Income Generating Capacities in Rural Java

——A Case Study of Wet Rice Fields in a Village in Central Java——

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This is a part of research results of a fieldwork in a village in Central Java in the period November 1982 to March 1983.[1] The name of the village is *Mongso*, fictious. In this paper the argument is based on the data for the total households, whereas one on the sample survey data will be presented elsewhere.[2]

1. Aim of the Study

The broader research aim of the fieldwork is to identity income generating capacities and consumption of the villagers placing a special emphasis on impacts of national development policies on the social and economic spheres. The introduction of new rice technology (HYV) is one of the policy measures to achieve self-sufficiency in rice production as well as to improve living standards of the people in rural areas.

The main target group of the research is farmers. As a natural and necessary course of study, however, non-agricultural activities are researched to a certain extent as well. Not only employment opportunities in agriculture but also "non-farm" employment opportunities have been affected by the process of "economic development." What the "spread effects" and "backwash effects" of development processes for the people in the rural areas are, how a socio-economic polarization process has been proceeded on the contrary to the concept of the "shared poverty"[3] is also attempted to investigate.

There has been argued that the introduction of new rice technology only benefitted the richer and worked against the poor along with some institutional changes, e. g., the more widely practiced *tebasan* system (a marketing system of paddy just before harvesting to a middleman who does harvest paddy with agricultural laborers, mostly women), which reinforces deprivation of traditional women's source of income. As William Collier *et al* suggest rural Java seems to have entered a new era of accelerated

development since 1979 after overcoming the *wereng* (brown planthopper) devastation of the mid-1970s[4]. The longer-run effects of new technology should be evaluated under these circumstances. This is also one of the issues kept in mind.

2. The Location and Transportation

Mongso is one of 23 villages (*Desa*) in the subdistrict (Kec*amatan*) of Polanharjo in the Regency (*Kabupaten*) of Klaten. *Desa* Mongso is located about 35km northeast of Yogyakarta and 20km southwest of Surakarta (Solo), both of these big cities were the centers of the former kingdoms in Central Java. The closest local town is Delanggu (8km southwest of Mongso) where a state rosela factory operates, and people from the neighboring villages can enjoy movies if they can afford.

The Regency of Klaten was the site of a project for the rice intensification carried on by the government of Indonesia for a few years since 1968. Polanharjo was also one of the site of the Progressive Farmers Project (*Tani Makmur*). Impressive progress made in rice production as a result of the introduction of new rice technology caught researchers attention to Klaten area, thus there exists fair amounts of data for the basis of this fieldwork and comparative studies.[5]

There is no public transportation or regular bus services to and from Mongso. Only in the early morning and evening a few *colt* (mini bus) services are available both to Delanggu and Klaten, and from these towns. If a person try to go to, say, Surakarta in day time, he or she must take one of the following means of transportation to Delanggu first; *andong* (horse cart), *becak* (pedicab) and *ojek* (motor-bicycle used as a *becak*) unless he or she is rich enough to acquire a motor-bicycle.[6] Then he or she must take *colt* to Kartosuro (9km from Delanggu) in order to get access to regular bus services to Surakarta. The total travelling hours easily amount to 2 hours or longer in case of using *andong*, the most comfortable means of transportation though time consuming. This implies that except the better-off the majority of the villagers are unable to commute to one of the nearby towns for employment. What they can afford is to be employed in one of these towns, stay there during week-days and come home over the week-ends. The lack of adequate transportation facilities is crucial to broadening employment opportunities for the villagers within the local towns and cities. This is reflected in the data on migration from Mongso (see Table 3)[7].

3. Climate and Soil

Kabupaten Klaten is regarded as one of the leading rice producing areas in Java, in fact, designated as a rice producing area by the government of Indonesia. In general land is fertile with plentiful supply of water from Mount Merapi and volcanic nature of the soil.[8] 80% of the annual precipitation falls between November and April, each month averaging over 200mm of rain fall; this reflects the rainy season. The average annual temperature ranges between 25℃ and 26℃. The average monthly temperature is about 27℃ for the hottest month, October, and 25℃ for the coolest month, July.

The mineral content of volcanic ash soil which provides fertility is composed of augite, hypersthene and andesite. The term ash soil here includes all the loose material, such as silt, sand, gravel and stones, which have been washed down from the upper slopes of the Mountain by the rivers. Because the weathering of the soil is still incomplete, it contains little clay; the amount of clay does increase, however, in cultivated soil which receives continuous and plentiful supply of water from irrigation system. The soil in Mongso is brownish-gray sand to sand loam containing clay and small amounts of iron-manganese concretions, which is good for the growing of rice, though less fertile than that of some neighboring villages.[9]

4. The Size of Land and Its Use

Overall land use is shown in Table 1. As this table indicates, the primary form of agriculture in *Desa* Mongso is rice cultivation. Due to the availability of full-technical irrigation system, *sawah* (wet rice field) plays an important role as the main source of income for the villagers as a whole. From Tables 1 and 3 the population densities are derived. Geographical density of the population of *Desa* Mongso in 1982 was 1, 417 persons per square kilometer and the agricultural density (in relation to *sawah* alone) was 1, 648, whereas the corresponding figures in 1972 were 1, 957 and 2, 276, respec-

Table 1 The Size of Land & Its Use (%)

Categories	Ha	Categories	Ha
Wet rice field	64.4 (86.0)	Home lot and garden	8.5 (11.3)
Dry field	0.3 (0.4)	Cematery and others	1.9 (2.5)
		Total	74.9 (100.0)

tively.[10] This drastic decline in the population densities was caused by the tremendous population outflows as disscussed below.

It is clear that wet rice field is the major area of cultivation in this village, and in 1982 only rice was planted in *sawah*, whereas in many of the neighboring villages tobacco and sugar cane were planted.[11] Presently rice is planted and harvested 5 times in 2 years under the excellent irrigation system built during the colonial period for sugar cane production. *Pekarangan* (home lot and garden) cannot be identified as substantial source of income because of its size for the most of the villagers.[12]

As indicated in Table 2 below, *sawah* is allocated for four different purposes of use;

Table 2 Allocation of *Sawah* by Use (%)

Use	Area (Ha)
Sawah kas desa (village treasury land)	2.5 (3.9)
Sawah lungguh pamong (land for support of village officials)	8.6 (13.4)
Sawah pituas (land given by former kingdom to its retired officials)	2.6 (4.0)
Sawah milik (land under fixed ownership)	50.7 (78.7)
Total	64.4 (100.0)

village treasury land (*sawah kas desa*), land for support of village officials (*sawah lungguh pamong*), land given by former kingdom to its retired officials as pension (*sawah pituwas*)[13] and land under fixed ownership (*sawah milik*). *Sawah milik* accounts for approximately 79% of the total *sawah*, and owned by only 44% of the total households in the village (see Table 7). On the other hand, *sawah lungguh pamong* amounts to 13% of the total, divided among 7 village officials. Since the *pamong*(*s*) also have their own *sawah* (except one *pamong*), simple average sizes of *sawah milik* per household and per *sawah* owner are calculated to be 0.2 ha and 0.4 ha, respectively (see Table 7), whereas the average size of *sawah lungguh pamong* is 1.2 ha.[14] Although the average size of this *lungguh* is not as large as those in other neighboring villages, this figure is strikingly large in the context of *sawah* situation in Mongso.[15] To become *pamong* is one way of getting well-off without mentioning their political and social well

beings.

5. Population

As of January 1982, there are 252 households in *Desa* Mongso and the number of total population is 1,061 (Table 3). The inhabitants live in six hamlets, i.e., Nganjat, Jetis, Ponggok, Umbul Cilik, Ngebakan and Botorejo. *Dukuh* (hamlet) Nganjat, the biggest in terms of area and of population, is the center of the village. The average size of a household is 4.3 persons. In 1972 the number of households and of inhabitants were 355 and 1,466 respectively,[16] whereas the corresponding figures in 1978 were 278 and 1,178 respectively.

This implies that in the past five years approximately 30% of the households or population of *Desa* Mongso have migrated out of the village (some are deceased, of course), suggesting an extremely high rate of population decrease on the contrary to general view that an population increase in the rural area is tremendous. Unfortunately what caused this decline in the number of households and population cannot be explained with existing data. The rate of decrease in earlier years (1972—1978) is clearly higher than that in recent years (1978—1982). One might argue that population data are rarely reliable. This may be a case in point though to a smaller extent. Data in

Table 3 Change in Population and Labor Force Between 1978 and 1982

Strata[3]	1978			1982			Change		A (1982)		B (1982)	
	Male	Female	Total	Male	Female	Total	Total	%	Number	%[1]	Number	%[2]
I	169	188	357	147	156	303	−54	−15.1	167	53	132	79
II	64	54	118	64	52	116	− 2	− 1.7	69	62	53	62
III	50	57	107	48	54	102	− 5	− 4.7	48	58	36	75
IV	69	62	131	62	57	119	−12	− 9.2	70	59	49	70
V	51	55	106	50	48	98	− 8	− 7.5	63	67	43	68
VI	120	103	223	97	94	191	−32	−14.3	149	68	95	64
VII	25	24	49	24	23	47	− 2	− 4.1	38	78	22	58
VIII	40	47	87	37	48	85	− 2	− 2.3	55	68	25	45
Total	588	590	1,178	529	532	1,061	−117	− 9.9	659	61	445	68

A. Population of the age group of 15—60 years old.

B. Number of those who have occupations.

1) $\frac{A}{\text{Total population}} \times 100$

2) $\frac{B}{A} \times 100$

3) The stratification of households will be explained in section 7 below.

1972 were checked by Ihalauw and Utami, and those in 1978 and 1982 by this author herself. In the latter case population data were checked one by one by going through *Buku Induk* (Master Book), confirming whether or not the listed individuals are still inhabitants of this village.

Important question to be asked is which factor worked stronger as a cause of migration, "push" factor or "pull" factor. If the former was the primary factor, then what it (they) was (were) and how it (they) came about. Adverse effects of the introduction of new rice technology might deprive them of opportunities of earning their daily bread from rice production, which was introduced into *Desa* Mongso in 1971 and/or *wereng* (stony insect the size of a rice kernel) devastation of the period of 1976 to 1978 might be the push factor. On the other hand if job opportunities outside *Desa* pulled them out, stories of migration and of the impacts of development process become quite different. The issue raised here needs intensive investigation in the future.[17,18]

6. Labor Force and Occupations

As shown in Table 3, of 1061 inhabitants, 659 are in the age group of 15—60 years of age. The ratio of economically productive age group, so defined, to the total population is 61%, much higher than that of the national average.[19] Those who have occupation(s) (not jobs) account for 68% of the economically productive age group. This high labor participation rate is explained by women's participation in labor force. This is evidenced by the fact that the higher the stratum, the lower female participation rate.

Farmers are the biggest occupational group (92 persons) as far as occupations of households' heads are concerned, followed by artisans (*tukang*), officials, and non-agricultural laborers (see Tables 4 and 5). One may name this village as that of farmers and artisans. Artisans in Mongso mean either carpenters (*tukang kayu*) or craftsmen who work for construction industry doing jobs not done by *tukang kayu* (*tukang batu*:*batu* implies stone and *kayu*, tree). If we include drivers of *becak*, *colt* and truck into the artisan group, they amount to 70 persons accounting for 28% of the occupation holders. Being a matter of course they are mostly found in strata I and II (see Table 5).

Another feature of the occupational composition of Mongso is that there only exists a small number of farm laborers. The basic explanation of this phenomenon is found in the fact that the village's total size of *sawah* and the individuals' holdings are so small that except a handful number of the lucky landless the majority of the landless

Table 4 Distribution of Households by Hamlet and by Primary Occupation of the Head of Households

Hamlet	Entre-preneur	Official	Farmer	Merchant	Driver	Artisan	Laborer	Farm Laborer	Others	Total
Nganjat	3	9	56	12	6	16	16	9	9	136
Jetis	—	3	5	3	8	15	1	1	2	38
Ponggok	—	6	17	—	—	1	—	1	—	25
Umbul C	2	4	11	1	2	14	3	1	—	38
Ngebakan	—	—	3	—	—	4	—	1	—	8
Botorejo	—	2	—	—	—	4	—	1	—	7
Total	5	24	92	16	16	54	20	14	11	252
(%)	(2.0)	(9.5)	(36.5)	(6.3)	(6.3)	(21.4)	(7.9)	(5.6)	(4.4)	(100.0)

Table 5 Distribution of Households by Land Control Stratum and by Occupation of the Head of Households

Strata	Entre-preneur	Official	Farmer	Merchant	Driver	Artisan	Laborer	Farm Laborer	Others	Total
I	—	5	—	9	12	25	13	8	8	80
II	—	1	—	2	1	18	3	4	1	30
III	1	2	12	1	—	2	3	—	2	23
IV	1	1	16	2	1	2	—	2	—	25
V	—	1	21	—	—	3	—	—	—	25
VI	2	6	30	2	1	3	1	—	—	45
VII	—	1	8	—	—	1	—	—	—	10
VIII	1	7	5	—	1	—	—	—	—	14
Total	5	24	92	16	16	54	20	14	11	252

are unable to earn sufficient income to support their family. Despite the complaint of farmers in higher strata about labor shortage, mechanization of rice farming has not yet proceeded. This is a reasonable choice for the better-off in terms of production cost so far, since farmers in lower strata often work as farm laborers to supplement their income from rice cultivation apart from the technical difficulties of mechanizing rice production.[20]

For the most of the landless *tukang batu* is the occupation to which their access is easiest. Being employed as an assistant to master *tukang batu*, most of the cases his neighbor, for three to four years, he is likely to become an independent *tukang batu* without no capital requirement. During the busy farming seasons they often work as temporary farm laborers in the village as well as the time of being unemployed. Their over-all employment opportunities, however, seem to be brighter in outside Mongso.[21]

Many of the villagers suggested that construction booms in large cities are closely related to this prospect.

7. *Sawah*: The Main Source of Income in the *Desa*

The Basic Agriculture Act of Indonesia of 1960 established the full private ownership of *sawah* including the abolition of primogenture and free transaction of *sawah*. In this special area of one of the former kingdoms in Central Java, selling and buying of *sawah* rarely occur even to the present day. Such words as *kuli kenceng* and *kuli kenceng setengah* are still used at an annual village meeting. In older time the former meant a village elite member who was allowed to hold *sawah* and *Pekarangan* through his whole life, although he was not allowed to sell the piece of *sawah*.[22] In Mongso *kuli kenceng* used to hold *sawah* of 3,600m^2 (*satu stat*: *satu* means one) consisting of three 1,200m^2 plots (*patok*) scattering in three different blocks. Ownership of 3,600m^2 of *sawah* is an extremely important necessary condition to be recognized as a "respectable" member of the village. In Mongso the size of *sawah* which provides just enough (*cukup*) income for a family of modest but comfortable living standard is considered to be 3,600m^2.[23]

Sawah is yet the main source of income in this village despite very limited amount of its size. As noted already, *pekarangan* cannot be regarded as another substantial source of income except for a few wealthy family with sizable area for planting fruit trees, fish culture, poultry raising and so forth. There are two small-scale rice fullers employing 2 men and 5 men respectively, only mechanized factories in the village. A retired police and his wife produce *tempe* (soybean cake) with their manual labor, helped by a girl of 9 years old for two hours per night. There does not exist a single shop which can offer employment opportunities for anybody else but family members.

Thus *sawah* is the primary source of income in Mongso for those who have no other employment opportunity both outside and inside the village in non-agricultural sector as well as owner farmers.

8. Stratification of the Total Households by *Sawah* and *Pekarangan* Controlled

In order to investigate income generating capacities of the villagers from agriculture, one type of stratification of the population is attempted. The concept of "land under control by household" is adapted. The concept of land control is widely used in Indo-

nesia and in particular relevent for examining income generating capacities of people in agricultural sector. It is a device of taking into account effects of sharecropping and leasing of agricultural land. The formula of calculating an area controlled by a household in this study is as follows:

$$\text{Area controlled} = A + bB + cC - bD - cE \qquad (1)$$

where A stands for ; area owned and utilized by the owner himself,

B ; area leased-in,

C ; area sharecropped-in,

D ; area leased-out,

E ; area sharecropped-out,

b ; adjustment coefficient for land leased,

c ; adjustment coefficient for land sharecropped.

In this study b is 4/5 and c is one of 1/2, 1/3 and 1/4 depending on the share between a sharecropper and a land owner. The value of b is set to a much lower magnitude than other studies, either 1 or 1/2, since it is believed that 4/5 is appropriate magnitude in the context of income genarating capacity in this village.[24] It is calculated on the basis of rent of and yields from land under consideration. Data for this adjustment coefficient will be presented in a section below.

In case of sharecropping most popular term prevails in the village is *Mrapat* (meaning to divide into four equal parts), thus in the most of the cases c is set to 1/4. One fourth of yields is retained by a sharecropper and three-thirds are taken by a owner of land. Therefore "undergone loss" of yields of an owner of a piece of land is one third of total yields. In cases of *maro* (1 : 1) and *mertelu* (1 : 2) the coefficients are changed to 1/2 and 1/3 respectively.

Under the system of *mrapat* an owner of *sawah* provides all inputs but labor, while under those of *maro* and *mertelu* it is a sharecropper who provides inputs. Under any systems of sharecropping, IPEDA (a kind of land tax on *sawah*) is borne by an owner. It is not, however, taken into account for the sake of simplicity. As discussed below sharecroppers on Mongso are more like laborers than farmers in terms of income from cultivating *sawah* as well as their involvements in decision making for rice production, namely all decisions concerning a choice of varieties to be planted and when and how paddy should be planted and sold. The term *maro* is rarely given even by a parent of a sharecropper. *Mertelu* is granted only to less fertile *sawah*. Interesting

fact is that sharecroppers are likely to prefer cultivating under *mrapat*, since they do not need to expose themselves to risk of incurring loss upon a crop failure. They prefer safety to higher income.

Although we have argued that in Mongso *pekarangan* is a marginal source of income, there is still possibility of earning some income from it as well as it is a status symbol for the villagers. Thus the population is stratified first by land controlled of both *sawah* and *pekarangan*. For the stratification of the total population, all the sharecroppings are assumed to be under the system of *mrapat*, and 150m^2 are deducted from a size of *pekarangan* as a house lot. Hence the formula becomes as follows:

$$\text{Area controlled by a household} = A + bB + cC - bD - cE \qquad (2)$$

where: A is (a size of *sawah* owner's cultivativating)
plus (a size of *pekarangan*-150m^2)
B, C, D and F are same as in formula (1) above
b is 0.75
c is 0.25

Table 6 shows the stratification by hamlet in this manner. 80 households, 32% of the total households in Mongso have no access to agricultural land so defined. As a matter of course there is no farmers in strata I and II (see Table 5). Although there are 12 farmers in stratum II, they are most likely to hold a second job (even a third job, too). They prefer being classified as farmers to as laborers or *tukang*. The proportion of the landless in Mongso is more or less an average of Klaten and of Central Java.[25] If the

Table 6 Distribution of Households by Land Control and by Hamlet 1982

Strata of Land Control	HAMLET						Total	
	Nganjat	Jetis	Ponggok	Umbul Cilik	Ngebakan	Botorejo	Number	%
I. 0m^2	43	20	1	13	1	2	80	32
II. 1— 500	13	4	1	6	3	3	30	12
III. 501—1000	16	3	2	1	—	1	23	9
IV. 1001—2000	18	1	1	4	1	—	25	10
V. 2001—3000	18	2	2	3	—	—	25	10
VI. 3001—4000	15	5	17	8	—	—	45	18
VII. 4001—5000	5	3	—	—	2	—	10	4
VIII. Over 5001	8	—	1	3	1	1	14	6
Total	136	38	25	38	8	7	252	100
(%)	(54)	(15)	(10)	(15)	(3)	(3)	(100)	

expedient measure of a level of *cukupan* (self-sufficiency), 3600m^2 of *sawah* is taken, only 28% of the total households of Mongso can be regarded to belong to this category in the middle of blessed rice growing area in Central Java.

In 1972 the number of households which owned *sawah* was reported to be 136, while the present corresponding number is 116.[26] Judging from the frequency of transaction of *sawah* in the village this decline in the number of owners of *sawah* is too great to be real. A plausible reason for this discrepancy is the difference in the method of identifying the households with *sawah*. In this study a household is identified to own *sawah*, if it is an actual owner regardless of registed name on *sawah*, whereas Ihalauw and Utami took registed names.

Traditionally only 136 persons in Mongso were allowed to hold cultivating rights of *sawah* and the holders of these rights at the time of basic Agriculture Act was executed (1960) became the owners of *sawah*. *Kabupaten* government tried to prevent *sawah* from being segmented even into smaller size until recent past. Thus a registered name of *sawah* was only able to be changed when 3, 600m^2 of *sawah* was totally transfered to one person regardless of the causes of this transfer, i. e., either inheritance or buying =selling transaction.[27] This is one of the reasons why many villagers prefer leasing out a part of *sawah*, say 1, 200m^2 (one *patok*) to selling it apart from a special attachment to *sawah*. The truth seems to be that even before 1972 some households either had moved out the village or sold out *sawah*, thus there existed only smaller number of households with *sawah* than 136. It is certain that some more have migrated out with ownerships of *sawah* and/or sold to those who already own *sawah* in the village or sold it to persons outside of the village.

If 3, 600m^2 of agricultural land is the dividing line of the people into the enough and not, merely 69 households (28%) in strata VI to VIII in Table 6 are identified as living on rice farming. However, almost 2/3 of government officials control *sawah* of 3, 600 m^2 and over, and all of the village officials control over 5, 000m^2. Table 7 shows the distribution of *sawah lungguh pamong*. Hence the number of farmers who can live on rice farming becomes 53 (69—16, see Table 5, too), 21% of the total households in the village. This points to the importance of employment opportunities in non-agricultural sector both inside and outside of Mongso, since there seldom exists employment opportunities in agricultural sector in neighboring villages.[28]

This coincides with the fact that when villagers were asked whether or not their

Table 7 Distribution of *Sawah Lungguh Pamong*

No.	Position	Area(m^2)
1.	village head (*lurah*)	52,605
2.	secretary (*carik*)	17,685
3.	messenger 1 (*bayan* 1)	8,355
4.	messenger 2 (*bayan* 2)	8,340
5.	official responsible for water supply (*ulu-ulu*)	8,380
6.	official in charge of religious matter (*modin*)	7,565
7.	official in charge of agriculture (*PTD*)	6,550
Total		109,480

living standards have been raised since the introduction of HYV, many of them answered "Yes," but about a half of them indicated that it was mainly caused by higher incomes from non-agricultural sectors. This supports one of the propositions of "acceleration of rural development of Java" by Collie *et al.*[29]

9. Stratification of Households by *Sawah* Owned and Controlled

Table 8 shows the relationship between land controlled and *sawah* controlled. The clustering of observations above a diagonal line of two stratifications suggests the effects of the practices of land tenure, leasing-in and -out of *sawah* and sharecropping, although it is partly explained by the inclusion of *pekarangan*. These practices alleviate a maldistribution of landownerships on one hand, and reinforce concentration of land

Table 8 Ownership of *Sawah* by Strata

Original Strata / Strata by *Sawah Milik*	I	II	III	IV	V	VI	VII	VIII	Total		
									Number	%	Cumulative % Strata II Through VII
0 m^2	80	28	13	10	5	1	2	2	141	56.0	—
1— 1200		1	1	9	6	0	0	0	17	6.7	6.7
1201— 2400		1	1	0	1	4	0	0	7	2.8	9.5
2401— 3600			8	6	12	37	7	1	71	28.2	37.7
3601— 4800					1	2	1	0	4	1.6	39.3
4801— 6000						1		1	2	0.8	40.1
6001—10000								8	8	3.2	43.3
Over 10000								2	2	0.8	44.1
Total	80	30	23	25	25	45	10	14	252	100.0	
(%)	(31.7)	(11.9)	(9.1)	(9.9)	(9.9)	(17.9)	(4.0)	(5.6)	(100.0)		

control to hands in a few wealthy villagers on the other hand. While 56% of the total households do not own *sawah*, the number of the households without access to land is reduced to 31%. At the same time, about 4% rich villagers in terms of *sawah* ownership become to controll more proportion of agricultural land. This process is more clearly observed from Table 9, which illustrates the relationship between agricultural

Table 9 *Sawah* Controlled by Strata

	I	II	III	IV	V	VI	VII	VIII	Total		
									Number	%	Cumulative % Strata II Through VIII
0 m²	80	26	1	1					108	42.9	—
0— 600		4	6	0					10	4.0	4.0
601— 1200			16	13					29	11.5	15.5
1201— 2400				11	8	2			21	8.3	23.8
2401— 3600					17	39	6		62	24.6	48.4
3601— 6000						4	4	2	10	4.0	52.4
6001—10000								9	9	3.6	56.2
Over 10000								3	3	1.2	57.2
Total	80	30	23	25	25	45	10	14	252	100.0	
(%)	(31.7)	(11.9)	(9.1)	(9.9)	(9.9)	(17.9)	(4.0)	(5.6)	(100.0)		

land controlled and *sawah* controlled. New stratification of households by *sawah* controlled is obtainted by using formula (2), excluding a size of *pekarangan*.

The percentage share of households without access to *sawah*, for example, is now reduced to 42.9% on the contrary to 56.0% on the basis of *sawah* ownerships. By comparing Tables 8 and 9 a few critical issues are revealed.

(1) Some landless gain access to *sawah* by sharecropping-in (group I).

(2) Relatively larger *sawah* owners gain greater access to *sawah* by leasing-in (group II).

(3) Sharecropped *sawah* by group I is supplied by group II.

(4) *Sawah* leased-in by group II is supplied by the households with *sawah* of 2,401 to 3,600m², "respected, self-sufficient" farmers' households (group III).[30]

The data in these two tables clearly show a tendency that the larger the size of *sawah* owned, the larger the size of *sawah* leased-in. An illustration of a wealthy landless merchant's way of increasing *sawah* control as an exceptional case is given in Table 10.

Through interraction among the three groups just mentioned, as far as income gen-

Table 10 An Illustrative Case of Land Tenancy

No.	Area m²	Duration of Contract	Rent (Rp.) Total/per Oyot	Time Contract Began	Tenant Obligation
1	2,800	7oyot	750,000/10,700	mid—1981	T. 7,500
2	1,100	60	1,200,000/20,000	end of 1981	T. 2,200
3	600	10	100,000/10,000	end of 1981	T. 1,000 R.
4	1,100	15	300,000/20,000	beginning of 1982	T. 2,200 R.
5	1,500	12	144,000/12,000	beginning of 1979	T. R.
6	2,000	13	455,000/35,000	end of 1981	T. 3,000 R. 12
7	1,250	11	220,000/20,000	mid—1979	T. 2,600 R. 8
8	1,300	10	175,000/17,000	1982	T. 2,500 R.
9	1,350	19	285,000/15,000	1980	T. 2,750 R.
Total	13,000m²	157oyot	Rp. 3,629,000		

T: Tax (unit : Rp.) R: Rice (unit : kg)

Mr. Soto is a wealthy merchant in the village with *pekarangan* but without *sawah*.

Oyot means a crop season.

erating capacities from *sawah* is concerned, a tentative conclusion is derived: While concentration of *sawah* controlled has been proceeded gradually to the hands of the wealthy, segmentation of *sawah* controlled is also observed. However, in terms of income generating capacities of the villagers from *sawah* the former process, namely concentration of the capacities to the richer is more significant under the system of *mrapat* (1 : 3 sharing practice). Sharecroppers under this system, as already indicated and analysed below, are closer to agricultural laborers in this village. Through the process pointed out in (4) above, degradation of self-sufficient farmers is also noticed, in particular under relatively cheap rent system (rent per cropping season in 1982/3 dry season was Rp. 20,000/*patok*, which is equivalent to Rp. 166,000/ha).

10. Income from *Sawah*

Rough estimation of income from *sawah* will be attempted. As mentioned earlier, *sawah* in this village consists of three blocks; Block F, Block G and Block H, each of which is divided into 136 *patok* (s). For past several years except a very small size of total *sawah*[31] paddy has been planted exclusively. Presently the farmers are suggested to plant paddy in several days in an agreed period. Cropping season for

Blocks F and H come at the same time, whereas that in Block G comes between harvest and planting period of Blocks F and H. This is a device of avoiding labor shortage by spreading peaks of busy farming seasons.

In Mongso even before the introduction of HYV, farmers planted and harvested paddy two times a year with a plenty of water supply from a fully-technical irrigation system. However, the introduction of new rice technology brought the "*petukan*" system. Through *petukan* the farmers use a small part of the rice field as a seed-bed for the next rice crop even before the first crop is harvested. Immediately after harvest the land is prepared. By the time the preparation is finished, the seedling are old enough to be transplanted. By doing this, the farmer can get five rice crops in two years. Technically the farmers can get three crops a year, however, they believe that by doing so fertility of soil will be lowered.

Since most of the farmers sell standing paddy to *penebas*, yields per *patok* or hectare cannot accurately measured. However, 8 to 10kw/*patok* seems to be standard which amounts to 6.6 to 8.3t/ha in terms of unfulled rice (*gabah*). The going ratio of rice to *gabah* is 0.65, thus yields of rice per hectar reach to 4.3 to 5.4t per crop season, very high productivity in Javanese villages.[32]

Gross Income from *Sawah*

In the dry season of 1982/3 the variety planted was Cisedane, much preferred to traditional varieties mainly due to its higher net return. Yields from *sawah* are said to be almost stable in any cropping seasons. However, seasonal fluctuations in prices of rice affect farmers' income. Income is highest for dry season crop and lowest for rainy season crop. A standard gross income from one *patok* of *sawah* in a past one year as of January to March 1983 was as follows:

Dry season crop:	(Sept. 1982—Jan. 1983)	Rp. 150,000
Raint season crop:	(March 1982—Aug. 1982)	Rp. 90.000
Semi dry season crop:	(Oct. 1981—Feb. 1982)	Rp. 55,000
	(one half of the total proceeds of Rp. 110,000)	
Gross total income from rice farming		Rp. 295,000/patok
		(Rp. 2,458,333/ha)

Individual farmers income is derived by multiplying this value by the size of *sawah* under control. For example, a farmer who cultivates his own *sawah* of 3,600m^2 (one

patok) get Rp. 885,000 from rice farming per year. On the other hand a farmer who does not own *sawah* but sharecrops one *patok* of *sawah* can only get gross income of Rp. 73,750, while a person who leases his *sawah* out can aquire Rp. 59,000.

Usually in the village of Mongso those who own *sawah* and need a considerable amount of money go to one of the wealthy men to ask to lease in his *sawah* stating the amount of money he needs. If a wealthy man agrees to lease it in, the number of farming seasons of leasing-in is decided on the basis of the amount of money needed taking into account of, say, fertility and location of land and the closeness of a lender and a renter. Cash is received by the owner upon the completion of a contract therefore, a least-out farmer do not receive any amount of money at the end of cropping season. The calculation of setting the coefficient to 0.2 is as follows. The going rate of leasing one *patok* of *sawah* in 1982/3 season was Rp. 20,000. For the sake of simplicity interest rate was not considered. Since a leased-in party pays land tax of Rp. 3,000/*patok* per season and some rice is given to a leased-out, a farmer who leases out his *sawah* is estimated more or less to receive 20% of the gross revenue of Rp. 295,000, namely Rp. 50,000/year per *patok*.

For the sake of comparison a moderately paid government official, primary school teacher's annual income and *tukang batu*'s income are estimated. A male school teacher of 50 years old obtaines Rp. 70,000+50kg rice per month, which amounts to Rp. 999,000/year (the price of rice is assumed to be Rp. 250/kg), while a *tukang batu* earns Rp. 2,000/day which comes to Rp. 555,000/year if he can work 250 days.

The meaning of "self-sufficiency" or *cukupan* is obvious. It is enough to fullfil everyday's basic needs for a family of, say, 6 persons, but not enough to send children to higher educational institution.[33]

Cost of Rice Production

A standard cost of rice production per *patok* is as follows:

Labor inputs

1. Clearing-off hay	2.5 days	Rp. 1,500
2. Preparing for seed-bed	1.5	900
3. Ploughing I	contract	1,750
4. Ploughing II	contract	1,750
5. Hoeing	2.5	1,500
6. Dike making	1.5	900
7. Harrowing	contract	1,750
8. Transplanting	contract	2,000

9. Weeding (I, II, III)	10	6,000 (4,000 Women)
10. Fertilizing and spraying insecticide	1	600
		Rp. 18,650/*patok* (Rp. 155,417/ha)
Other inputs		
1. Seeds	Rp. 1,000	
2. Fertilizer	3,500	
3. Insecticide	1,000	
	Rp. 5,5000/*patok* (Rp. 45,8333/ha)	
Others		
1. Land tax	Rp. 3,000	
2. Rent	20,000	
	Rp. 23,000/*patok* (Rp. 191,666/ha)	

Since there are several ways of cultivating *sawah*, costs of rice production vary accordingly. Usually most of the farmers use hired labor for 3, 4, 5, and 8, and total cost for these work comes to Rp. 7,250/*patok* per crop season. Other cost of inputs than labor everyone must pay. Tax is only borne by owner-cultivaters and those who lease in *sawah*. Corresponding to gross incomes of an owner-cultivater and a sharecropper above, costs of rice production per year of two kinds are calculated:

	Owner-cultivater	Sharecropper
Labor cost		
1. Contracted labor	Rp. 18,125	Rp. 18,125
2. Other hired labor	14,250 (one half of the rest of labor required)	—
Other inputs		
1. Seeds	2,500	—
2. Fertilizer	8,750	—
3. Insecticide	2,500	—
Others		
1. Land tax	7,500	—
Total cost of rice production per year per *patok*	Rp. 35,625	Rp. 18,125

By applying these values now net income per *patok* per year from rice farming can be derived.

	Owner-cultivater	Sharecropper
Gross income	Rp. 295,000	Rp. 73,750
Production cost	35,625	18,125
Net income from rice farming	Rp. 259,375	55,625

We have already known that those who lease *sawah* out obtain more or less Rp. 59, 000, which is very close to sharecropper's net income, although he is possible to earn extra income by being employed either in agricultural sector or others. Furthermore, the natures of these two types of incomes are different; one is of labor and the other is of property. However, in terms of income generating capacities of *sawah* this is an interesting calculation which suggests that a relative price of land to labor is cheaper than one might expect, in particular in the context of densely populated Central Java.

Employment opportunities for agricultural laborers, both for men and women can not be discussed in this paper. Employment perspectives for women, however, seem to be brighter if they are young, strong and efficient. According to one of the *penebas(s)* in the village, they can work as many days as 290 by following multiple *penebas(s)* even to villages around Mongso. The very best harvester was reported to earn Rp. 2, 000 per day. However, when wage rate for women rises too high in relation to price of rice, mechanization of harvesting may come. In Mongso male agricultural laborers may not be able to survive unless they own buffalos to work with. These issues will be taken up elsewhere.[34]

Note

1. This main fieldwork was supplemented by a month-long return to the village during the summer of 1983.
2. Another part of results of this research is found in "Research Note on Social-Economic Life in a Village in Central Java," *Economy and Society* No. 12, February, 1984. In this paper references to data from other researchers will be minimized, since the author believes that the original data should be presented as much as possible. Comparisons with other research should be attempted elsewhere.
3. Clifford Geertz, *Agricultural Involution*: *The Processes of Ecological Change in Indonesia*, University of California Press, 1963.
4. Wiliam L. Collier *et al.* "Acceleration of Rural Development of Java," *Bulletin of Indonesian Economic Studies*, Vol. XVIII, No. 3, November, 1982, pp. 84—101.
   Tebasan is a contractual arrangement whereby a farmer sells a standing crop which is almost ready for harvest to a *penebas* (middleman). In the context of rice farming community, the change in harvesting rice from "communal" *bawon* system to that of *tebasan* has predominantly been recognized by researchers as an institutional arrangement to limit employment opportunities for rural poor women to participate in harvesting rice. However, as Hayami and

Hafid indicate, recent empirical results are not so decisive. See Y. Hayami and Anwar Hafid, "Rice Harvesting and Welfare in Rural Java," *BIES*, Vol. XV, No. 2, July, 1979, pp. 94—112.

5. Research Institute in Social Sciences of Satya Wacana Christian University conducted an intensive reseach in 1972 in the village where this author carried out the research. The major findings of the study are published in the following article: John Ihalauw and W. Utami, "Indonesia; Klaten, Central Java," in *Changes in Rice Farming in Selected Area of Asia*, International Rice Research Institute, Los Banos, Philippines, 1975, pp. 149—77. Werner Röll deals with the structure of land ownership in Klaten in *Struktur Pemilikan Tanah di Indonesia; Studi Kasus Daerah Surakarta-Jateng* (original publication is in German published in 1976), Yayasan Obor Indonesia, 1983. Although the areas researched are in Yogyakarta Special District, the following two researches are also instructive to design author's research scheme: Masri Singarimbun dan D. H. Penny, *Penduduk & Kemiskinan: Kasus Sriharjo di Pedesaan Java*, Bhratara Karya Aksara, 1976; H. Kanō, *Sawahan——Rural Area in Central Java under "Development" Process.*
6. A price of motor-bicycle (say, Honda, 50cc) in the research area in 1983 was Rp. 500,000, while a monthly salary of primary school teacher was Rp 70,000 plus 50kg rice, of which price was roughly Rp 250 per kilogram (annual average).
7. Our sample (80 households out of 252) data show that 108 persons have migrated out of the village, of which 77 cases occurred since 1973 when Ihalauw and Utami conducted their study in the village. 31 and 30 persons were in the age groups of 31—40 and 21—30, respectively.
8. The description of the climate and the soil is dependent upon the work by Ihalauw and Utami, *op. cit.*, pp. 150—153.
9. This is an information from the village officials.
10. Data in 1972 are taken from data bank of Research Institute in Social Sciences, Satya Wacana Christian University, and Ihalauw and Utami, *op. cit.*
11. In the dry season of 1982, a third of *sawah* in Block F was planted rosela, plant belonging to the mallow family used for its fibers for sack shipping sugar. *Sawah* was leased out to the state rosela company in Delanggu by the village head's decision for 8 months, which is equivalent to one and half times crops of rice. The reason for this decision was his fear that the regency government as well as the central government may well consider the influences of underground communists are still strong, if he had refused once again upper governmental request of leasing out *sawah* for rosela. As indicated below, economic cost of leasing out is extremely high, therefore none of *sawah* owners is willing to lease it out. However, once the village was one of the strong communist party's rural bases, and the head and the secretary of the village at the time of 1965 Event were killed on October 2, in 1965. Although the villagers talk about the event and local situation of that time without hesitation nowadays, there can be seen its aftermath.

Calculation of the cost of leasing out *sawah* for rosela

Rent for 8 months/ha	Rp. 275,000
Expected net income from rice cultivation/ha (minimum for 1 crop)	Rp. 688,900
Net loss/ha	Rp. 413,900

This is a case for an owner-cultivater. For the basis of the calculation, consult with section 8 on income from *sawah* below.

12. An average size of *pekarangan* per household is 337m². Corresponding figures for Masri's case study and Kano' are 780m² and 975m², respectively, where *pekarangan* is a substantial source of income for many families. See Masri and Penny, *op. cit.*, p. 41 and Kano, *op. cit.*, p. 33.
13. Since the administrative reform of 1949, pensions for retired local officials have been paid in cash, *sawah pituwas* has not been used for the original purpose. In case of Mongso 2.3 ha out of 2.6 ha *of sawah pituwas* is used as *sawah lungguh pamong*. See Table 9.
14. The actual average size of *sawah lunguh pamong* becomes 1.6 rather than 1.2 ha with the reason mentioned in note 13.
15. For example, see Kanō, *op. cit.*, 34.
16. Data for 1972 are taken from the same data source for the note 10 above and those for 1978 are provided by the village office.
17. There reside a young couple, not being chosen as a raspondent of our sample survey, in Mongso who transmigrated to Sumatra and returned the village six months later due to the misfortunes. According to *pamong* nobody but this couple returned the village once whole family had migrated while people are (were) still young.
18. Migration data of sample survey households provide interesting characteristics of migrants. Some of them are as follows: (1) marital status; 75% are married, (2) age froup; 78% are in the group of 21 to 40 years old, (3) educational attainment; 38% are primary school graduates and 33% are those of senior high school (both including those who incompleted), (4) the purpose of migration; either migration for job (51%) or following a spouse (35%), and (5) destination is for large cities in Java (81%), Jakarta being most favored (27%).
19. Over-all labor participation rate in 1971, Census year, was 51.3%. *Statistical Information on Indonesian Agriculture*, German Agency for Technical Co-operation, 1978, p. 61.
20. So far only one innovating farmer tried to introduce a tractor. However, the size of a plot of 1,200m² is too narrow for the use of a tractor. Furthermore he believes that buffalos can plough better than tractor, particularlly the very stoney *sawah*.
21. See Section 8 below.
22. For the description of social groups and ownership of Klaten area, see, for example, "Kelompok-Kelompok Social Di Pedesaan Dan Pembagian Tanah Milik Untuk Pertanian pada Masa Kini," in W. Röll, *op. cit.*, pp. 61—72.
23. Masri and Penny indicate that if a farmer can harvest 1.2 ton of rice (*beras*), he reached a level of "*cukupan.*" In Mongso a farmer with 3,600m² of *sawah* obtained Rp. 295,000 at the minimum in 1982/3, with which amount he was able to buy approximately 1.2 ton of rice.
24. For example, the coefficient in the study by Masri and Penny is set to 0.5, whereas that in Kanō's is 1. See Masri and Penny, *op. cit.*, Kanō, *op. cit.*
25. For example, see Röll, *op. cit.*,
26. Ihalauw and Utami, *Changes in Rice Farming in Selected Asian Countries, Case Study*, (research mineo), Satya Wacana Christian University, 1972, p. 2.
27. During the author's supplementary research period, the head of the Regency of Poranharjo came to Mongso to speak before the villagers at an annual village meeting. He strongly

suggested that actual owners of *sawah* should register and obtain land certificates, which now can be issued for every *patok* of *wasah* rather than one certificate for 3,600m² of *sawah* altogether. We have to wait to see the effects of this new policy, in particular on an acceleration of segmentation of *sawah* and of polization of farm sizes, and land tenure system, thus on rice farming as a whole.

28. One of the respondents of the sample survey is an agricultural laborer who ploughs with two buffalos. He indicated that there are abundant agricultural employment opportunities even outside Mongso. However, this is only applicable to buffalo-men.
29. The proposition is that "Job opportunities for rural landless labourers and marginal farmers, and young educated villagers, have expanded in off-farm activities outside the home village." Collier *et al*, *op. cit.*, p. 87
30. Data from the sample survey of the village is consulted to explain these issues.
31. There were five households which had planted oranges on *sawah* which had been introduced into the village a few years ago. There is a two-year gestation period for oranges, though income from oranges are believed to be ten times as high as that income from rice farming.
32. G. Burger reports that the productivity of *sawah* in Mongso in 1972 was between 85 to 100 kw/ha. "Agrare Intensivierungsmassnahmen in Mittel-Java und Probleme ihrer Realisierung," in *Georgraphische Rundschau* Vol. 4 (1975), p. 151.
    Ihalauw and Utami record 5.9t/ha for dry season of 1972, and at the same time introduce three farmers yields, 8, 10 and 12t/ha respectively. Ihalauw and Utami, *Case Study*, pp. 40—45.
    Collier *et al* present 3.4, 2.3 and 4.5t/ha for three villages in Central Java. Collier *et al*, *op. cit.*, p. 89.
33. Expenditure and consumption data are in process of publication.
34. This issue will be discussed in a paper in *Economy and Society* No. 13(forthcoming March, 1985).

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