Abstract

A study was initiated in 1984 in an area of South Nyanza, Kenya, Undergoing a transition from maize to sugarcane production. The study evaluated the effects of the commercialization of agriculture on women's income, time allocation, and child care practices. Results indicate that household incomes are significantly higher in sugarcane-producing households when compared to non-cane producers. However, the percent of female-controlled income (although not the absolute amount) is significantly less in sugarcane-producing households.

Sugarcane-producing households spend virtually no time on the cultivation of the cane crop and, therefore, it is not surprising that the child care patterns of women from sugarcane-and nonsugarcane-producing households are not different. Women from sugarcane-producing households do not allocate their time to the sugarcane crop. Sugarcane-producing households use more hired labor than the nonsugarcane households; this may be and important reason why there is no increased demand for women's labor in these households.

For each of the factors examined in this paper, cash crop production appears to have no dramatic impact.

About the author

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The Case of Sugarcane in Kenya: Part I Effects of Cash Crop Production on Women's Income, Time Allocation, and Child Care Practices

by

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EFFECTS OF CASH CROP PRODUCTION ON WOMEN'S INCOME, TIME ALLOCATION, AND CHILD CARE PRACTICES

INTRODUCTION

The issue of the appropriate role of export crop production in many developing countries is politically volatile.[1] On the one hand, many governments are encouraging the increased production of cash crops/export crops as a means of generating foreign exchange while, on the other hand, stressing the production of food crops for domestic consumption. At times, these goals appear to be in conflict.

In Kenya, there has been some concern that in areas with increased cash cropping, particularly increased sugarcane production, deterioration of nutritional status has occurred. However, relatively little is known about the nutritional effects of cash crop production. A recent review of the income and nutritional effects of cash crop production suggests mixed results (von Braun and Kennedy 1986); while some studies show a negative effect of cash crop production on consumption and nutritional status, an equal number of studies shows a positive or neutral effect.

This study was initiated at the request of the Government of Kenya to examine the effects of cash crop production on small-farm households in an area undergoing a transition from maize to sugarcane production. The study assesses the effect of cash cropping on agricultural production, income, food consumption, expenditures, health, and nutritional status. In addition, the research concentrated on an identification of the process leading to these outcomes. Figure 1 provides a conceptual model of the pathways through which cash crop production can potentially influence health and nutritional status.[2] Past work has tended to concentrate on a limited number of household-level effects--mainly household agricultural production. Noticeably absent from most of these studies is any research related to the effects of cash cropping on allocation of household resources including time. The current study, therefore, looks very specifically at the effects of cash cropping on resource allocation and control within the household. The present paper focuses on the impact of cash crop production on household income, women's income, labor allocation, child care, and weaning practices. A companion piece examines the effects of intrahousehold dynamics on women's and child's health and nutritional status.[3]

STUDY AREA

The project area is located in Nyanza province, South Nyanza district, in the southwest part of Kenya. Nyanza province has historically been a grain-producing area supplying basic staples for other parts of Kenya, but since the early 1970s it has become part of the area known as the sugar belt of Kenya.

In 1977, the newest of sugar factories in Kenya was established--the South Nyanza Sugar Factory (Sony). The Sony factory obtained approximately 2,500 hectares of land from local landowners to establish the factory and nucleus estate. The majority of sugar, however, is produced by smallholders under

contract with the Sony Company. The outgrowers program includes 6,000 contract farmers and approximately 6,000 hectares of land.

Since the Sony factory is the newest sugarcane scheme in Kenya, it is still undergoing expansion of the outgrowers' program. This provides the opportunity to identify a cohort of farmers prior to entry into the outgrowers' program and/or prior to the first sugar harvest, and to collect baseline information on socio-demographic characteristics and health and nutritional status.

The Sony Company provided a list of all farmers in the outgrowers scheme. From this list, a random sample of sugar farmers weighed by sublocation[4] was chosen. Each of the randomly selected households had to meet the following criteria: (1) had to have at least one preschooler in the household, (2) had to have less than 20 hectares of land, (3) could not be a nonresident farmer.

The presence of a preschooler in the household was important since the government of Kenya has a specific interest in evaluating the impact of the commercialization of agriculture on preschooler nutritional status.

The sugar farmers represent outgrowers in various stages of the scheme. A contract with Sony normally lasts five years and includes a plant crop and two ratoon crops. The first sugar plantings in the area were done in 1978; farmers who planted in the early years of the outgrowers' program were already in the second contract when field work for the current study began in June 1984.

Of the 181 sugar farmers in the study sample, 77 percent had received at least one payment for the sugar crop. This group is called the sugar farmers. Twenty-three percent of the farmers had not yet had a first harvest and, therefore, had not yet received payment for any sugar harvest. This group is called new entrants.

The sample of sugar farmers is heterogeneous and allows us to assess the short- and long-term impact of the outgrowers' program by looking at farmers in various stages of the scheme.

Once the sugar farmers' sample was chosen, field staff identified the next nearest nonsugar farmers who met the same selection criteria.[5] This approach ensured geographic similarity of sugar and nonsugar farmers. The nearest-neighbor method of sampling nonsugar farmers essentially enabled the use of the sugar farmer as a seed unit by mapping all neighbors who did not grow sugar. For each sugar contractor, mapping was performed on comparable households of up to three neighbors, of which up to two were randomly selected.

Since the research is concerned with an assessment of the impact of sugarcane production on the entire community, it was important to also consider nonagricultural households in the sample selection. This is something that typically has not been done in prior studies. A mapping was done of all businesses in the main township, Awendo, and in the eight villages in the project area. From these lists, a random sample of local merchants was selected.[6] Many of the merchant households are also involved in agriculture;

for the present study, a household was defined as "merchant" if the major source of household income was supplied by the business activity.

Finally, landless households were randomly selected by doing a restricted area census of all landless famiaies living in the eight small towns of the project area. Two groups emerged from the general category of "landless." First, there was the group of households who owned no land and who had no permanent source of income. These are the types of households who are generally thought of as landless, and for the purpose of this study are called "landless." The second group of landless were those households who did not own land but who did have a regular source of income. This group was reclassified as the "wage earners."

A comparison of key sociodemographic characteristics is shown in Table 1. The average household size for the sample as a whole--9.9 household members--is large because many households are polygamous. The nonagricultural households (merchants, wage earners, landless) have smaller households, on the average, than any of the agricultural groups. This is true even for the number of adult equivalents in the household.

As expected, landholdings in the agricultural households are larger than in the nonagricultural groups. The new entrants and both sugar and nonsugar farmers have a similar number of hectares per capita.

RESULTS AND DISCUSSION

It has been assumed by planners advocating the switch to cash crop production that incomes of farmers would increase. The data in Table 2 suggest that the incomes of sugar farmers are significantly higher ($p < 0.05$) than those of nonsugar farmers. Interestingly, the incomes of the new entrants who have not received sugar income from the sugar crop are almost identical to that of the nonsugar farmers.

Some of the literature on cash cropping suggests, however, that increases in income as a result of the commercialization of agriculture may not be sufficient to achieve desired health and nutrition objectives. Tinker (1979:15) concluded, a "recurring theme in all these studies of new technology for cash crops is that while cash income may have increased, nutritional levels tend to fall. The primary reason for this seemingly contradictory phenomenon is the fact that income belongs to men. Men use this money for improving homes, throwing prestige feasts, and buying transistor radios."

In many cultures, particularly in Africa, men control cash income and women control food income. The daily level of nutrition and standard of living may depend more on the women who earn small steady incomes that they tend to spend on small regular purchases like food (Tripp 1982; Guyer 1980). Therefore, in addition to examining the effect of cash crop production on income, the study evaluated the impact of sugar production on women-controlled income.

Table 2 data show that the percentage of women-controlled income[7] is significantly less ($p < 0.05$) in sugar-producing than in nonsugar-producing households. However, given that the total household income is higher for

sugar producers, women from sugar households control a higher absolute amount of income than women from nonsugar-producing households. All the women in agricultural households--whether sugar or nonsugar-producing households--have significantly ($p < 0.05$) higher percentage of women-controlled income than women from nonagricultural households. This was due primarily to income from agricultral production used for home consumption.

Commercialization of agriculture may effect not only women's income but also the allocation of women's time. Here again, particularly in Africa, men and women have different responsibilities for crops, labor, and support obligations in the household. The effect of commercial agriculture on reallocation of women's time is of concern because of its potential effect on women's household activities, such as child care, food preparation, and other nurturing activities, and the ultimate effect of these patterns on food consumption and nutrition.

Table 3 presents data on time allocation of women in different activity groups. The data were collected using a 24-hour recall of yesterday's activities; the recall was administered four times during the survey period and the data in Table 3 are aggregated for all four rounds.

Women in all types of agricultural households spend significantly ($p < 0.05$) more time away from home (mainly agricultural work and marketting) than women from nonagricultural households. However, women from sugar-producing households do not spend any more time than non-sugar producing women away from home. There is no difference in the amount of time women spend on farming, animal care, or child care in sugar-versus nonsugar-producing households.

Women spend virtually no time on the production of sugar. Part of the explanation for this comes from the data presented in Table 4. Sugar-producing households use substantially more hired labor for the production of their crops than non-sugar producing or new entrant households.

Since women from agricultural households, including sugar producers, spend more time than other households away from home, we were interested in who takes care of the children while the mother is gone. When the mother is away from home, the most common arrangement is for other children to care for preschoolers (Table 5). The second most frequent scenario is for the children to look after themselves.

There is no difference in the type of child care provider within different types of households. Women in sugar-producing households were as likely to have their preschoolers cared for by other children as were the children in non-sugar producing households. Infants who are still being breast fed normally accompany their mothers.

The source of childcare is of concern because of the potential implications for the nutritional status of children. Analyses from another part of this study indicate that children cared for by an adult--whether or not that person is the mother--are less likely to be malnourished; results suggest that controlling for income or expenditures and household wealth, children who were cared for by siblings were more wasted (Cogill 1987).

There has also been concern that, because of demands on women's time, child feeding and weaning practices will be affected. Table 6 and Figure 2 present data on the age of weaning and the age of introduction of solid foods. There is no difference within agricultural households in the weaning age; the merchants are the only group that differs significantly in the age of weaning. Similarly, the age of introduction of solids to children exhibits a fairly consistent pattern across different types of households.

SUMMARY

There has been a tendency in prior research in the area of commercialization of agriculture to look at the transition to cash cropping as either "good" or "bad." This view is simplistic since the entry into commercial agriculture can potentially affect households and individuals within the household in different ways.

The conceptual framework presented in Figure 1 identifies three major routes through which cash cropping may affect the household. The impact on agricultural production and the effect on hired labor tend to exert its influence via income-mediated pathways. The present paper concentrates on the effects of cash cropping on women's time and income and child care practices.

The data suggest that income is significantly higher in sugarcane-producing households but the proportion of income controlled by women declines somewhat in households producing sugar. This decline in women's income in sugar households is small. In addition, the absolute amount of women-controlled income is actually higher in sugar versus nonsugar producers.

There are no differences in the time allocation patterns of women from sugar and nonsugar-producing households. Women from sugar-producing households do not allocate their time to the sugar crop. Sugar-producing households use more hired labor than the nonsugar households; this may be an important reason why there is not increased demand for women's labor in these households.

The preschoolers' weaning patterns and child-feeding practices also appear to be similar for the sugar and nonsugar households.

Thus, no dramatic impacts of the cash crop production appear for any of the factors assessed in this paper. The Kenya work is one of a series of studies that are being conducted to evaluate the income and nutritional effects of cash crop production. It is important to determine if the results reported from this study are generalizable to other socio-cultural environments.

Notes

Paper presented at the annual meeting of The Association of Women in Development, April 1987.

1. The terms "cash crops" and "export crops" are often used interchangeably in the literature and this creates some confusion. Export crops are those that are exported from the country and which can be food or nonfood crops. Cash crops are commodities that are sold and can also be either food or nonfood crops.

2. A more detailed description of each of these linkages is found in von Braun and Kennedy, 1986.

3. See Bruce Cogill and Eileen T. Kennedy, "Maternal Buffering and Health and Nutritional Responses to Increasing Agricultural Commercialization in South-West Kenya," paper presented at the annual meeting of American Association of Women in Development, Washington, D.C., April 25, 1987.

4. Sublocation is the smallest administrative unit in Kenya. The Sony factory serves 25 sublocations. Areas closest to the factory have a higher proportion of sugar farmers than areas further out from Sony.

5. Nonsugar households also had to have: (1) a preschooler, (2) less than 20 hectares of land, and (3) a resident owner.

6. The merchant sample had to meet same selection criteria as agricultural households.

7. Female-controlled income includes nonfarm income, and agricultural income controlled by women and was comprised of small crop sales, women's wages, and profits from their enterprises, and the estimated value of the household food consumption from household own production.

Figure 1
Relationship between commercial agriculture and production, income, consumption, and health

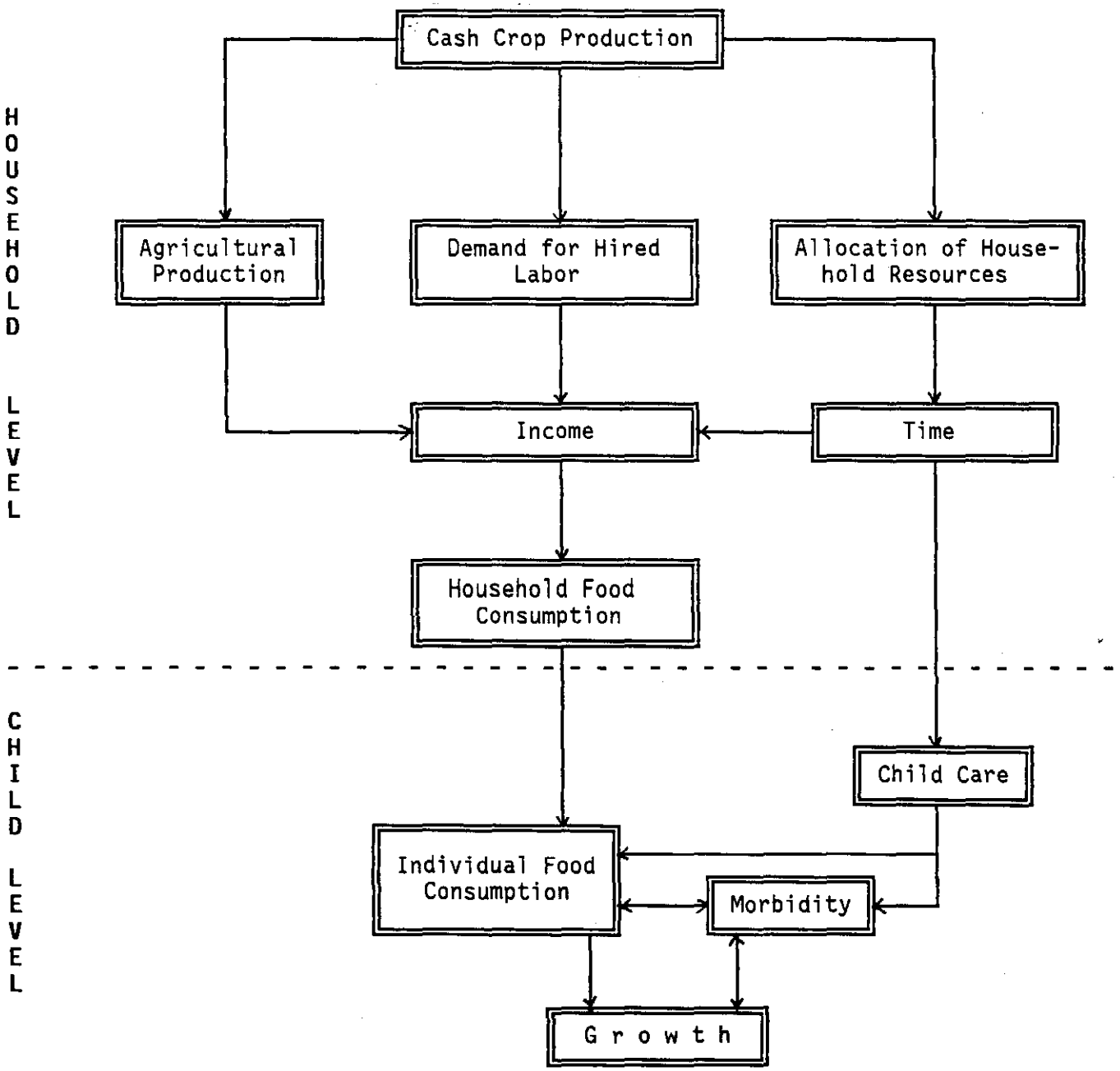

Figure 2
Cumulative percentage of preschoolers that were exclusively (N=936) and partially breast-fed (N=786)

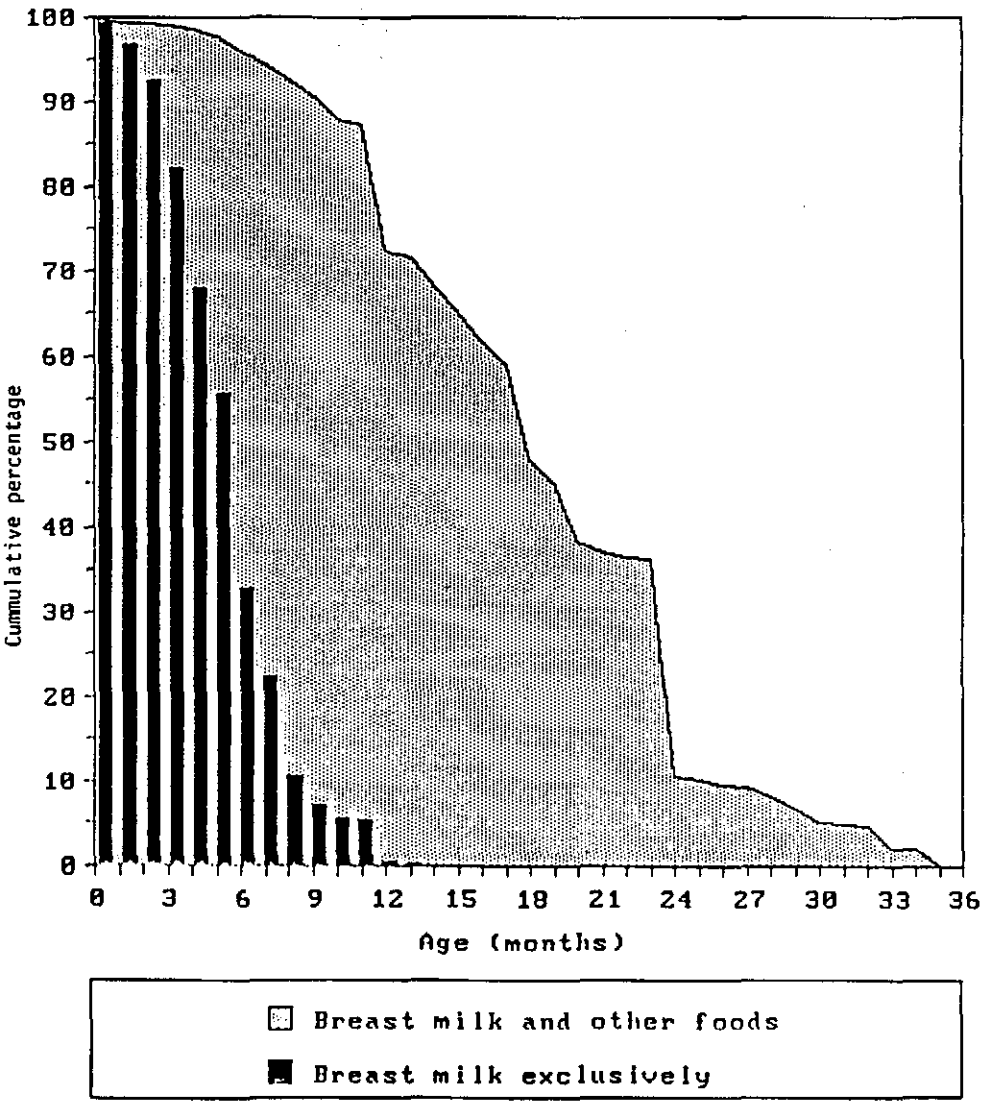

Table 1
Characteristics of households in the study sample, 1984/85

Activity Group	Mean Household Size[a]	Number of Adult Equivalents[b]	Percent of Children in Household[c]	Size of Landholding[d]	
				(hectares)	(hectares/ capita
New entrants	9.4	6.2	50.5	5.0	0.59
Sugar farmers	11.1	7.4	52.9	5.6	0.56
Nonsugar farmers	10.2	7.0	52.3	3.7	0.41
Merchants	8.8	5.0	53.0	1.5	0.23
Wage earners	6.6	4.3	50.3	0.5	0.08[e]
Landless	6.6	4.1	52.3	0.4	0.07[e]
Sample mean	9.9	6.6	52.3	3.8	0.41

Source: International Food Policy Research Institute, "Survey 1984/85," South Nyanza, Kenya.

Notes : All variables are evaluated at the sample mean. Children are defined as those below 15 years of age.

[a] Sugar and nonsugar farmers are significantly larger at the 0.05 level than other groups.

[b] Agricultural households are significantly larger at the 0.05 level than nonagricultural households.

[c] No two groups are significantly different.

[d] Farmers have significantly larger landholdings and more hectares per capita at the 0.05 level than nonagricultural households.

[e] Some of the landless have access to council-owned land.

Table 2
Annual income by activity group, 1984

Activity Groups	Income $\bar{X}$ (K. Sh.)	Percent Female Controlled[b]	N
New entrants	1,956	56.5	42
Farmers with sugar income	2,591[a]	50.5	139
Nonsugar farmers	1,924	58.5	231
Merchant	2,209	12.8	29
Wage earners	2,037	18.6	18
Landless	1,290	37.7	43
Sample $\bar{X}$	2,078	50.4	502

[a] Based on analysis of variance, sugar farmers significantly higher ($p < 0.05$) than nonsugar farmers and landless.

[b] Nonsugar farmers have significantly more female-controlled income than all groups except new entrants. The agricultural households have a greater percentage than nonagricultural households.

Note: 1 U.S. Dollar equals 16 Kenyan Shillings

Table 3
Time allocation of women[a]

	Hours Away From Home[b]	Weeding[b]	Animal Care[c]	Agriculture Excluding Sugar and Animals[b]	Total Farming Excluding Sugar[b]	Child Care[d]	Sugar[e]
New entrants	3.7 (193)	1.4 (193)	0.21 (193)	2.9 (193)	3.3 (193)	2.0 (193)	0.19 (193)
Sugar farmers with income	3.5 (752)	1.1 (752)	0.22 (752)	2.8 (752)	3.2 (752)	1.8 (752)	0.21 (752)
Nonsugar farmers	3.5 (1,156)	1.3 (1,156)	0.26 (1,156)	3.0 (1,156)	3.3 (1,156)	1.9 (1,156)	0.04 (1,156)
Merchant	1.1 (106)	0.06 (106)	0.12 (106)	0.53 (106)	0.65 (106)	1.2 (106)	0 (106)
Wage earners	2.2 (62)	0.8 (62)	0 (62)	2.0 (62)	2.1 (62)	1.5 (62)	0.11 (62)
Landless	2.5 (160)	0.5 (160)	0.09 (160)	1.6 (160)	1.8 (160)	1.4 (160)	0.18 (160)
Sample $\bar{X}$	3.3 (2,429)	1.1 (2,429)	0.22 (2,429)	2.7 (2,429)	3.0 (2,429)	1.8 (2,429)	0.12 (2.429)

a. All rounds combined. Number in parenthesis equals number of women.

b. Women in agricultural households spend significantly (0.05) more time than women in other types of households.

c. No two groups significantly different at 0.05 level.

d. New entrants and nonsugar farmers spend significantly (0.05) more time than merchants. Refers only to time spent exclusively on child care.

e. Sugar farmers with income spend significantly more time than sugar farmers.

Table 4
Total household and hired labor[a] for major crops
in long rains for sugar and nonsugar farmers

	New Entrants		Sugar Farmers		Nonsugar Farmers	
	Household Labor	Hired Labor	Household Labor	Hired Labor	Household Labor	Hired Labor
Local maize	145	4	147	8	148	8
Hybrid maize	164	4	110	22	188	15
Sorghum	109	2	161	5	169	6
Peanuts	215	2	191	7	196	18
Beans	127	1	111	11	147	13
Tobacco	211	2	349	40	419	10
Sugar[b]	109	50	90	32	96	31
Total days/ha.	1,080	65	1,159	125	1,363	101

a All labor in person days per hectare. Child labor equals one-half adult labor.

b Includes contract and noncontract sugar. Non-sugar households produce cane which is sold to jaggery factories.

Table 5
Who takes care of children?

	Round			
	1 Preharvest	2 Post-Harvest	3 Preharvest	4 Post-Harvest
Who cared for children (% of sample)				
Mother not away	29.0	22.4	27.5	24.1
Grandmother	4.8	2.4	3.0	4.5
Other household women	4.3	2.1	2.5	3.4
Other children	24.5	32.7	31.3	33.4
Other nonhousehold women	1.5	1.0	0.8	1.1
Children took care of themselves	9.3	7.6	5.2	5.7
Other	3.3	1.6	0.3	1.0
Took them with her	4.5	6.8	3.3	4.7

Table 6
Weaning patterns by activity group

Activity Group	Age of Weaning	Age Introduction of Solids
	(In Months)	
New entrants	19.70	5.4
Sugar farmers	19.06	5.6
Nonsugar farmers	20.20	6.0[b]
Merchants	13.30[a]	5.7
Wage earners	17.07	5.4
Landless	18.19	6.2

[a] Statistically different ($p < 0.05$) from other groups.

[b] Nonsugar farmers significantly ($p < 0.05$) later than new entrants or sugar farmers.

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