmented land gives less, and family incomes falls below subsistence level. The traditions that lead to fragmentation must be discouraged or modified, by adopting measures such as fixing a minimum beyond which land cannot not be disposed of, constituting legal provisions against taking land as repayment for loans, checking contractual exploitation of farmers who cannot read or write, and reinforcing social development to reduce spending on social and ceremonial activities. Land polarization is increaseing and needs to be stopped before landlessness and the resulting poverty is out of control.

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