

This work is licensed under a
Creative Commons Attribution-NonCommercial-
NoDerivs 3.0 Licence.

To view a copy of the licence please see:
<http://creativecommons.org/licenses/by-nc-nd/3.0/>

INSTITUTE
FOR
DEVELOPMENT STUDIES
UNIVERSITY COLLEGE, NAIROBI

IDS LIBRARY
RESERVE COLLECTION

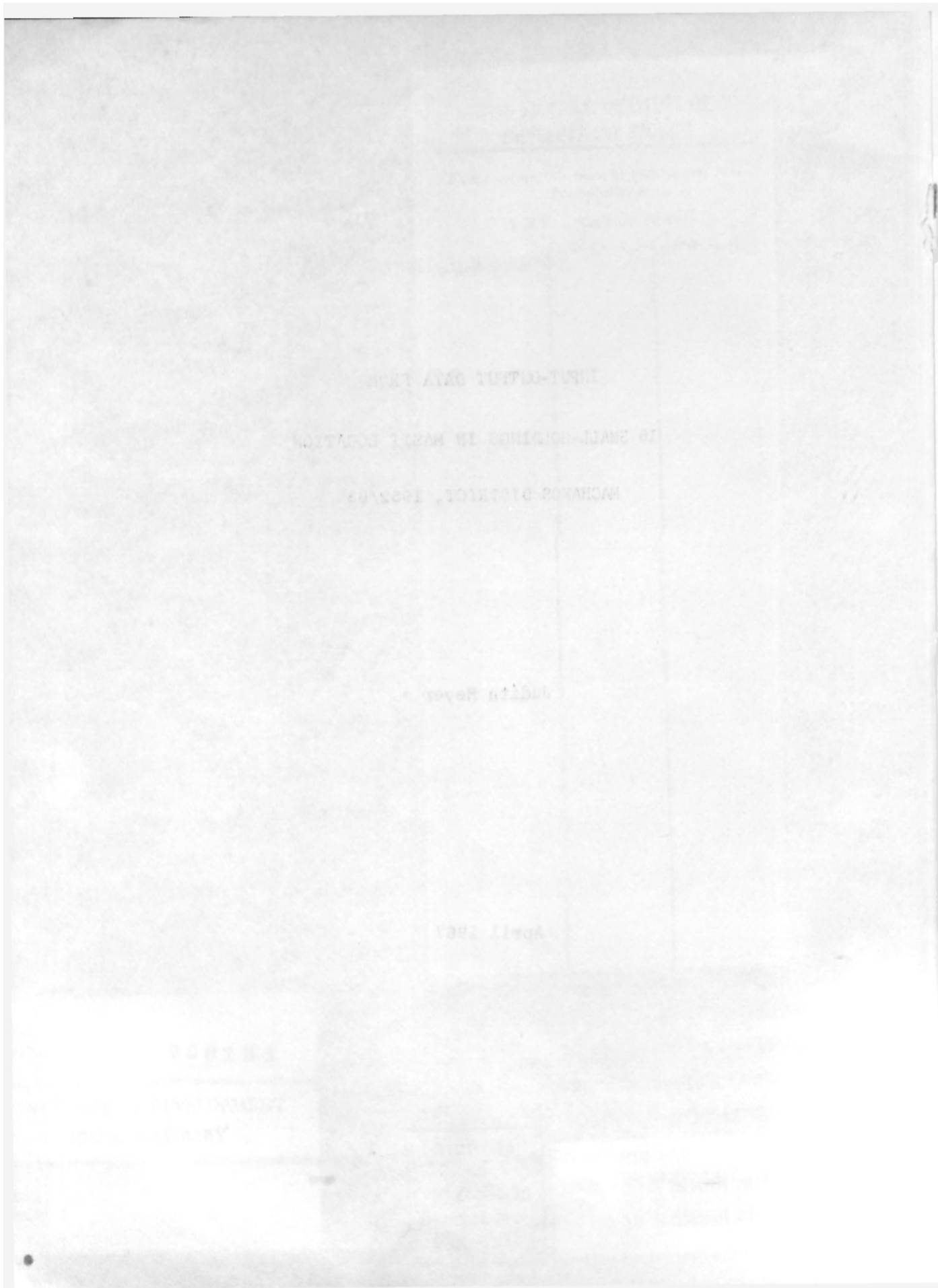
INPUT-OUTPUT DATA FROM 16
SMALLHOLDINGS IN MASH LOCATION,
MACHAKOS DISTRICT, 1962/63

Judith Heyer

INSTITUTE
OF
DEVELOPMENT
STUDIES
LIBRARY

SUPPLEMENT TO OCCASIONAL PAPER No. 1

April 1967



Introduction

The input-output data presented here were collected in 1962/63 from a group of smallholdings in Masii location for use in a linear programming analysis of farm production there.¹ The raw data have been assembled here for use by other research workers and people in Government who may need straightforward input-output figures for various purposes. The data have been analysed elsewhere, and there is no attempt here to do more than present the raw data in their original form.

Masii Location

Masii is one of the more densely populated of the Machakos lowland locations, its central market lying 18 miles east of Machakos town on the Machakos-Kitui road. It is in the acacia combretum ecological zone, and has an annual rainfall of about 25 inches, but this varies widely from year to year. Most of the rain falls in the two rainy seasons, from October to January, and from March to June. The soils are sandy clay loams.

The population density in Masii is now over 300 per square mile and there are about 130 livestock units² per square mile as well.

1. The full analysis appears in J. Meyer, Agricultural Development and Peasant Farming in Kenya, Ph.D. thesis, London, 1966. Shorter papers are also available.

2. A livestock unit is defined as 1 head of cattle or 5 head of sheep or goats.

The land is extensively cultivated, with residual areas of poor and eroded grazing left for cattle. Masii farmers own both arable and grazing land individually, under tribal land tenure, and most holdings consist of several fragments of land. Fragmentation is not severe, as yet, the average number of fragments being 2 or 3, and the furthest distances a mile or two between fragments, but most are much closer together than this.

Crops are planted behind an ox-drawn plough when the rain begins, in mixed combinations, on previously unprepared land. Maize, beans, pigeon peas, bulrush millet, wimbi and sorghum are the major crops, with small quantities of cowpeas, sweet potatoes, cassava, pumpkins, melons and gourds, castor, bananas, citrus, mangoes and pawpaws grown among the major crops or in small patches near the homestead as well. Cotton was grown in Masii in 1962 for the first time since the war, and it is planted exclusively in pure stands. Pigeon peas, sorghum, wimbi, cotton and many of the minor crops continue through the two rainy seasons, but maize, beans and millet can all be harvested in time for a second crop of maize or beans to be grown in the March rains.

Masii people work hard at peak seasons, as the data show, many people working more than 8 hours a day, 6 days of the week, for several weeks at a time. There appears to be no lack of incentives in the location which is generally recognised as the most progressive of the lowland locations in Machakos district.

The 1962/63 Seasons in Masii

1962/63 was a year of relatively high and well distributed rainfall in Masii, without any major pests or diseases, and crop yields were generally good as a result. Years such as 1962/63 occur once or twice every five years, with years of mediocre or poor crops alternating in between.

The 16 Holdings Studied

The 16 holdings were chosen as case studies and not by random sampling methods. In choosing the farms, an attempt was made to cover widely different situations, and many holdings were chosen as typical of large numbers of farms in the area, but there were exceptions to this, as in the choice of holdings with cotton, when only about 1% of the farmers in the location had cotton in 1962/63. Special care was taken to include poor farms as well as good farms, the relatively sophisticated and the traditional, the large families as well as the small, etc. There is no reason to suppose that the final group is unrepresentative of farms in Masii as a whole. Some of its characteristics are shown in Table 1.

The data presented refer to individual holdings which are the effective decision-making units within homesteads in Masii. Homesteads contain groups of people under a head of the homestead who allocates land and exercises overall control, but who does not necessarily control the use of the land after he has allocated it. The homestead usually contains a man, his wives and their children, and any married sons or their families,

living at home. Where the main family is monogamous and there are no married sons living at home, the holding corresponds to the homestead, and the head of the homestead and his wife take all production decisions jointly and consume jointly as well. But where a man has more than one wife, there is always a strict division between the plots of land allocated to each wife, (and to each married son), and the plots of land kept by the head of the homestead himself. Each wife has complete responsibility for the cultivation and produce of her own plots of land, and she makes all her production decisions alone. The head of the homestead does the same for his plots. Holdings in the following tables are controlled either by a man and his one wife together, or by a man alone, or one of several wives alone. This is shown in Table 1.

The Collection of the Data

The data were collected by the author working with an interpreter for the main cultivating season, from October 1962 to January 1963, when the ploughing, weeding, and some early harvesting of main season crops took place, and again for the pigeon pea harvesting season in September 1963. During these periods farms were visited twice weekly and all background data as well as detailed input-output data for the periods during which the author was present, were collected on the farms. A local schoolteacher was employed for 4 weeks in December to help with the plot acreage measurements as well.

Data for the period from February to August, when the author was engaged on a second study elsewhere, were collected by schoolchildren living on or close to the farms, and keeping detailed diaries on labour inputs and crop and livestock outputs, every day or every other day. The schoolchildren proved to be extremely good enumerators, working conscientiously and recording meticulously, with one exception. The set of data collected by the one who was poor has been rejected and does not appear here.

The Data on Cotton

1962/63 was the 1st season in which cotton was grown in Masii since the war. Data were collected for 2 holdings, but these have not been presented here. They have had to be used with some reservations being the first on a new crop and being for a year in which the growing pattern was somewhat unusual for climatic reasons as well. Details of the data finally used in the study can be found in the thesis cited above.

The tables that follow are self explanatory.

Judith Heyer
Research Fellow
Institute for Development Studies
January 1967.

NOTES ON TABLE 1

- (1) Holding controlled by male, female, or both.
- (2) Majority of children over or under 10 years.
- (3) W. H. O. nutritional consumption units in which children aged 0-10 years are counted as 0.5, and children aged 11-15 years are counted as 0.75 of an adult-equivalent.
- (4) This is mostly family labour available to the holding, and not strictly full-time as many people have other rural occupations as well.
- (5) This holding was controlled by two women, one of whom had taken a 'wife' according to Kamba custom, after her husband had died.
- (6) This woman only had grown children with holdings of their own.

TABLE 1: SOME CHARACTERISTICS OF THE 16 MASII HOLDINGS

<u>Holding No.</u>	<u>m/f</u> (1)	<u>Child. over/under 10.</u> (2)	<u>Adult equiv.</u> (3)	<u>Full-Time labour.</u> (4)	<u>Cult-ivated land.</u>	<u>Labour Land</u>	<u>Length Cult-ivated.</u>	<u>Soil Conser-vation.</u>	<u>Row Culti-vation</u>	<u>Plough</u>
1	f	Under	3.50	.75	1.97	.38	All	Poor	Fair)
2	m	-	-	.50	2.48	.20	over	Poor	Fair)
3	f	Over	5.25	.63	1.97	.32	yrs.	Poor	Fair)
4	mf	Under	4.25	1.00	1.85	.54	5-10yrs.	Good	Good	Shared
5	f	Under	2.75	.73	2.73	.26	All	Good	Fair)
6	m	-	-	1.25	.98	1.28	over	Good	Good)
7	f	Over	3.50	1.13	3.31	.30	25	Good	Good)
8	f	Over	3.00	1.33	5.57	.24	10yrs.	Good	Good	One
9	ff(5)	Over	3.75	1.84	6.45	.29	25yrs.	Fair	Good	Shared
10	f	- (6)	1.50	.50	1.80	.28	Nearly	Fair	Fair)
11	m	-	-	1.00	1.40	.71	all	Fair	Fair)
12	f	Under	2.50	1.00	3.37	.30	over	Fair	Fair)
13	f	Over	4.75	1.33	3.43	.39	25yrs.	Fair	Fair)
14	f	Under	2.50	.30	2.56	.30	5-10yrs.	Fair	Fair	One
15	f	Under	5.50	1.00	3.48	.29	Over	Fair	Fair)
16	m	-	-	.50	.61	.82	25yrs.	Fair	Fair)
Totals			42.75	15.23	44.50	.32				

TABLE 2. 1962/63 PATTERN OF FARMING ON 16 MASII HOLDINGS

<u>CROP MIXTURE</u>	<u>NO. OF HOLDINGS</u>	<u>TOTAL ACRES</u>	<u>AVERAGE ACRES PER HOLDING</u>	<u>% OF TOTAL ACREAGE</u>
Maize/Peas	12	12.93	.31	29
Maize/Beans/Peas	13	12.42	.78	28
Maize/Beans	10	5.15	.32	12
Maize	3	3.67	.23	8
Beans, Beans/Peas, Peas	4	.83	.05	2
Peas/Wimbi	6	2.60	.16	6
Peas/Millet, Peas/Sorghum, Peas/Millet/Sorghum	5	2.61	.16	6
Peas/Millet/Sorghum/Wimbi, Peas/Sorghum/Wimbi	3	2.50	.16	6
Millet, Beans/Millet	2	1.23	.08	3
Cotton	1	.41	.03	1
Totals	16	44.35	2.77	100

TABLE 3: MASII CROP YIELDS PER ACRE IN 1962/63

200 lb. bags per acre

	No. of obs.	Highest Yield	Lowest Yield	Mean Yield	S. D. (1)
1st Season Beans	15	5.9	0.3	2.2	1.6
1st Season Maize	15	12.8	2.9	5.7	2.6
Millet	9	9.5	0.2	2.3	2.8
Sorghum	7	6.7	0.3	1.6	2.1
Vimbi	9	7.7	0.3	2.3	3.7
Pigeon Peas	15	5.1	0.9	2.2	1.0

(1) S.D.: Standard deviation

TABLE 4: FIRST SEASON BEANS YIELDS 1962/63

<u>HOLDING NO.</u>	<u>TOTAL YIELD</u> (200 lb.bags)	<u>ACRES</u>	<u>YIELD PER ACRE</u> (200 lb. bags)
9	.50	1.83	.3
4	.90	1.36	.7
11	1.12	1.40	.8
16	.57	.61	.9
12	2.28	2.36	1.0
3	.67	.54	1.2
2	2.51	1.96	1.3
5	1.78	1.19	1.5
13	5.02	2.34	2.1
15	3.07	1.35	2.3
6	1.68	.58	2.9
7	4.32	1.51	2.9
10	3.38	.82	4.1
8	2.29	.44	5.2
14	4.00	.68	5.9

Note: Holding No. 1 has no beans in 1962/63.

TABLE 5: FIRST SEASON MAIZE YIELDS 1962/63

<u>HOLDING NO.</u>	<u>TOTAL YIELD</u> (200 lb bags)	<u>ACRES</u>	<u>YIELD PER ACRE</u> (200 lb bags)
13	9.79	3.43	2.9
14	7.75	2.60	2.9
16	2.00	.61	3.3
1	4.68	1.36	3.4
11	4.88	1.40	3.5
15	12.71	3.48	3.6
9	24.93	6.11	4.1
8	22.64	4.72	4.8
5	9.91	1.85	5.4
2	13.46	2.42	5.6
12	13.80	2.20	6.3
4	12.89	1.85	7.0
3	11.32	1.42	8.0
7	19.59	2.43	8.1
10	7.80	.82	9.5
6	12.59	.98	12.8

TABLE 6. MILLET YIELDS 1962/53

<u>HOLDING NO.</u>	<u>TOTAL YIELD</u> (200 lb bags)	<u>ACRES</u>	<u>YIELD PER ACRE</u> (200 lb bags)
15	.19	.95	.2
5	.38	.66	.6
13	.38	.69	.6
9	.50	.76	.7
12	.94	1.01	.9
14	.71	.47	1.5
10	2.43	.98	2.5
8	1.80	.48	3.8
7	3.51	.37	9.5

Note: Many holdings had no millet in 1962/63.

TABLE 7: WIMBI YIELDS 1962/63

<u>HOLDING NO.</u>	<u>TOTAL YIELDS</u> (200 lb bags)	<u>ACRES</u>	<u>YIELD PER ACRE</u> (200 lb bags)
1	.19	.61	.3
10	.37	.98	.4
12	.75	1.01	.7
3	.40	.51	.8
7	1.12	1.01	1.1
4	.28	.23	1.2
5	.27	.22	1.2
8	1.69	.24	7.0
9	2.24	.29	7.7

Note Many holdings had no wimbi in 1962/63.

TABLE 3: SORGHUM YIELDS 1962/63

<u>HOLDING NO.</u>	<u>TOTAL YIELD</u> (200 lb bags)	<u>ACRES</u>	<u>YIELD PER ACRE</u> (200 lb bags)
15	.3	.95	.3
13	.4	.69	.6
1	.3	.41	.7
3	.5	.51	1.0
12	1.0	1.01	1.0
10	1.7	.98	1.7
5	4.4	.66	6.7

Note: Many holdings had no sorghum in 1962/63.

TABLE 9. PIGEON PEA YIELDS 1962/63

HOLDING NO.	TOTAL YIELD (200 lb bags)	ACRES	YIELD PER ACRE (200 lb bags)
5	2.40	2.55	.9
2	2.24	2.24	1.0
7	3.62	3.28	1.1
3	2.04	1.63	1.3
15	4.00	2.55	1.6
1	3.06	1.97	1.6
12	4.59	2.61	1.8
6	2.24	.98	2.3
14	3.44	1.51	2.3
8	11.43	4.81	2.4
4	4.17	1.75	2.4
10	4.59	1.80	2.6
11	2.24	.80	2.8
13	3.50	1.13	3.1
9	6.72	1.32	5.1

Note: Holding No. 16 yield not available.

TABLE 10: RELATIVE WEIGHTS FOR DIFFERENT CATEGORIES OF LABOUR

<u>Full-time farmers</u>	<u>No. in group</u>	<u>Relative weights</u>
Men 20-60, women 20-30 years	12	1.00
Women 40-60 years	3	.75
Men, women over 60 years	4	.50
<u>Occasional farm workers</u>		
Students and schoolchildren over 10 years	-	.50
Children 10 years and under	-	.00

Note:

These relative weights assumed for different categories of labour are the weights assumed per hour of work put in, all labour measurements having been made in hours. The comparative weights attached to different groups are based on detailed discussions on comparative work rates in the field, but it was not possible to set up controlled measurements of these.

The normal distinction between male and female labour is not considered appropriate. This is often made where labour measurements are in days rather than hours, and women are assumed to work fewer hours per day because their domestic chores are onerous. It is felt, though, that age distinctions are important, as are distinctions between full-time and occasional workers on the farm.

TABLE 11

URGENT AGRICULTURAL LABOUR INPUTS:
 HOURS-DAYS PER DAY, 16 HOLDINGS MASII 1962/63

	OCT 1-17	OCT 18-26	OCT 27 -NOV 1	NOV 2-12	NOV 13-30	DEC 1-18	DEC 19-31	JAN 1-14	JAN 15 -FEB 6	FEB 7-25
Clear	1.25	0.63	0.26	0.26	-	-	-	-	-	-
Plough and Plant	0.55	7.12	7.57	1.82	-	0.06	-	-	-	-
Plant	-	-	-	-	-	-	-	-	-	0.02
Replant	-	0.24	0.40	1.32	0.65	0.07	0.04	-	-	-
Weed	-	-	-	1.25	6.53	9.02	4.23	2.64	2.81	0.95
Plough Weed	-	-	-	0.45	0.86	0.42	0.23	-	-	-
Scare Birds	-	-	-	0.03	-	-	0.20	0.36	1.12	0.66
Plant Cassava and Sweet Potatoes	-	-	-	-	0.13	0.68	0.25	0.03	0.04	-
Apply Insecticide	-	-	-	-	-	0.06	-	-	0.03	0.05
H Beans	-	-	-	-	-	-	-	3.24	2.70	0.94
H Millet	-	-	-	-	-	-	-	-	0.22	1.27
H Sorghum	-	-	-	-	-	-	-	-	-	0.03
H Wimbi	-	-	-	-	-	-	-	-	-	0.70
H Maize	-	-	-	-	-	-	-	-	-	1.30
H Maize/Beans	-	-	-	-	-	-	-	-	-	-
H Cotton	-	-	-	-	-	-	-	-	-	-
H Peas	-	-	-	-	-	-	-	-	-	-
Totals	1.80	7.99	8.23	5.13	8.32	10.31	4.95	6.27	6.92	5.92

Note: H = Harvest

TABLE 11 (Contd.)

URGENT AGRICULTURAL LABOUR INPUTS:
MAN-DAYS PER HAY, 16 HOLDINGS HASITI 1962/63

	FEB 26 -MAR 10	MAR 11-20	MAR 21-31	APR 1-30	MAY 1 -JUN 9	JUN 10 -JUL 5	JUL 6-31	AUG 1-31	SEPT 1-30
Clear	-	-	-	-	-	-	-	0.06	1.67
Plough and Plant	0.73	1.54	1.57	2.00	-	-	-	-	-
Plant	0.60	0.75	1.14	0.27	-	-	-	-	-
Replant	-	-	-	-	-	-	-	-	-
Weed	0.98	2.60	0.85	3.11	3.06	0.69	0.09	-	-
Plough Weed	-	0.03	-	0.63	0.12	-	-	-	-
Scare Birds	-	-	-	-	0.14	0.32	0.29	-	-
Plant Cassava and Sweet Potatoes	-	-	0.08	-	-	-	-	-	-
Apply Insecticide	0.01	-	0.16	0.08	-	-	-	-	-
Beans	0.13	-	0.02	-	-	-	-	-	-
Millet	1.20	0.78	0.09	-	-	0.03	-	-	-
Sorghum	0.06	0.11	0.05	0.01	-	0.24	0.51	0.15	0.16
Wimbi	0.54	0.31	0.56	5.40	0.23	0.09	0.09	-	-
Maize	3.29	5.20	5.51	2.91	-	-	-	-	-
Maize/Beans	-	-	-	-	0.10	0.88	1.02	1.00	-
Cotton	-	-	-	0.15	0.45	0.63	0.30	0.41	0.24
Peas	-	-	-	-	-	-	0.02	3.15	7.66
Totals	7.54	11.32	10.04	14.56	4.10	2.88	2.86	4.77	9.73

Note: H = Harvest

NOTE ON TABLES 12 AND 13

Tables 12 and 13 that follow here are intended to show how hard the adults associated with the 16 holdings worked in 1962/63. Figures given are percentages of an 8-hour day, and 6-day week, an arbitrary standard of measurement. This does not imply that this is the normal working week in Masii. At some seasons people work harder than this, and at other seasons considerably less, as the tables show.

Table 12 gives figures for urgent agricultural work, work that is tied to specific time-periods in the model. It shows the variations in pressure of work on different holdings at different seasons in the year. Table 13 includes all work on an off the farm, except domestic chores, and half the time spent on marketing too. It shows total employment over the year.

HOLDING NO.	FEB 26 -MAR 10	MAR 11-20	MAR 21-31	APR 1-30	MAY 1 -JUN 9	JUN 10 -JUL 5	JULY 6-31	AUG 1-31	SEPT 1-30	AVERAGE OVER YEAR
1	71.0	50.0	56.3	16.3	19.7	13.6	9.1	25.0	74.0	37.7
2	0.0	61.1	84.4	51.9	12.8	8.7	2.3	15.7	64.0	24.8
3	0.0	40.0	68.8	68.8	31.4	38.0	25.0	22.2	51.4	25.7
4	47.5	33.3	32.8	29.2	9.3	11.7	3.4	16.2	42.8	26.6
5	80.0	55.5	93.3	33.2	25.1	28.3	11.4	39.3	63.7	47.6
6	60.0	61.1	28.1	60.0	33.2	17.4	15.4	33.3	35.3	36.5
7	85.0	105.6	87.5	65.4	46.8	27.2	15.5	38.9	73.7	55.9
8	88.8	68.1	56.3	65.7	29.4	54.4	36.4	27.8	94.0	47.5
9	70.0	52.8	98.5	66.4	53.9	33.1	36.9	52.9	53.0	54.4
10	67.5	51.3	44.3	45.3	51.5	66.1	38.1	14.8	110.0	44.3
11	0.0	0.0	0.0	0.0	0.0	0.0	13.1	0.9	40.6	11.3
12	67.5	52.8	95.8	59.7	44.3	42.6	31.8	4.6	94.1	43.1
13	38.8	22.2	56.3	25.0	22.4	13.0	7.4	15.2	11.9	21.9
14	50.0	26.9	41.6	28.5	31.6	13.0	17.1	23.1	23.9	30.5
15	38.5	40.6	45.6	56.3	28.7	20.7	14.3	23.1	33.5	39.8
16	37.5	61.1	43.8	30.4	31.3	15.2	3.4	0.0	0.0	15.8

URGENT AGRICULTURAL WORK (Contd.)

TABLE 12: PERCENTAGE EMPLOYMENT OVER THE YEAR 1962/63

TABLE 12: PERCENTAGE EMPLOYMENT OVER THE YEAR 1961/62

URGENT AGRICULTURAL WORK

HOLDING NO.	OCT 1-17	OCT 18-26	OCT 27 -NOV 1	NOV 2-22	NOV 23-30	DEC 1-18	DEC 19-31	JAN 1-14	JAN 15 -FEB 9	FEB 7-25
1	50.0	71.9	37.8	55.5	65.6	60.0	20.0	45.5	40.0	24.4
2	0.0	25.0	20.0	0.0	12.5	23.7	12.5	13.7	52.5	12.5
3	0.0	0.0	23.9	11.1	0.0	0.0	0.0	0.0	0.0	0.0
4	51.7	52.1	27.9	20.0	46.6	35.6	51.2	22.7	45.0	37.5
5	43.3	57.8	55.0	50.0	56.2	71.6	57.5	16.4	50.0	74.4
9	43.3	57.8	79.8	37.0	50.0	30.0	20.0	8.9	33.8	21.6
7	63.4	57.8	100.0	75.0	59.5	76.0	35.0	36.4	86.2	80.2
8	38.3	52.5	60.0	27.2	27.2	50.6	60.0	50.0	41.2	56.3
6	45.0	35.4	60.0	56.2	57.0	55.0	48.8	45.5	46.9	66.7
10	6.7	50.0	26.6	59.2	43.8	8.3	25.0	54.5	87.5	84.8
11	0.0	66.7	57.1	67.1	15.6	20.0	0.0	18.2	12.5	0.0
12	6.7	50.0	26.6	67.1	43.8	25.0	10.0	40.6	63.6	89.6
13	10.0	15.6	20.7	13.0	26.6	36.8	15.0	29.6	35.5	27.3
14	20.0	21.8	5.7	25.6	36.4	58.5	20.0	63.6	41.3	37.5
15	20.0	26.5	32.6	25.0	78.6	60.8	63.8	74.6	48.3	43.8
16	6.7	8.3	0.0	0.0	0.0	7.9	52.1	18.2	21.3	18.8

Contd over

TABLE 13: PERCENTAGE EMPLOYMENT OVER THE YEAR 1962/63

ALL WORK ON AND OFF THE FARM (Contd..)

HOLDING NO	FEB 26 -MAR 10	MAR 11-20	MAR 21-31	APR 1-30	MAY 1 -JUN 9	JUN 10 -JUL 5	JUL 6-31	AUG 1-31	SEPT 1-31	AVERAGE OVER YEAR
1	76.0	61.1	93.8	20.2	27.8	21.2	22.8	50.0	82.0	46.5
2	20.0	72.2	84.9	51.9	30.4	65.3	50.0	43.5	76.0	46.9
3	0.0	52.3	68.7	72.7	47.6	48.9	36.3	38.0	59.4	26.5
4	121.2	100.0	107.8	87.8	48.2	105.8	72.6	78.8	71.8	75.8
5	112.5	66.7	109.4	62.0	79.8	64.1	91.9	93.5	93.7	74.3
6	112.5	102.8	78.1	104.2	97.1	90.3	99.6	113.9	102.9	85.2
7	110.0	114.0	115.7	82.7	85.7	70.6	92.7	91.7	120.0	82.0
8	103.8	93.1	75.0	83.9	74.3	89.1	64.8	68.5	130.0	72.0
9	95.0	69.5	101.0	81.3	82.6	76.6	53.4	69.0	70.0	69.7
10	80.0	65.2	59.9	61.5	60.3	104.3	63.5	59.2	130.0	62.7
11	0.0	0.0	0.0	0.0	29.4	104.3	n.a.	n.a.	n.a.	n.a.
12	92.5	66.7	114.5	77.9	80.3	99.2	n.a.	n.a.	n.a.	n.a.
13	66.2	52.8	82.8	58.2	70.2	56.9	57.3	69.2	37.9	57.5
14	61.2	43.6	63.5	49.6	68.4	53.2	74.6	52.8	35.9	51.2
15	58.5	62.8	61.2	75.6	69.8	63.0	49.5	62.0	45.5	63.0
16	97.5	83.3	87.5	61.2	84.2	79.4	70.5	74.1	48.0	60.8

(1) Excluding domestic work of women. Marketing counted as half work; other half assumed to be social.

TABLE 13: PERCENTAGE EMPLOYMENT OVER THE YEAR 1962/63

ALL WORK ON AND OFF THE FARM⁽¹⁾

HOLDING NO.	OCT 1-17	OCT 18-26	OCT 27 -NOV 1	NOV 2-12	NOV 13-30	DEC 1-18	DEC 19-31	JAN 1-14	JAN 15 -FEB 6	FEB 7-25
1	70.0	83.3	46.6	75.2	70.3	100.0	20.0	50.0	50.0	36.9
2	13.3	93.8	60.0	66.7	62.5	50.3	12.5	13.7	70.0	46.9
3	0.0	0.0	26.6	11.1	0.0	0.0	0.0	0.0	0.0	0.0
4	64.2	74.3	78.5	79.2	103.1	55.0	51.5	77.3	86.9	102.3
5	63.3	87.5	73.4	69.4	78.5	91.7	57.5	16.4	63.8	100.9
6	50.0	87.5	113.3	50.0	81.3	70.0	100.0	61.4	91.3	84.4
7	96.7	87.5	100.0	83.9	73.6	82.7	85.0	59.1	113.8	122.4
8	81.3	71.9	70.0	77.0	82.8	80.2	75.0	86.4	61.2	84.4
9	45.0	100.0	93.3	64.8	96.1	68.3	66.3	54.6	60.6	73.3
10	13.3	87.5	90.2	87.1	73.4	25.0	40.0	63.6	90.0	91.1
11	26.7	87.5	86.7	76.0	70.3	90.0	70.0	45.6	102.5	0.0
12	20.0	71.9	82.8	63.9	67.2	46.7	20.0	50.0	85.2	99.0
13	33.3	55.6	51.8	46.3	71.7	76.5	32.5	50.0	78.0	76.6
14	26.7	30.1	23.0	25.9	47.8	88.5	30.0	81.8	70.0	57.9
15	33.3	38.6	44.6	25.9	88.3	100.0	78.8	102.2	88.3	71.9
16	33.3	71.8	50.0	27.8	43.7	33.3	22.5	52.3	93.8	62.5

TABLE 14. FIRST SEASON PLOUGHING

PLOT NO	ACRES	MAN-DAYS PLOUGHING	MAN-DAYS PLOUGHING PER ACRE	TIME OF PLOUGHING ⁽¹⁾
1	.18	.29	1.62	E
2,3	1.02	1.60	1.57	M
4	.77	5.34	6.94	L
5	1.96	4.72	2.41	M
6	.18	.47	2.61	L
7	.28	.65	2.33	L
8	.36	2.00	5.56	E
9	.34	.50	1.47	M
10-13	1.27	2.04	1.61	L
14,15	.74	2.93	3.96	PR
16,17	.62	3.36	5.42	E
18,19	.49	2.66	5.42	M
20,21 25-28	4.45	19.31	4.34	E
22,23	.88	2.09	2.37	L
24,34	.36	1.22	3.39	L
29	1.01	1.84	1.82	M
30	.27	1.38	5.11	H
31-33	.55	5.13	9.32	M
35,36	2.80	10.25	3.66	E

Contd.,.....

TABLE 14: FIRST SEASON PLOUGHING (Contd.)

PLOT NO	ACRES	MAN-DAYS PLOUGHING	MAN-DAYS PLOUGHING PER ACRE	TIME OF PLOUGHING ⁽¹⁾
37	.41	1.78	4.35	E
x 38,39	.48	.76	1.59	M
x 40-43	1.88	2.99	1.59	L
44-46	3.75	9.52	2.54	E
x 47-49	1.36	3.66	2.69	M
50,51	.95	2.56	2.69	L
e 52	.24	-	-	L
x 53-55,57	4.20	9.83	2.34	L
x 58	1.01	2.36	2.34	M
56,59	1.20	2.50	2.08	L
60	.16	.40	2.50	L
x 61,62,65 69-71,74	5.14	12.44	2.42	E
x 63,64,72 66-68,73	5.04	12.20	2.42	M

(1) PR - before rains; E - early; M - medium; L - late.

Note: x - adjoining rows are one observation, split according to known order of timing.

e - cultivated by hand.

TABLE 15: THE DISTRIBUTION OF FIRST SEASON WEEDING PER ACRE

MAN-DAYS WEEDING PER ACRE	HAND- WEED ONLY	PLOUGH & HAND WEED	BEANS MIXTURES	PEAS & MAIZE MIXTURES	WIMBI MIXTURES	MILLET & SORGHUM MIXTURES
	ACRES	ACRES	ACRES	ACRES	ACRES	ACRES
0-2	.74	.74	-	.74	-	-
2-4	.76	5.24	.76	-	-	.48
4-6	8.59	14.00	6.60	.61	1.99	-
6-8	3.61	5.81	2.56	2.09	.69	.47
8-10	5.35	5.75	1.54	2.79	-	1.02
10-12	2.61	3.62	.78	.66	.31	.66
12-14	4.60	4.60	2.63	1.21	-	.76
14-16	1.73	2.28	.72	-	1.01	.37
16-20	.98	.98	.10	.37	.51	-
20-30	.69	.69	.45	-	.24	-
(42.5) ⁽¹⁾	.23	.23	-	-	.23	-

Note: Cotton is excluded from this table.

(1) This observation was for a plot with a particularly bad couch grass problem and a large part of its weeding should be counted as an overhead.

TABLE 16: FIRST SEASON WEEDING

PLOT NO.	CROP MIXTURE	ACRES	WEEDING PER ACRE	PLOT NO.	CROP MIXTURE	ACRES	WEEDING PER ACRE
1	MP	.18	7.5	19	PN	.23	42.5
2	MPS	.41	8.4	20	MBP	1.01	*10.1
3	PW	.61	8.4	21	MP	.56	11.0
4	MP	.77	8.1	22	PW	.22	17.7
5	MBP	1.96	6.6	23	PSMI	.36	10.8
6	M	.18	16.7	24	MB	.18	22.2
7	MP	.28	9.3	25	MP	.40	6.9
8	MP	.36	8.8	26	MBP	.58	11.6
9	MB	.34	3.4	27	MBP	1.06	* 4.5
10	MP	.56	9.1	28	MP	.74	1.4
11	B	.04	11.6	29	PW	1.01	14.9
12	MBP	.16	11.6	30	MB	.27	22.8
13	PSW	.51	11.6	31,32	MP	.18	* 14.4
14	MBP	.56	14.7	33	PMI	.37	* 14.4
15	MBP	.18	12.0	34	MB	.18	3.3
16	MB	.10	17.1	35	MP	2.45	* 2.6
17	MBP	.52	13.3	36	B	.35	4.3
18	MP	.26	13.3	37	COTTON	.41	* 14.7

Contd.....

PLOT NO.	CROP MIXTURE	ACRES	WEEDING		PLOT NO.	CROP MIXTURE	ACRES	WEEDING	
			PER ACRE	PER ACRE				PER ACRE	PER ACRE
38,39	PMI	.48	*	2.3	57	MBP	1.60		4.5
40	PW	.24		24.0	58	PSW/1	1.01		4.9
41,42	MP	1.55	*	2.2	59	MB	.60		5.8
43	BP	.09		4.2	60	B	.16		14.1
44	M	2.88	*	4.3	61	MB	1.30		4.5
45	MB	.53		12.0	62	MBP	1.04		4.2
46	PW	.29		16.8	63	MP	.40	*	8.7
47	MP	.25		8.0	64	PS/1	.69	*	6.9
48	NBP	.25		8.0	65,66	MB	.68		8.5
49	MP	.86	*	4.7	67	M1	.47		6.4
50	BMI	.76		13.2	68	MP	1.51		6.0
51	P	.19		17.2	69	M	.61		5.1
52	MBP	.24		3.9	70	MB	.32		12.5
53	MBP	.82		5.3	71	MBP	1.03		12.5
54	PSNMI	.98		4.7	72	MP	.57		9.5
55	MBP	.80		5.2	73	P:MI	.95		12.1
56	MB	.60		7.9	74	M3P	.61		9.7

M - maize. B - beans. P - peas. Mi - millet. W - Wimbi. S - sorghum.
 * includes some weeding with a plough.

TABLE 17: HARVESTING FIRST SEASON BEANS

HOLDING NO.	MAN-DAYS	ACRES	BAGS (200 lb.)	MAN-DAYS PER ACRE	MAN-DAYS PER BAG
2	6.50	1.36	2.51	3.32	2.59
3	3.00	0.54	0.67	5.56	4.48
4	7.75	1.36	0.90	5.70	8.61
5	10.25	1.19	1.78	8.61	5.76
6	9.75	.58	1.68	16.81	5.80
7	18.25	1.51	4.32	12.09	4.22
8	10.50	.44	2.29	23.86	4.59
9	11.25	1.83	0.50	6.15	22.50
10	5.75	.82	3.38	7.01	1.70
11	4.00	1.40	1.12	2.86	3.57
12	8.00	2.36	2.28	3.39	3.51
13	7.25	2.34	5.02	3.10	1.44
14	6.25	.68	4.00	9.19	1.56
15	4.75	1.35	3.07	3.52	1.55
16	.50	.61	.57	4.32	.88

Note: Holding No. 1 had no beans in 1962/63

TABLE 16: FIRST SEASON WEEDING (Contd.)

TABLE 18: HARVESTING FIRST SEASON MAIZE

HOLDING NO.	MAN-DAYS	ACRES	BAGS (200 lb)	MAN-DAYS PER ACRE	MAN-DAYS PER BAG
1	11.75	1.36	4.68	8.64	2.51
2	13.00	2.42	13.46	5.37	.97
3	11.75	1.42	11.53	8.27	1.02
4	10.25	1.85	13.64	5.54	.75
5	19.25	1.85	9.91	10.40	1.94
6	25.00	.98	12.57	25.51	1.99
7	34.75	2.43	19.59	14.30	1.77
8	22.50	4.72	22.64	4.77	.99
9	32.00	6.11	24.83	5.24	1.29
10	8.50	.82	7.80	10.37	1.09
11	15.00	2.20	13.80	6.82	1.09
12	5.60	1.40	4.88	4.00	1.15
13	3.00	.61	2.00	4.92	1.50
14	15.00	3.43	9.79	4.37	1.53
15	18.00	3.48	12.71	5.17	1.42
16	12.00	2.66	7.75	4.51	1.55

TABLE 19: HARVESTING MILLET

<u>HOLDING NO.</u>	<u>MAN-DAYS</u>	<u>ACRES</u>	<u>BAGS</u> <u>(200 lb)</u>	<u>MAN-DAYS</u> <u>PER ACRE</u>	<u>MAN-DAYS</u> <u>PER BAG</u>
5	14.22	.66	.38	21.55	37.42
7	25.00	.37	3.51	67.57	7.12
8	14.50	.48	1.80	30.21	8.06
9	2.18	.76	.50	2.87	4.36
10	7.14	.98	2.43	7.29	2.94
12	8.29	1.01	.94	8.21	8.82
13	1.90	.69	.38	2.75	5.00
14	4.26	.47	.71	9.06	6.00
15	1.05	.95	.19	1.11	5.52

Note: Many holdings had no millet in 1962/63.

TABLE 22: HARVESTING PIGEON PEAS

<u>HOLDING NO.</u>	<u>MAN- DAYS</u>	<u>ACRES</u>	<u>BAGS (200 lb)</u>	<u>MAN-DAYS PER ACRE</u>	<u>MAN-DAYS PER BAG</u>
1	17.38	1.97	3.06	8.82	5.68
2	6.94	2.24	2.24	3.10	3.10
3	7.49	1.63	2.04	4.60	3.67
4	17.99	1.75	4.17	10.28	4.31
5	30.84	2.55	2.40	12.09	12.85
6	27.52	.98	2.24	28.08	12.29
7	41.01	3.28	3.62	12.50	11.33
8	23.50	4.81	11.43	4.89	2.06
9	27.02	1.32	6.72	20.47	4.02
10	18.27	1.80	4.59	10.15	3.98
11	8.96	.80	2.24	11.20	4.00
12	18.47	2.61	4.59	7.08	4.02
13	9.65	1.13	3.50	8.54	2.76
14	9.69	1.51	3.44	6.42	2.82
15	18.84	2.55	4.00	7.39	4.71
16	3.66	.61	0.40	6.00	9.15

Judith Heyer

Institute for Development Studies

April 1967.