THE CONSEQUENCES OF SMALL RICE FARM MECHANIZATION PROJECT

Working Paper No. 90

CHANGES IN HARVESTING-THRESHING ARRANGEMENTS AND LANDLESS LABORERS

by

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Los Baños, Laguna

December 1983

The Consequences of Small Rice Farm Mechanization Project is supported by the United States Agency for International Development under Contract tac-1466 and Grant No. 931-1026.01 and is being implemented by the International Rice Research Institute and the Agricultural Development Council, Inc.

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ABSTRACT

A socio-economic profile of 47 landless households is presented, including their wealth holding position, family labor resources and household labor allocation. Changes in harvesting and threshing arrangements and their effects on the landless are assessed. Finally the paper includes an examination of socio-psychological aspects of the landless workers' existence including how they view their present condition and what they anticipate in the future.

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* Paper presented at a workshop on the Consequences of Small Farm Mechanization in the Philippines, December 1-2, 1983, held at Development Academy of the Philippines, Tagaytay City.

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INTRODUCTION

The introduction, promotion and use of agricultural machinery in Third World countries is a controversial subject. Many consider machines a necessary component of agricultural development and associate such equipment with increased productivity of land and labor. Others view farm mechanization as a major threat to employment of an expanding labor force who rely on the agricultural sector for jobs.

Debates over agricultural mechanization revolve around four major issues[1]: (1) does mechanization increase output and if so, how? (2) to what degree is labor displaced by machines and what are the alternative employment opportunities for that labor? (3) to what extent are the benefits of mechanization concentrated in the less poor sectors of society? and; (4) what policies should governments follow to obtain the maximum desirable benefits of mechanization while minimizing undesirable, features?

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The overall consequences of small farm mechanization are difficult to quantify and disentangle. In addition effects on it is necessary to examine the different groups in the mechanization process. One group are the landless laborers distinguished by their inaccessibility to ownership of the land on which to make a living and their almost complete dependence on farm owners as employers.

In the Philippines, the landless constitute a significant proportion of the agricultural labor force. The Rural Worker's Office in 1975 estimated that 3.3 million or 42% of the agricultural labor force were landless rural poor. For the same year, Ledesma's estimate of the number of landless laborers was 2.3 million.[2] Although they are highly visible because of their overwhelming numbers, government programs have failed to adequately address the adjustment problems of this group. Hence, the landless are plagued by problems of consistently low income, hunger, high morbidity and infant mortality, poor educational attainment and limited no upward mobility.

For these reasons, this paper focuses on the landless - their socio-economic status and how they are affected by agricultural mechanization in the agricultural sector.

Objectives

The main objective of the paper is to assess the effects of changes in harvesting-threshing arrangements on landless laborers. Specific goals are:

(a) To present a profile of the landless in terms of demographic characteristics, wealth position and household labor allocation patterns.

(b) To determine the effects of mechanized threshing on the composition of labor with respect to age, sex and type.

(c) To assess how landless laborers perceive past and future changes in harvesting-threshing arrangements.

Data Sources

Data for the paper are from field surveys of landless households conducted for the Consequences of Mechanization Project. The survey was carried out during the 1979 wet season, 1980 dry season and 1980 wet season in the municipalities of Cabanatuan City and Guimba in the province of Nueva Ecija. A total of 47 landless laborers were included in the survey. Since they are unevenly distributed among 8 villages, they were grouped for purposes of this paper, according to the village's water regime. Thus we will have 2 village groups - irrigated and rainfed.[3]

The paper also utilizes information from a supplementary survey conducted in six of the original eight villages[4] involving one hundred farmers and an equal number of laborers. The latter survey focused on changes in labor arrangements in harvesting and threshing. Among the workers, 64 were landless laborers and 36 were small farmer-hired laborers. The main objective of this supplementary study was to determine how both farmers and workers perceive past and future developments in harvesting-threshing arrangements.

Site Description

The level of mechanization in each village was determined using the following as indicators: (a) area tilled by machine versus animals and, (b) ownership of machines and draft animals by residents. Based on the 1978 wet season data, villages were classified into 3 levels of mechanization. The villages of San Isidro, Lagare and Caalibangbangan were classified as highly mechanized. About 94-98% of the area in these villages was plowed using 2- and/or 4-wheel tractors only or in combination with water buffalo. In the moderately mechanized villages of Bunol and San Andres, 62-71% of the area was tilled by machines. Kalikid Sur, Galvan and Narvacan I were considered non-mechanized since only 26-33% of the area was mechanized.[5]

In the irrigated villages of Lagare, San Isidro and Caalibangbangan, only small threshers are used in threshing. In the rainfed/pump-irrigated villages of Galvan, San Andres and Bunol, about

63% of the respondents in the harvesting-threshing survey still use the large McCormick threshers while 15% have started using small threshers. The remainder of the farmers employ manual threshing methods.

DISCUSSION

Profile of the Landless Laborers

Demographic characteristics

In 1979, the landless laborers composed 5-18% of the households in the 8 sample villages in Nueva Ecija (Table 1), with Kalikid Sur having the smallest share and Caalibangbangan, the highest. Compared to farmers, the landless are a minority. Households which are headed by farmers constitute 48-87% of the population.

A majority (about 83%) of the landless households were headed by males. The average age of the household head was about 41 yrs in the irrigated villages and 43 yrs in the rainfed villages. Generally, the average educational attainment was 4 yrs. Thus, with very little education and limited skills, landless households have little occupational mobility. Consequently, their income levels remain low.

Average household size was 5.6 persons. Of the total household members, only 32.4% were working in the wet season 1979. The rest were not economically active (Table 3). This inevitably places a heavy economic strain on the productive members. Of the working household members, there were about twice as many male adults[6] as females. Across villages, nearly the same proportion of males worked in irrigated and rainfed villages (about 68% and 72%, respectively).

There is surprisingly very little seasonal or permanent outmigration by landless household members. Only 12 household members had left permanently since the introduction of mechanized land preparation or since the introduction of irrigation. All these left to get married. An explanation for this minimal outmigration is provided by Todaro.[7] According to his hypothesis, the decision to migrate is stimulated primarily by economic considerations of relative costs and benefits. Thus if the opportunity costs of migration outweigh the returns, the landless household decide to stay where they are. Possibly such factors are at work in our sample.

With regard to access to government and institutional services, landless laborers have limited access to public services such as credit, extension services and training programs. In the 1979 wet season, only 28% of the sample landless laborers received help on farm problems, mostly from informal sources such as fellow farmers, relatives and the village head. No landless laborer had any contact with extension workers. All training in the operation of farm machines was received either from friends, relatives or picked up by experience (Table 4).

Wealth position

The opening value of assets is used as an indicator of the wealth position of the landless households. Table 5 shows that in 1979, the average opening value of assets of landless household was ₱1587. The value of assets in irrigated villages was relatively greater compared to rainfed villages (₱1645 vs. ₱1456). The most valuable assets were buildings, consisting mainly of light residential structures, followed by non-agricultural land and home consumer durables. Ownership of draft and productive animals was minimal averaging only ₱100 and ₱39, respectively.

In terms of financial liabilities, about half (46%) of the landless households were in debt in the wet season 1979 (Table 6). Almost all liabilities were in the form of loans, averaging ₱436 in the wet season and ₱237 in the dry season. A majority of the loans (90%) were obtained from informal sources such as friends, relatives and middlemen (Table 7). Only 10% of the landless households in debt in the wet season borrowed from formal sources like banks. This can be explained in that landless laborers have less access to institutional credit, since such credit is usually subject to specific conditions such as membership in Samahang Nayon and presentation of collateral. Most of the loans were for home consumption (52% in the wet season and 60% in the dry season) and for family expenses (30.4% in the wet season and 20% in the dry season).

Household employment and income

In both wet and dry seasons, almost all landless households derived their income exclusively from agriculture (Table 8). Only two had income from both agricultural and non-agricultural employment. Average employment per household was 122 mandays in the wet season, 121 in the dry season or a total of about 243 for the whole year. By village, average employment in rainfed villages was higher than in irrigated villages in both seasons.

Not surprisingly the average household income in the wet season was thus higher in rainfed than in irrigated villages (₱1325 vs. ₱1136). In the dry season, however, average income in irrigated villages was higher than in rainfed villages (₱1347 vs. ₱1085), despite the average mandays worked in the rainfed villages being slightly higher. Combining the two seasons, the average annual household income was a little over ₱2400.

In general the male household head made the greatest contribution in terms of employment and income (Table 9). In the wet season, male household heads accounted for about 55% of household labor and 64% of household income. In the dry season, their contribution was about 46% and 52% respectively. Male adults (10 yrs. and over) accounted for the second largest source of household labor and income, contributing about 19% each to labor and income in the wet season and 30% to labor and 27% to income in the dry season. Contributions by female household heads were 8.1% and 12.6% for income and labor in the wet season and about 3% and 5% in the dry season. Contributions by spouses were less than 5%

in the wet season and about 12% in the dry season. The minimal contribution of female household heads and spouses can be explained by mothers and wives allocating a major share of their time to housekeeping and child-rearing. Since nearly a third of the landless households' population consisted of children below 10 years, female household heads and wives could not contribute significantly to the household labor pool.

CHANGES IN HARVESTING-THRESHING ARRANGEMENTS AND THE LANDLESS

Landless rural workers make up a significant portion of the agricultural labor force. This group of workers has the following characteristics:[8] a) they are landless, owning neither land to cultivate nor tenancy rights to someone else's land; b) they are rural, and heavily dependent on farm work and; c) they are workers, selling their employment, together with the labor of their families, as their principal source of income. Landless workers in rice areas become almost entirely dependent on work on rice farms which provide 75% of their income. About three-fourths to four-fifths of this income comes from crop shares of the rice harvest.[9]

There are a number of reasons why we have given special attention to the landless households in relation to changes in harvesting threshing arrangements:

1. The landless who supply the bulk of agricultural hired labor compose about 20% of the farm households in the study area;
2. A major portion of the landless workers' income is derived from crop shares and wages in the harvesting and threshing tasks;
3. Harvesting and threshing, together with transplanting are farm tasks traditionally carried out by hired labor;[10]
4. The number of landless workers will continue to grow with population increases and a closed land frontier in the province and the country as a whole; and,
5. Small thresher mechanization is gaining acceptance in many areas as evidenced by sales within the last few years.

Since landless rural workers comprise an important segment of the agricultural economy, it is vital that programs be addressed to their needs. This concern is consistent with the country's overall development objectives of reducing poverty, unemployment and inequality.

The above socio-economic profile of the landless households shows some of the demographic and economic features of this class. The second part of the paper examines socio-psychological aspects of the landless workers' existence including how they view their present and future

positions. The study was designed primarily to document modifications in harvesting-threshing arrangements brought about by changes in population, production technologies, support services, government policies and programs related to agriculture.

Effects of mechanical threshing on landless workers

What has small thresher adoption done to landless laborers? Workers' opinions are presented in Table 10 and indicate that mechanical threshers brought more advantages than disadvantages to the landless. Mechanical threshing is a more convenient and faster method than manual beating. Under the present method workers only cut and haul paddy and to the thresher. This advantage was cited frequently by workers in rainfed areas where, under the old system, bundled paddy had to be hauled to a central location. With small threshers paddy requires minimal movement as the machines can be easily transported from one plot to another. There is also no winnowing required as paddy from the machine is sufficiently clean for bagging. Faster threshing also gives workers two additional benefits: they are left with more time to harvest in other fields, thus increasing their incomes and they can get their crop share sooner. The latter advantage is especially important for workers in the single cropped rainfed areas.

The major disadvantage workers find with thresher adoption is the sharp decline in sharing rates. Five percent complained of a decrease in income from harvesting. The decline in sharing rates was proportional to the reduction in responsibilities. Farmer operators continue to spend about 16% of the gross harvest for the combined harvesting-threshing operations. Using manual methods, workers get about 1/6th to 1/8th of the gross harvest for both harvesting and threshing. Using mechanical threshers, workers get a 1/10th share while the machine charge is 6%. In the rainfed areas, where the use of the small mechanical thresher has just begun, most workers had felt little or no effects yet.

Effects on the composition of labor

Under the traditional manual threshing arrangement prior to mechanization, more than 80% of the laborers in the harvesting-threshing operations were men (Table 11). Only one percent were younger than 15 years, two percent were over 50 years. Under the new threshing technology more women and younger children participate in the operation. Female participation went up to 36% and workers younger than 15 rose to eight percent of the total labor force. Although the proportion of workers of landless origin remained at 56% under the new method, there was a slight increase in children's participation, both for landless and small farmer-hired laborer families. An explanation for this

observation is that the cutting, bundling and hauling of paddy to the threshing site combined with beating the stalks against a wooden frame required more physical strength than women and younger workers possess. Manual threshing, which is the most physically demanding task, takes up about 30% of the total labor requirement under the manual method.[11] Women, who account for one-fifth of the workers under the traditional system participate mostly in the lighter tasks such as cleaning, winnowing, or measuring and bagging threshed paddy.

Using mechanized threshing, harvesting is separated from threshing labor. Harvesters only cut and haul the paddy to a nearby threshing area and help thresher operators to bag the threshed paddy. Mechanical threshing not only saves time and human energy but also eliminates the tediousness of manually beating stalks against a wooden frame. It also provides more opportunities to women and children.

Changes in income from harvesting and threshing jobs

Table 12 reflects the dependence of landless laborers on harvesting and threshing jobs in both irrigated and rainfed villages. In the rainfed villages where the shift towards mechanized threshing has just begun, there is only a slight change in the proportion of income derived from harvesting-threshing jobs. In the irrigated villages however, where the shift to mechanized threshing has been almost complete for two years, the change has been substantial - from about four-fifths to only two-thirds. Although average income changed,

not all workers indicated that their income decreased. Neither can the decline be attributed entirely to machine use. Only 63% of the landless whose income decreased in the irrigated villages indicated that the machines displaced them (Table 13). In the rainfed villages only one respondent mentioned the machine as the cause of lower income. Some had taken other farm jobs while many simply worked less.

Similarly, no respondents whose income from harvesting had increased under the new system mentioned that machines might have been the cause. Incomes from harvesting increased because they received larger amounts of paddy from their share since yield levels had also increased, children are now able to do harvest work; responsibilities have increased due to a change in status; and more double-cropped farms provide extra employment opportunities. With the loss of his tenancy right, one respondent had no alternative but to do more harvesting-threshing work to earn a living.

Changes in employment opportunities in harvesting and threshing

A majority of the landless felt that under present conditions there was inadequate employment in harvesting and threshing (Table 14). Workers believe there is an excess supply of harvester-threshers in their villages. In the irrigated villages, this problem is traced to the increasing number of temporary workers coming to the villages from rainfed or non-rice areas. When workers say there are limited areas to

harvest, they mean harvesting and threshing operations are much faster. The availability of machines facilitates simultaneous threshing on a large number of farms. Farmer/operators have also begun to be more selective in their choice of workers, giving priority or even limiting work to relatives or those who perform extra work in other operations. This may lead to a system, similar to the "gama" system practiced in Laguna,[12] of earning the right to harvest a plot by performing extra work such as weeding without compensation.

Workers who reported adequate employment in harvesting-threshing found ways to maintain an adequate volume of jobs. Thirty two percent maintained good relations with farmer employers, worked well at their jobs to ensure being hired again. Workers who approached farmers personally or accepted all offers even if the crop is poor never ran out of jobs. Some workers do not actively seek work. Others do their best to speed up harvesting to be able to harvest as much as their physical capability allows. This means beginning work early and retiring late in the afternoon. When the harvesting-threshing period in their own villages is finished, some workers look for jobs in the adjacent villages or other municipalities. Workers from rainfed villages go to other provinces when harvesting is completed in their own villages.

The preceding discussion indicates that landless workers have a struggle to find and maintain jobs.

Worker's perception of their present conditions

Changes in harvesting-threshing arrangements have affected landless rural workers differently for varied reasons. Over 60% of all workers feel that they are currently better than five years ago. Sixteen percent had not perceived any change in their condition (Table 15).

In the irrigated villages, three-quarters of the workers felt that they are better off today than 5 years ago. Many attribute this improvement to thresher adoption. The availability of threshing machines makes work easier and enables them to receive their crop shares sooner. In contrast, the landless in the rainfed villages cited the increase in the number of farms to harvest. Rainfed landless workers have also found small threshers beneficial. Workers from both irrigated and rainfed areas regard the increase in crop shares due to improved yields a strong reason for their improved welfare.

Worker's perception of their future

Table 16 reflects the landless worker's view of his future. Half believe that in five years, their condition will be worse. Their greatest fear is that there will be more people looking for work but fewer available jobs. There is also anxiety about farm machines displacing jobs. In the rainfed areas, additional threshing machines are viewed with trepidation while in the irrigated villages other types of machines such as reapers or combines may come into use in the years

ahead. With more machines in use, the smaller residual tasks left to the landless may only be paid minimal shares.

One-third of the landless workers anticipate a better future. In the irrigated villages situated near Cabanatuan City, workers envisage that industrialization in urban areas will attract and absorb the excess labor available in the rural areas. If this happens, workers believe that competition will raise rural wages. The possibility that yields will continue to increase in both irrigated and rainfed areas also gives landless laborers hope for a better future. Rainfed workers are hopeful that irrigation will soon provide two crops a year thus increasing harvesting-threshing jobs. Other possibilities such as double cropping with short season varieties or multiple cropping utilizing any residual soil moisture would also enhance employment prospects in the rainfed villages.

Changes expected in the future

The most common change in the harvesting-threshing operations that workers foresee is a decline in the sharing rates (Table 17). This anxiety is based on their observations over the last 5-10 years; harvesting-threshing shares have declined from as high as 1/5 down to 1/10 currently. The rainfed landless anticipate that more threshers will be used while those in the irrigated villages foresee other new farm machines being introduced.

Also the landless in the irrigated villages fear that the harvested area will decline due to urban expansion; upland workers are hoping that the daily wage for harvesting will increase. For most anticipated changes the landless identify the farmer and machine owners or operators as the major beneficiaries of these changes. They express the feeling that machine use will reduce the farmer's work and supervision at their expense. Only one landless laborer believed that any changes in harvesting-threshing arrangements would be neutral with respect to farmers and workers shares.

Changes workers desire

Workers cite three desirable changes related to harvesting-threshing operations (Table 18). An increase in sharing rates for harvesting is sought by most landless workers. Some workers, perhaps more realistically, want the existing rates to be maintained, not reduced whatever the developments in harvesting-threshing technology. Their experience tells them that shares have declined over the years for a variety of reasons. Mechanization should end with the small mechanical thresher and no further types of harvesting-threshing machines should be introduced.

Being very dependent on harvesting shares, the workers fear that further mechanization of harvesting and threshing will leave them

destitute. In the rainfed areas, small farmer-hired laborers want additional units of small threshers for use in the village but no landless worker expressed the same desire in the same village. A number of landless were reluctant to outline the changes they desired since they felt compelled to follow the farmers in order to keep their jobs.

Possible effects of reaper use

The idea of the adoption of another type of machine such as a reaper for harvesting is unpopular with the landless workers, and small farmers who also do other harvesting jobs. All workers felt that reaper use would not benefit them (Table 19). On the contrary, its effects would be negative. Many workers are apprehensive that reaper adoption would cause them to lose their harvesting-threshing jobs. About one fourth fear a decrease in sharing rates. Workers anticipated that such potential effects, would increase poverty among workers and mean absolute hunger for some of them. When workers cannot find work on the farm, they leave the villages for work elsewhere. If they go to urban areas and find no work, they add to the problems of the cities. Some workers frankly state that should a large number of people become hungry, there will be discontent and possibly disorder. Only 2 workers felt that reaper use would not change the present harvesting-threshing arrangement.

SUMMARY

The typical landless household in the eight villages surveyed is composed of about 5.6 members with the head having an education of four years. The landless are poor with total assets valued at ₱1587 and earn approximately ₱1,200 in one rice season. They are underemployed, with only 32% of the total household members having work and this for only 122 mandays per season. Seventy-five percent of their income comes from crop shares and wages from harvesting-threshing work. The landless feel that mechanical threshers have brought more advantages than disadvantages to them. One such advantage is that the machine has enabled more women and children to participate in the harvesting-threshing activities. The landless workers' greatest fear however is that in future there will be more people seeking for work but fewer available jobs on farms. Some are hopeful that industrialization in the urban areas will attract or absorb the excess labor available in the rural areas. It is the opinion of the landless that no further types of harvesting-threshing machines should be introduced in labor-surplus areas if excess labor can not be absorbed in other sectors of the economy.

FOOTNOTES

1. The Consequences of Small Rice Farm Mechanization on Production, Incomes and Rural Employment in Selected Countries of Asia. A Project Proposal. IRRI, February 1978.

2. There are different national estimates of the number of landless rural workers. These estimates show that landless rural workers compose a sizable proportion of our agricultural labor force. It was Ledesma who provided an estimate of the total number of landless rice workers.

3. The villages in Cabanatuan City are grouped as irrigated while those in Guimba are classified as rainfed.

4. Ebron, L. "Changes in Labor Arrangements in Harvesting and Threshing in Nueva Ecija". A thesis proposal submitted to and approved by the UPLB Graduate School. 1982.

5. Moran, P. and E. Casillan. "Consequences of Farm Mechanization Project Site Description. Working Paper No. 34. 1981.

6. Over 10 years old.

7. Todaro, M. Economic Development in the Third World. New York, Longman, Inc. 1981.

8. Ledesma, A. Landless Rural Workers and Rice Farmers: Peasant Sub-classes Under Agrarian Reform in Two Philippine Villages. The International Rice Research Institute. 1982.

9. Ledesma, A. ibid and Juarez, F. and B. Duff. "The Economic and Institutional Impact of Mechanical Threshing in Iloilo and Laguna". The Consequences of Small Rice Farm Mechanization Project. Working Paper No. 1. IRRI. October 1979.

10. Smith, J., V. Cordova and R. Herdt. "Trends in Labor Absorption and Earnings: The Cases of Rice Production in the Philippines." IRRI Agricultural Economics Paper No. 81-13.

11. Toquero, Z., C. Maranan, L. Ebron and B. Duff. "Assessing Quantitative and Qualitative Losses in Rice Post-Production Systems". Agricultural Mechanization in Asia. Vol. VIII, No. 3. Summer, 1977.

12. This is a contractual arrangement whereby harvesting and threshing is limited to those who weeded the same plots for free. It is called "sagod" in Iloilo and "hilani" in the Bicol Region.

13. M. Kikuchi, V. Cordova, E. Marciano and Y. Hayami. "Changes in Rice Harvesting Systems in Central Luzon and Laguna. IRRI Research Paper Series No. 31, July 1979.

Table 1. Distribution of households by occupational group and distribution of sample households in 8 villages of Cabanatuan City and Guimba, Nueva Ecija, March 1979.

Village	Total no.	Distribution by occupational group (%)			No. of sample landless
		Farm operator	Landless laborer	Non-agricultural worker	
Cabanatuan					
1. San Isidro	200	55.5	15.5	29.0	7
2. Lagare	153	69.9	18.3	11.8	6
3. Kalikid Sur	282	48.9	5.3	45.7	1
4. Caalibangbangan	410	48.3	17.1	34.6	18
Guimba					
1. Galvan	134	80.6	14.2	5.2	1
2. Narvacan I	89	80.9	7.9	11.2	1
3. San Andres	125	87.2	11.2	1.6	3
4. Bunol	283	70.3	17.3	12.4	10
TOTAL	1576	62.2	13.9	23.9	47

Source: Moran, P. and E. Casillan. Consequences of Farm Mechanization Project Site Description: Philippines. Working Paper No. 34 (Los Banos: IRRI, 1981).

Table 2. Demographic characteristics of landless households in 8 villages of Cabanatuan City and Guimba, Nueva Ecija, Philippines, wet season, 1979.

	Item	Type of village		All villages
		Irrigated	Rainfed	
0.	No. of households	31	16	47
1.	Ave. age of HH head (yrs.)	41.2	42.6	41.8
2.	Sex of HH head			
	Male	27	12	39 (82.6)*
	Female	4	4	8 (17.4)*
3.	Ave. education of HH head (yrs.)	4.1	4.2	4.0
4.	Ave. HH composition			
	Male 10 yrs. and above	1.7	2.2	2.0 (34.8)*
	Female 10 yrs. and above	1.9	1.7	1.8 (32.2)*
	Child under 10 yrs.	1.8	1.5	1.8 (32.0)*
	Total	5.5	5.4	56

* Percent share.

Table 3. Working and non-working landless household members, Nueva Ecija, Philippines, wet season 1979 and dry season 1980.

Item	Villages		
	Irrigated	Rainfed	Total
Number of households	30	16	46
Working household members[1]			
Household head	30	16	46
Spouse	7	1	8
Male (10 years and over)	14	6	20
Female (10 years and over)	8	2	10
Sub total			84
Non-working household members			
Household head			0
Spouse	19	10	29
Male (10 years and over)	21	16	37
Female (10 years and over)	15	11	26
Child	58	25	83
Sub total			175
Total			259
Proportion of household members not working (%)[2]			
Household head			0
Spouse	51.4	27	78.4
Male (10 years and over)	36.8	28.1	64.9
Female (10 years and over)	41.7	30.5	72.2
Child	100	100	100

[1] 31% of working household members are females; 69% are males.

[2] 67.6% of all household members are non-working members.

Table 4. Degree and source of training in use of farm equipment, Nueva Ecija, Philippines, wet season 1979.

Item	Village	
	Irrigated	Rainfed
	Number reporting	
Number of households	30	16
1. Trained by machine dealer		
a) irrigation pump		1
2. Trained by friends		
a) 2-wheel tractor	1	
b) 4-wheel tractor	1	2
3. Trained by relatives		
a) 2-wheel tractor		3
b) 4-wheel tractor		2
c) thresher		1
4. Trained by others		
a) 2-wheel tractor	2	1
b) irrigation pump		2
5. Total no. of landless who received some training*		
Wet season 1979	2	9
a) 2-wheel tractor	3	4
b) 4-wheel tractor	1	4
c) thresher		1
d) irrigation pump		3
Dry season 1983		
a) 2-wheel tractor	9	4
b) 4-wheel tractor	1	2
c) thresher	5	5
d) irrigation pump	1	3
e) rice mill		1

* Some of the landless in the rainfed villages - Galvan, San Andres, Bunol - learned to operate two machines.

Add the actual no. of LL who learned how to operate machines (2 or 3).

Table 5. Average opening value of assets (₱) of landless households by type of asset, 8 villages in Nueva Ecija, Philippines, wet season 1979.

	Item	Type of village		
		Irrigated	Rainfed	Total
0.	No. of households	31	16	47
	Draft animals	112.9	75.0	100.0
	Productive animals	44.8	32.2	39.4
	Buildings	599.2	447.6	552.6
	Farm implements/tools	134.0	121.5	129.4
	Non-agricultural land	354.9	562.5	425.5
	Home consumer durables	398.9	227.0	339.6
	Total	1644.7	1465.0	1586.6

Table 6. Average size of loan (₱) per landless household, by source of loan, 8 villages in Nueva Ecija, Philippines, wet season 1979 and dry season 1980.

Item	Wet season 1979			Dry season 1980		
	Irrigated	Rainfed	All villages	Irrigated	Rainfed	All villages
No. of households	31	16	47			
No. of HH's with loan	16	4	20	4		4
Source of loan						
1. Government through a bank		1725.0	1725.0			
2. Friends/relatives	295.4	225.0	287.0	237.5		237.5
3. Middleman	400.0		400.0			
Total ave.	301.9	975.0	436.5	237.5		237.5

Table 7. Characteristics of loans incurred by landless households (no. reporting) in 8 villages in Nueva Ecija, Philippines, wet season 1979 and dry season 1980.

Item	Wet season, 1979			Dry season 1980		
	Type of village		All villages	Type of village		All villages
	Irrigated	Rainfed		Irrigated	Rainfed	
No. of household	31	16	47	31	16	47
No. of HH's with loan	16	4	20	4	0	4
1. Source of loan						
a. Government through a bank		2	2(10.0)			
b. Friends/relatives	15	2	17(85.0)	4		4(100.0)
c. Middlemen	1		1(5.0)			
2. Security for loan						
a. Government through a bank						
Agricultural product		1	1(5.0)			
Personal note		1	1(5.0)			
b. Friends/relatives						
None	10	1	11(55.0)	3		3(75.0)
Verbal promise	5	1	6(30.0)			
Others				1		1(25.0)
c. Middlemen						
Verbal promise	1		1(5.0)			
3. Purpose of loan*						
a. Government through a bank						
Seasonal farm expenses		2	2(8.7)			
b. Friends/relatives						
Seasonal farm expenses	1		1(4.3)			
HH consumption	11	1	12(52.2)	3		3(60.0)
Family expenses	5	2	7(30.4)	1		1(20.0)
Others				1		1(20.0)
c. Middlemen						
Others	1		1(8.7)			

*Some landless households cited more than one purpose.

Note: Figures in parentheses are percent shares.

Table 8. Average income and employment per landless household by type of work, 8 villages in Nueva Ecija, Philippines, wet season 1979 and dry season 1980.

Item	Wet season 1979			Dry season 1980			Total		
	Type of village		All villages	Type of village		All villages	Type of village		All villages
	Irrigated	Rainfed		Irrigated	Rainfed		Irrigated	Rainfed	
1. Agriculture									
No. of households	29	16	45	30	15	45			
Ave. mandays per HH	101.6	155.2	120.7	117.3	128.9	121.2			
Ave. income per HH (₱)	1094.8	1324.7	1176.6	1391.7	1128.4	1263.9			
2. Agriculture and services									
No. of households	1		1	1	1	2			
Ave. mandays per HH	108.0		108.0	167.0	55.0	111.0			
Ave. income per HH (₱)	508.0		508.0	1416.0	385.0	900.0			
3. Agriculture and commerce									
No. of households	1		1						
Ave. mandays per HH	201.0		201.0						
Ave. income per HH (₱)	2970.0		2970.0						
4. Total									
No. of households	31	16	47	31	16	47	31	16	47
Ave. mandays per HH	105.0	155.2	122.1	118.9	124.3	120.7	223.9	279.5	242.8
Ave. income per HH (₱)	1136.4	1324.7	1200.5	1346.8	1057.9	1248.5	2483.2	2382.6	2449.0
5. Livestock									
No. of households									
Ave. mandays per HH									
Ave. income per HH (₱)									

Table 9. Percent distribution of household income and employment by household member, 8 villages in Nueva Ecija, Philippines, wet season 1979 and dry season 1980.

Item	Wet season 1979			Dry season 1980			Total		
	Type of village		All villages	Type of village		All villages	Type of village		All villages
	Irrigated	Rainfed		Irrigated	Rainfed		Irrigated	Rainfed	
A. Income									
1. Male	85.5	79.6	83.3	80.1	77.4	79.3	82.6	78.6	81.3
HH head	65.3	61.2	63.8	51.5	53.0	51.9	57.8	57.5	57.7
10 yrs. & above	20.2	18.4	19.5	28.6	24.4	27.4	24.8	21.1	23.6
2. Female	14.5	20.4	16.7	19.9	22.6	20.6	17.4	21.4	18.7
HH head	4.5	14.1	8.1	3.3	1.5	2.7	3.8	8.5	5.4
Spouse	3.1	1.4	2.5	10.4	11.9	10.8	7.1	6.1	6.7
10 yrs. & above	6.9	4.9	6.1	6.2	9.2	7.1	6.5	6.8	6.6
B. Employment	76.5	70.3	73.8	78.5	69.2	75.2	77.6	69.9	74.5
1. Male									
HH head	56.9	51.7	54.6	48.4	40.3	45.5	52.4	46.7	50.1
10 yrs. & above	19.6	18.6	19.2	30.1	28.9	29.7	25.2	23.2	24.4
2. Female	23.5	29.7	26.2	21.5	30.8	24.8	22.4	30.1	25.4
HH head	5.9	21.1	12.6	3.0	8.6	5.0	4.4	15.6	8.8
Spouse	5.0	2.1	3.7	12.1	12.0	12.0	8.7	6.5	7.8
10 yrs. & above	12.6	6.5	9.9	6.4	10.2	7.8	9.3	8.0	8.8

Table 10. Effects of mechanical thresher use on harvesting-threshing operations and labor use arrangement, 64 landless workers, Nueva Ecija, 1982.

Effects	Irrigated		Rainfed	
Total number of workers	44		20	
Effects:	No.	%	No.	%
More convenient threshing	26	59	6	30
Faster threshing operation	25	57	3	15
Shares declined sharply	7	16	3	15
Shares received sooner	5	11	2	10
Income increased	5	11		
Income decreased	2	5		
No effect			6	30

Table 11. Effect of mechanized threshing on the composition of labor used in harvesting-threshing operations, Cabanatuan City, 1982.

Item	Before	After
	percent	
Sex		
Male	82	64
Female	18	36
Total	100	100
Age level:		
Below 15	1	8
15 to 30	48	56
31 to 50	49	34
Over 50	2	2
Total	100	100
Worker type:		
Landless worker	47	45
Child of landless worker	9	11
Small farmer-hired laborer	30	24
Child of small farmer	14	20
Total	100	100

Table 12. Changes in income from harvesting and threshing jobs, 64 landless workers, Nueva Ecija, 1982.

Item	Irrigated		Rainfed	
Number of workers	44		20	
Income derived from harvesting jobs:		percent		
Present	66.3		76.0	
Before	77.7		79.5	
Change	14.7		4.4	
Workers reporting income:	No.	%	No.	%
Decrease	24	55	8	40
Increase	5	11	11	55
No change	15	34	1	5

Table 13. Reasons for changes in income from harvesting and threshing jobs, 64 landless workers, Nueva Ecija, 1982.

Item	Irrigated		Rainfed	
Total number of workers	44		20	
	No.	%	No.	%
Workers reporting no change in income	15	34	4	20
Workers reporting a decrease in income	24	55	8	40
Reasons:				
Less farms to work on	16	67	6	75
Other farm jobs taken	14	58	8	100
Machines displace them	15	63	1	12
Non-farm employment	8	33		
Growing old	2	8	2	25
Workers reporting an increase in income	5	11	8	40
Reasons:				
Increased yields			6	75
More farms to work on	1	20	5	62
Additional family labor	2	40	1	12
Loss of non-farm jobs	1	20	2	25
Change of status	1	20		
Loss of farming rights	1	20		

Table 14. Changes in employment opportunities in harvesting and threshing, 64 landless workers, Nueva Ecija, 1982

Item	Irrigated	Rainfed
Total number of workers	44	20
	percent	
Workers reporting inadequate employment	25	8
Reasons		
Excess supply of workers	56	88
Limited areas to harvest	20	12
Farmers select or limit harvesters	16	
Old age	8	
Total	100	100
Reasons		
Good relations or performance	32	33
Regular job/permanent workers	26	17
Seek harvest work outside village	11	23
Approach farmer/accept all offers	16	
Sufficient area/farms to requiring harvest	5	17
Rush work	5	
Limited physical capability	5	
Total	100	100

Table 15. How workers consider themselves compared with 5 years ago, 64 landless workers, Nueva Ecija, 1982.

Item	Irrigated	Rainfed
Total number of workers	44	20
Condition at present:	percent reporting	
Better	75	35
Worse	16	35
Same	9	30
Reasons why better of:		
Availability of threshing machines	88	43
Get crop share sooner	66	14
Increased shares resulting from higher yield	50	57
More farms to harvest	16	86
More irrigation	25	14
New landowners are more generous	3	
Staggered harvesting		
Reasons why worse:		
Crop shares have declined	100	71
Number of harvesters has increased	71	43
Threshers displaced workers	71	14
Low yields		14
Broadcast rice laborious to harvest		14
Poor health		14

Table 16. Worker's perception of their condition 5 years ahead, 64 landless workers, Nueva Ecija, 1982.

Item	Irrigated		Rainfed	
Number of workers	44		20	
Workers who consider the future	No.	%	No.	%
Better	14	32	3	15
Worse	20	46	11	55
Same	5	11	6	30
Don't know	5	11		
Reasons why <u>better off</u>:	percent reporting			
Higher yield expected	43		33	
Industrialization will attract labor	50			
Higher wages	21			
Less work for same pay			33	
Irrigation expected			67	
Reasons why <u>worse</u>:				
More people and fewer jobs	95		82	
Machines will displace labor	70		55	
Harvesting rates will decrease	30		9	

Table 17. Changes in harvesting-threshing operations expected in the next ten years, 64 landless workers, Nueva Ecija, 1983.

Item	Irrigated		Rainfed	
Total number of workers	44		20	
Expected change:	No.	%	No.	%
Sharing rates will decline	27	61	12	60
More machines will be used	2	5	2	10
Daily wages will increase			1	5
Available area will decline	1	2		
No change	1	2		
No comment/not sure	13	30	5	25
Changes will favor:				
Farmers	20	45	9	45
Farmers and machine owners	3	7	4	20
Machine owners	7	16		
Workers			2	10
Fair to both farmer and workers	1	2		
Do not know	13	30	5	25

Table 18. Changes in harvesting-threshing operations workers desire, 64 landless workers, Nueva Ecija, 1982.

Changes	Irrigated		Rainfed	
Total number of workers	44		20	
Changes desired:	No.	%	No.	%
Increase sharing rates	29	66	18	90
Maintain existing rates	11	25	1	5
No additional machines[1]	1	2		
No comment	3	7	1	5

[1] In the rainfed areas, 2 small farmer-hired laborers expressed the desire for additional small threshers to be used in the area.

Table 19. Worker's opinion on the possible effects of reaper use, 64 landless workers, Nueva Ecija, 1982.

Effects	Irrigated	Rainfed
Total number of workers	44	20
Effects:	percent reporting	
Loss of harvesting jobs	89	90
Decreased sharing rates	20	25
Increased poverty	20	25
Hunger	14	20
Workers will leave farm	11	10
Discontent and disorder	5	5
No change	2	

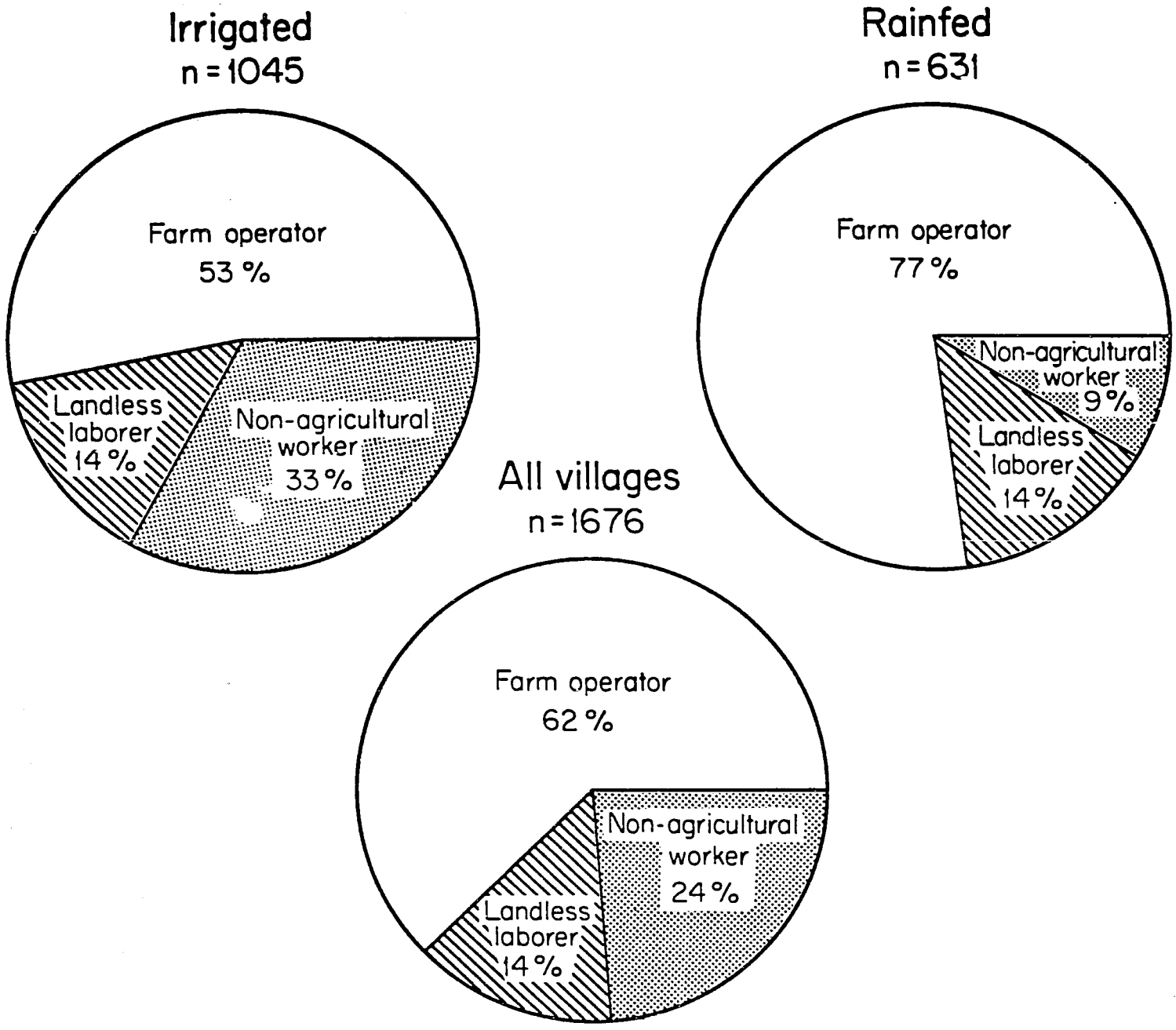

Figure 1. Distribution of households by occupational groups and water regime. Nueva Ecija, 1979.

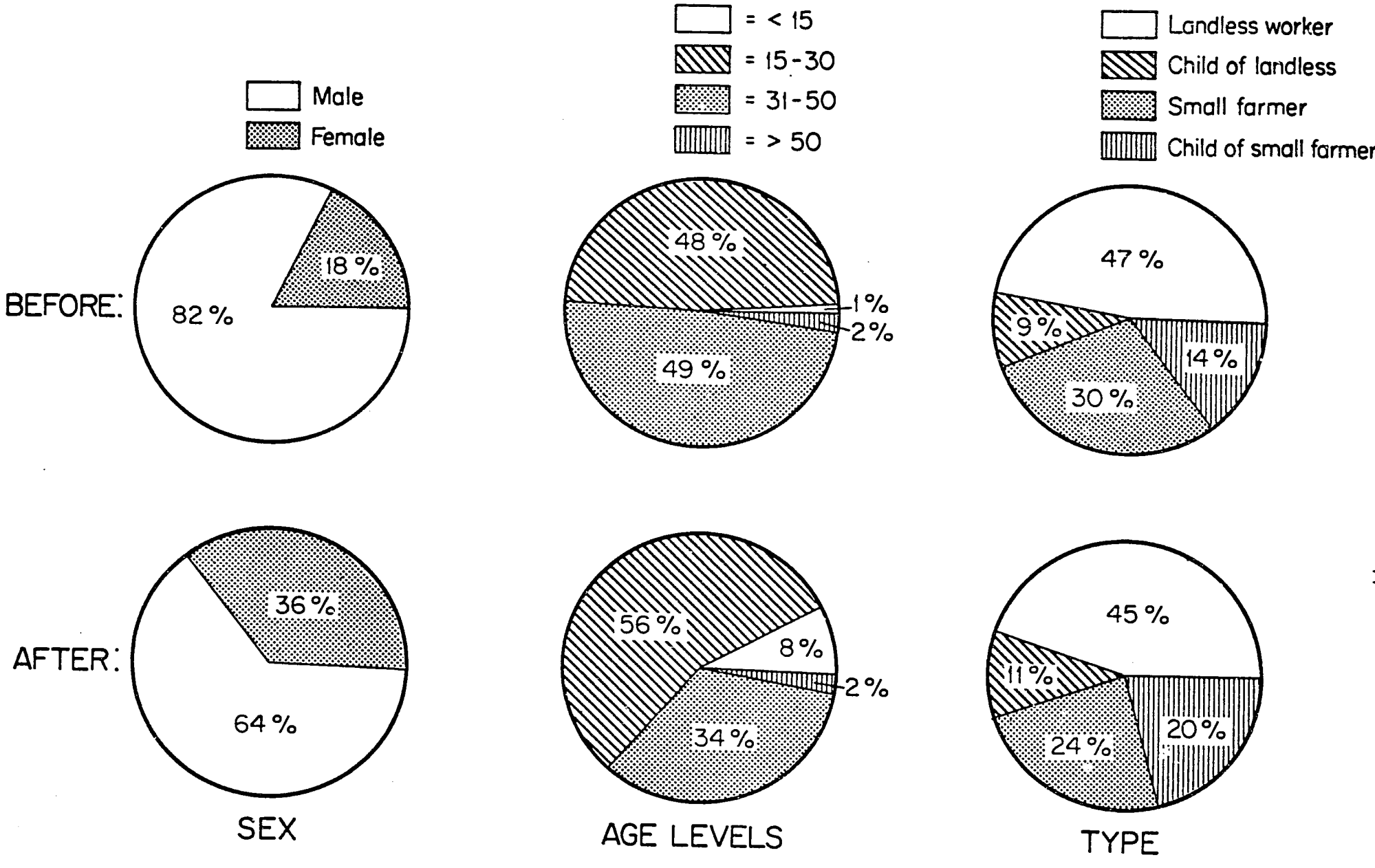

Fig. 2. Changes in the composition of labor in harvesting and threshing.