

3. Labor Use in Agricultural Production

権利	Copyrights 日本貿易振興機構（ジェトロ）アジア 経済研究所 / Institute of Developing Economies, Japan External Trade Organization (IDE-JETRO) http://www.ide.go.jp
シリーズタイトル(英)	Occasional Papers Series
シリーズ番号	42
journal or publication title	African Rural Livelihoods under Stress : Economic Liberalization and Smallholder Farmers in Malawi
page range	51-62
year	2008
URL	http://hdl.handle.net/2344/00010585

3

Labor Use in Agricultural Production

Labor is another key asset for smallholder households in rural Malawi. Labor available to the household (its numbers, education, skills, and health) constitutes the human capital that becomes the basis of constructing household livelihood strategies. In the context of Malawi's smallholder production where farm mechanization is virtually nonexistent and all farm work is done manually, having access to necessary labor for agricultural production directly affects the levels of household farm income. In addition to own farming, household labor may also be deployed in off-farm economic activities, thus providing additional income to the household.

This chapter first examines the types of labor used in agricultural production and its allocation to different farm tasks and crops. It also highlights major characteristics of labor contracts that were used by households to obtain necessary labor. In addition, engagement in agricultural wage labor by household members is examined. In the vocabulary of the livelihood framework, the chapter analyzes labor in terms of assets (family labor), access (sources of labor and labor contracts), and economic activity (engagement in agricultural wage labor).¹

3.1 Labor Use

Most of the farm work in rural Malawi is done during the rainy season between November and March. The types and sequences of farm tasks in the

Fig. 3.1 Farming Calendar

A. Maize

	Dry Season						Rainy Season						Dry Season			
	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG
Land preparation	■	■	■	■	■	■										
Sowing							■	■								
Fertilizer application							■	■	■							
Weeding								■	■	■						
Banking									■	■						
Harvesting											■	■	■			

B. Tobacco

	Dry Season						Rainy Season						Dry Season			
	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG
Land preparation	■	■	■	■	■	■										
Nursery				■	■	■										
Transplanting							■									
Manure/fertilizer application							■	■	■							
Constructing barn							■	■								
Weeding								■	■	■						
Banking									■	■						
Topping									■	■	■					
Harvesting & curing									■	■	■	■	■	■		
Grading & baling													■	■	■	■
Uprooting old stems											■	■				

production of the two major crops, maize and tobacco, are summarized in Figure 3.1. The figure clearly shows that tobacco production requires more farm work than maize production in terms of both the number of farm tasks and the length of the cultivation period.

The types of labor used in agricultural production can be broadly classified into two categories: family labor and hired labor. Of these, family labor was the main source of labor in the villages studied. As Table 3.1 shows, family labor accounted for 74 percent of total labor used in tobacco production and 88 percent of that in maize production.

The importance of family labor in farm work and the lack of mechanization in agricultural production imply that the availability of family labor influences the household farm size. The correlation coefficients between household farm size and the number of household members whose age was 15 years old or over were positive in all six villages and statistically significant (at the 1 percent level) in Kachamba, Belo, and Bongololo. This signifies the impor-

TABLE 3.1 Labor Input into Maize and Tobacco Production by Type of Labor and Farm Task (man days / ha)

A. Maize

	Total	Land Prep.	Sowing	Fertilizer Application	Weeding	Banking	Harvesting
Family labor	155	69	9	6	40	17	15
Hired labor	21	10	1	1	4	3	2
Total	176	79	9	7	45	20	17

B. Tobacco

	Total	Land Prep.	Nursery	Transplanting	Manure/ Fertilizer Application	Constructing Barn
Family labor	538	24	113	15	20	48
Hired labor	188	7	43	3	4	14
Total	726	31	156	18	24	62

	Weeding	Banking	Topping	Harvesting & Curing	Grading & Baling	Transp.	Uprooting Old Stems
Family labor	48	11	153	24	69	2	9
Hired labor	17	2	57	11	26	0	4
Total	65	13	210	35	95	3	13

Note: Those under age 15 were counted as 0.5.

tance of the quantity of family labor in expanding the household farm size.

A qualification is necessary, however. The increase of farm size using abundant family labor is possible only under the condition that land is readily available for the expansion of a family's farm. This is not always the case in most of rural Malawi today because increasing population pressure on the land has considerably reduced the scope of farm expansion onto uncultivated land. An exception was Belo, where at the time of the study unopened land was still readily available, and there remained the possibility for farm expansion. In the cases of Kachamba and Bongololo, however, unopened land was hardly available. In the two villages, it was the existence of vernacular land markets that enabled some households to expand the size of their farm by obtaining additional land through purchase or rental, as discussed in the previous chapter. These characteristics unique to each village opened some scope for farm expansion for labor abundant households.

Apart from family labor available within the household, labor exchanges among relatives that involved other households were also practiced. In most

cases such labor exchange was used for farm tasks that required a lot of labor at a given time, such as the harvesting of maize. However, the contribution of exchanged labor to a family's overall labor input was low (less than 10 percent). In Table 3.1 exchanged labor is included in the category of family labor.

When a household has insufficient family labor to complete the farm tasks, hired labor is used. In the study villages, there were two types of farm tasks in which hired labor was most commonly used (Table 3.1). One was the farm tasks that required physical strength, such as land preparation and weeding. For these tasks, hired labor was frequently sought both by wealthy households who had enough capital to pay for the labor and by labor-deficient households (such as households headed by a female or elderly person) who could not fulfill these strength-demanding tasks. Another was the farm tasks that required a lot of labor. Examples of such tasks included tobacco grading, the topping of tobacco plants, and the harvesting of maize and tobacco.

3.2 Types of Hired Labor

The types of hired labor used in the study villages were seasonal labor and task-contracted casual labor. The following section examines some characteristics of these two labor contracts.

3.2.1 Seasonal Labor

In seasonal labor contracts, laborers are employed for several months in the rainy season. In most cases in the study villages the seasonal laborers came from other areas, and no kin relations were found between employers and laborers. The contracts were only for one season, and the laborers left the village after their contracts were up and rarely came back to the same employer in the next season. In the study villages, 10 percent of the sample households employed seasonal labor (Table 3.2). Many of the employers were wealthy farmers and all of them grew tobacco. Seasonal laborers were used either for a specific crop (usually tobacco) or for any farm tasks, depending on the agreement made between employer and laborer. In any case, the employer made all decisions on farm management, and the work of the laborers was closely monitored and supervised.

The seasonal laborers received their wages both in cash and in kind. Payment of wages in cash was made at the end of the contract after harvest, but the amount to be paid had been agreed upon at the beginning of the contract.

TABLE 3.2 Uses of and Engagement in Agricultural Wage Labor

	Kachamba (<i>n</i> = 31)		Belo (<i>n</i> = 30)		Horo (<i>n</i> = 32)		Bongololo (<i>n</i> = 33)	
	No. of cases	(%)	No. of cases	(%)	No. of cases	(%)	No. of cases	(%)
Uses of agricultural wage labor:								
Seasonal labor	1	(3)	4	(13)	1	(3)	9	(27)
Task-contracted casual labor	18	(58)	13	(43)	11	(34)	21	(64)
Engagement in task-contracted casual labor	14*	(45)	16	(53)	16	(50)	10	(30)
Of male-headed households**	8	(36)	11	(48)	2	(14)	6	(27)
Of female-headed households**	6	(67)	5	(71)	14	(78)	4	(36)

	Mulawa (<i>n</i> = 28)		Mbila (<i>n</i> = 32)		Total (<i>n</i> = 186)	
	No. of cases	(%)	No. of cases	(%)	No. of cases	(%)
Uses of agricultural wage labor:						
Seasonal labor	0	(0)	4	(13)	19	(10)
Task-contracted casual labor	17	(61)	6	(19)	86	(46)
Engagement in task-contracted casual labor	7	(25)	18	(56)	81	(44)
Of male-headed households**	4	(22)	16	(59)	47	(37)
Of female-headed households**	3	(30)	2	(40)	34	(57)

* Including wage labor on estates.

** Percentages are the percent shares of cases to the total number of male/female-headed households in each village.

Wages in kind were paid in the form of daily food. Employers provided seasonal laborers with cooked foods, maize, or cash to buy food. When maize or cash was provided, laborers received them in advance on a weekly or monthly basis. Some employer also provided shelter to the laborers. The wages in kind guaranteed the basic survival of the laborers in the lean period of November–March during which many households faced food deficit.

The seasonal labor contract discussed above can be regarded as a form of fixed-wage contract in which an employer pays a laborer a fixed amount of wage that was agreed upon in advance. In a fixed-wage contract, risks of production failure and of produce price changes are born by the employer. In the study villages, however, we found many cases where contracts were amended so as to enable employers to share risks with laborers, as the following cases illustrates.

Cases of seasonal labor contracts:

(1) JB in Mbila employed two seasonal laborers between September and June for his 1.6 ha farm of tobacco, maize, and groundnuts. The laborers performed any farm tasks that JB ordered. The employer provided the laborers with daily food and shelter during the period, and paid MK 4,000 to each of them at the end of the contract. The amount of cash paid was determined by the employer after he received money for the tobacco harvest.

(2) EM was using a seasonal laborer between November and April and provided the laborer with food and shelter in Mbila. EM and the laborer had agreed in advance that MK 12,000 would be paid to the laborer after EM received money from his tobacco sale. However, due to the erratic rain and low tobacco price that year, the amount EM received for his tobacco was much lower than what he had expected. EM negotiated with the laborer again, and it was agreed that he would pay MK 4,000 to the laborer.

(3) Between September and June, AB in Mbila employed a seasonal laborer to whom AB provided 60 kg of maize and MK 175 every month to cover the cost of food. In addition, AB and the laborer had agreed in advance that the laborer would receive a lump sum cash payment, and that the amount to be paid would vary according to the level of tobacco production. Following this agreement, AB paid MK 3,000 to the laborer after the tobacco harvest.

(4) LG in Bongololo employed two seasonal laborers for nine months from September. LG divided his 1.2 ha tobacco farm into two parts and let each laborer do all the farm tasks on each part of the farm. He paid each laborer 260 kg of maize in advance, and agreed that MK 24,000 would be paid at the end of the contract. However, the lack of rain in the 2004/05 season considerably reduced the yield, and he consequently paid only MK 12,000 to one laborer and MK 10,000 to another. LG himself suffered a large deficit that year because of the reduced tobacco production.

In the four cases above, the amount of wages in cash paid at the end of the contract was reduced after a bad harvest or determined according to the production level. This arrangement is similar to that of a share contract in the sense that an employer and a laborer share the risk of production. In a share contract, when the production level is low, both employer and laborer receive less income. In a fixed-wage contract, on the other hand, low production levels only affect the income of the employer, while the laborer receives the same amount of wage irrespective of the level of production. Therefore, we can regard the seasonal labor contracts practiced in the study villages as a form of fixed-wage contract that contains a risk-sharing characteristic of share contracts.

This characteristic of seasonal labor contract provides some merits to both employers and laborers in the context of rural Malawi. For employers it provides a means of risk sharing in a highly uncertain condition of agricultural production. Relying totally on rain-fed agriculture, smallholder farmers occasionally face production failure due to unfavorable weather. Moreover, the price of agricultural produce fluctuates widely, adding another risk of a fall in income for producers. Under these situations, the risk-sharing arrangement with laborers in a seasonal labor contract can help ameliorate an income shock faced by the employers.

Reducing the amount of wages in cash in a bad harvest year is clearly a demerit for laborers. On the other hand, the seasonal labor contract guarantees the food security of laborers during the lean period through the payment of wages in kind. The guaranteed provision of food during this season is crucial because many poor households in rural Malawi who exhaust their maize stock during the rainy season have to look for opportunities of casual labor in order to buy food. Seasonal laborers have no need to do so because their contracts guarantee the opportunity of income smoothing (Morduch 1995) through the payment of wages in kind by the employer. Thus, the unique characteristics of seasonal labor contracts provide the employer with a means of risk sharing and the laborer with a means of income smoothing.

3.2.2 Task-contracted Casual Labor

Task-contracted casual labor (*ganyu*²) was widely used for various farm tasks in the study villages. In this contract, wages were paid upon completion of a specific task, such as weeding. The rewards varied depending on the types of work and the ages of the laborers. There were some distinct difference between task-contracted casual labor and seasonal labor. First, the duration of work in task-contracted casual labor was much shorter (typically less than a week but occasionally a few weeks) than that of seasonal labor. Second, laborers were recruited from within the village or nearby villages. Third, the percentage of sample households using task-contracted casual labor (46 percent) was much higher than that using seasonal laborer (10 percent). User households included both wealthy households who had enough cash to pay for laborers and poor households who had insufficient family labor to complete farm tasks by themselves.

On the other hand, engaging in task-contracted casual labor was mostly confined to poorer households. The total engagement rate among the sample households was 44 percent, but the rate shows important gender differences.

Fifty-seven percent of the sampled female-headed households engaged in task-contracted casual labor while only 37 percent of the male-headed counterparts did. The difference stemmed from the fact that the average agricultural and household income of female-headed households was relatively low (see Chap. 7 for details), forcing them to seek any means of income sources.

In task-contracted casual labor contracts, laborers were paid in cash or in kind (usually maize or cooked food) or both. Table 3.3 summarizes the means

TABLE 3.3 Means of Payment in Task-Contracted Casual Labor by Farm Task

A. Tobacco Production

Farm Task	Means of Payments (No. of Cases)							Total
	Cash Only	Cash + Food	In Kind Only	In Kind + Food	Cash + In Kind	Cash + In Kind + Food	Food Only	
Land preparation	2	4	0	0	0	0	1	7
Nursery	13	5	1	0	0	0	0	19
Transplanting	1	2	1	0	1	0	0	5
Manure/fertilizer application	2	8	1	0	0	0	0	11
Constructing barn	9	5	2	0	1	0	0	17
Weeding	7	8	1	1	1	0	1	19
Banking	0	0	0	0	0	0	0	0
Topping	5	7	3	1	2	1	1	20
Harvesting & curing	7	13	0	1	0	0	0	21
Grading & baling	6	20	0	0	0	0	0	26
Transporting	0	0	0	0	0	0	0	0
Uprooting old stems	4	3	0	0	0	0	0	7
Total	56	75	9	3	5	1	3	152
Percent share	37%	49%	6%	2%	3%	1%	2%	100%

B. Maize Production

Farm Task	Means of Payments (No. of Cases)							Total
	Cash Only	Cash + Food	In Kind Only	In Kind + Food	Cash + In Kind	Cash + In Kind + Food	Food Only	
Land preparation	13	9	7	2	0	1	1	33
Sowing	2	1	3	0	1	0	0	7
Fertilizer application	4	2	0	0	0	0	0	6
Weeding	10	4	9	2	2	0	1	28
Banking	9	4	6	0	0	0	1	20
Harvesting	3	1	10	3	0	0	1	18
Total	41	21	35	7	3	1	4	112
Percent share	37%	19%	31%	6%	3%	1%	4%	100%

of payment to casual laborers engaged in tobacco and maize production. It is noteworthy here that, first, in both tobacco and maize production the majority of payments involved cash and, second, there were sizable cases of payment in kind (mainly maize) for the casual labor used in maize production.

In fact, some maize-surplus households used task-contracted casual labor extensively for farm work in maize production and paid laborers with maize. A wealthy farmer with 2 ha of farm land in Kachamba, for example, used task-contracted casual labor for his maize and groundnut farms for 65 mandays and paid them 37 pails (about 740 kg) of maize. As the season of high demand for task-contracted casual labor (October to March) coincides with the time when poorer households exhaust their maize stocks, these labor arrangements provide an important opportunity for households lacking maize to survive during the lean period.

Nevertheless, as Englund (1999) and Devereux (1999) rightly argue, task-contracted casual labor is neither an arrangement of wealth-sharing nor an informal transfer between the rich and the poor. Rewards are paid as returns on the labor provided on the basis of a commercial exchange. On the other hand, it is also true that villagers share the feeling of moral obligation whereby wealthy farmers should provide other villagers with opportunities to engage in task-contracted casual labor. Thus, the labor arrangement conveys the image of both an economic contract and a social obligation (Whiteside 2000, pp. 4–5; Ellis et al. 2003, p. 1509; Bryceson 2006, p. 178).

Some literature has suggested that the engagement of poor households in task-contracted casual labor (*ganyu*) may result in food insecurity. For example, Whiteside (2000) suggested that the need to do task-contracted casual labor to obtain an immediate supply of food may mean less labor input on one's own farms in a less timely manner during this critical farming period, which may result later in a smaller harvest and can lock some households into a vicious cycle of food insecurity. For this reason, Devereux suggested that engagement in task-contracted casual labor can be an erosive survival strategy when farmers neglect their own farming activities (Devereux 1999, p. 12).

The data obtained in the six study villages suggest the need to distinguish between *amount* and *timing* of labor input when we examine the potential competition between task-contracted casual labor and own-farm production. It is true that the households who engaged in task-contracted casual labor produced less maize per hectare than those who did not, as Table 3.4 shows. However, the correlation coefficients between maize production per hectare and labor input per hectare in five villages (except in Belo³) were statistically insignificant. This implies that the higher productivity of maize was not caused by increased labor input. In addition, the labor input on one's own

TABLE 3.4 Task-contracted Casual Labor and Maize Production

Engaged/Non-engaged households in task-contracted casual labor	Kachamba		Belo		Horo	
	Engaged	Non-engaged	Engaged	Non-engaged	Engaged	Non-engaged
No. of cases	14	17	16	14	16	16
Maize production (kg/ha)	872	1,234	483	487	156	423
Labor input on maize farming (man days/ha)	209	198	194	124	245	174
Correlation coefficient between maize production per hectare and labor input per hectare	0.246		0.440*		0.206	
Fertilizer input (kg/ha)**	40	90	10	17	54	108

Engaged/Non-engaged households in task-contracted casual labor	Bongololo		Mulawa		Mbila	
	Engaged	Non-engaged	Engaged	Non-engaged	Engaged	Non-engaged
No. of cases	10	23	7	21	18	14
Maize production (kg/ha)	1,189	1,641	696	1,531	575	895
Labor input on maize farming (man days/ha)	176	161	193	178	223	157
Correlation coefficient between maize production per hectare and labor input per hectare	-0.121		0.051		0.205	
Fertilizer input (kg/ha)**	88	72	67	139	84	128

Engaged/Non-engaged households in task-contracted casual labor	Total	
	Engaged	Non-engaged
No. of cases	81	105
Maize production (kg/ha)	622	1,015
Labor input on maize farming (man days/ha)	206	162
Correlation coefficient between maize production per hectare and labor input per hectare	N.A.	
Fertilizer input (kg/ha)**	48	84

* Significant at the 5% level.

** Total application irrespective of types of fertilizer.

maize farm plots among households providing task-contracted casual labor was not less than that of other households (Table 3.4). This implies that engaging in task-contract casual labor does not reduce the labor input on one's own farm land. On the other hand, there is the possibility that the *timing* of labor input on one's own farm could influence the production level. For example, weeding on an employer's farm for a long period of task-contracted labor may delay the timing of weeding on one's own farm, resulting in less optimal production output. The present study lacks the data to examine this possibility.

The difference in maize productivity between the two types of households, observed in the six villages, seemed to be the result of the level of fertilizer use. As Table 3.4 shows, those who engaged in task-contracted casual labor used much less fertilizer on their maize farms than other households. This is because poorer households who engaged in task-contracted casual labor to obtain an immediate supply of food had no working capital to purchase fertilizer, thus resulting in less harvest. Therefore, the low productivity among the households providing task-contracted casual labor was not caused by the low input of labor but by the low level of fertilizer used.

Conclusion

This chapter has examined the labor use and labor contracts observed in agricultural production. It revealed that the characteristics of labor contracts in the study villages were interrelated with the high risk of agricultural production and the problem of food deficit during the lean season. This interrelation was examined in the case of seasonal labor contracts that provided a means of risk sharing for employers and of food security for laborers. The chapter also examined some features of task-contracted casual labor and highlighted the fact that the relations between user and provider of casual labor were interwoven into the wealth differences among the households. In addition, the chapter showed that the low productivity of maize among the households engaging in task-contracted casual labor was not caused by the low level of labor input but by the low level of fertilizer use.

Notes

- 1 Parts of this chapter are based on Takane (Forthcoming, a).
- 2 *Ganyu* refers to all kinds of piecework, including nonagricultural work. Through-

out this book, use of the word *ganyu* is deliberately avoided in order to make the distinction between agricultural wage labor and nonagricultural wage labor.

- 3 One possible explanation for the statistically significant correlation coefficient in the case of Belo is that many households in the village have to establish new farms on unopened land which requires much labor, and the newly established farms produce better harvest due to good soil conditions.