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AGRICULTURAL TECHNOLOGY AND INSTITUTIONAL CHANGE IN JAVA†

In 1972 a rather explosive change began in various areas in Java. Since then a traditional but little-used method of selling a crop just before the harvest has been increasingly used to limit the number of rice harvesters, reduce their traditional share of the harvest, and lower the costs of rice harvesting. This method, called *tebasan*, has also permitted the use of sickles to harvest the high-yielding rice varieties and the payment to harvesters in the form of money rather than in kind. These recent changes allow the *penebas* (farmers and middlemen) to receive a larger net return from the rice crop and reduce employment opportunities for the majority of the harvest laborers. In the process, the farmers have tried to eliminate their traditional role as patrons to the landless laborers. This patron-client relationship has been shifted to the penebas who buy the farmers' crops, but it excludes the majority of the rural villagers.

Unemployment and underemployment in Java are two of the most serious problems confronting policymakers in Indonesia. Compounding the problem is the large number of people in the rural villages who depend heavily on farm labor. In a study in which more than 3,300 villagers were interviewed in the major rice producing areas in Java, it was reported that the most important source of income was farm labor for 10.5 percent of these villagers in West Java, 7.5 percent in Central Java, and 25.6 percent in East Java. Farm labor was the second most important source for 19.8 percent of these villagers in West Java, 27.1 percent in Central Java, and 10.9 percent in East Java (*5*, pp. 8, 9). Thus, more than 30 percent of these rural villagers depend very heavily on farm labor.

To further substantiate the importance of farm labor, Benjamin White stated that in the Javanese village where he was living two-thirds of the households depended on work outside of their family farms for most of their subsistence needs. He further stressed that harvesting labor had a higher return than other kinds of wage labor (*24*, pp. 6, 7). Another study that covered eight villages in West Java mentioned that 35 percent of the population was dependent upon

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farm labor and tenancy (*17*, p. 12). Because of the 30 to 35 percent of the villages' population who are full-time or part-time farm laborers, the impact of tebasan on the villages could be very severe. To give a rather extreme example, in a study from 1950 to 1954 in Chibodas village—which was not in a major rice-producing region of West Java—H. Ten Dam showed that 44 percent of the families were completely landless. Twenty-five percent had only the land on which their houses were located and 23 percent were very small landowners with poor-quality fields. Consequently, he estimated that about 90 percent of the total population in Chibodas were farm laborers (*6*, p. 349).

TEBASAN AND ITS LOCATION

Although tebasan has been reported in widely separated places in Central and West Java, it appeared in only 25 percent of the Survey's sample villages. The locations of the areas of tebasan are shown on the map on page 171.[1]

Under the tebasan system, the farmer sells his almost mature crop in the field to a penebas a week or so before the harvest. The buyer arranges for the harvest and sells the rice. If he is from the farmer's own village, he usually will pay the farmer within a week after he has sold the rice. If the penebas is from a different village and not well known to the farmers, he will pay the farmer at harvest time.

Traditionally on Java, rice is harvested a panicle at a time by unlimited numbers of harvesters, both from within the village and itinerant, using the *ani-ani* (small finger rice knife) and receiving a fixed share (in kind) of the harvest. R. W. Franke mentioned that "Literally thousands of landless families criss-cross the Javanese countryside, following the harvest from west to east, and then returning for the next season as the paddy starts to yellow on the fields again" (*8*, p. 181).

Under the new system, the penebas limits the number of harvesters, insists they use the sickle for harvesting, reduces the traditional harvest share, weighs the amount each harvester cuts, and pays in money. If the farmer did not sell to a penebas he could not introduce these tradition-breaking innovations, at least during the first two years. At harvest time there is considerable tension between the people who are cutting the rice and the owner because the harvesters try to increase their share and the owner tries to prevent it. The farmer has a traditional social obligation to these harvesters which prevents the farmer from effectively controlling the harvest and limiting his losses. However, the penebas is considered to be a middleman and not constrained by these traditional obligations to the rural community. As was also mentioned by Widya Utami and John Ihalauw, "the tebasan system tends to free farmers from various socio-cultural and socio-economic ties, but it also seriously limits the work opportunities for farm laborers" (*20*, p. 63).

[1] The areas where tebasan has been reported are: Karawang Kabupaten, West Java, by Dr. Herman Suwardi, Pajajaran University, in a private discussion (Oct. 20, 1973), Yogyakarta Province, by Dr. Mubyarto, Gajah Mada University, in a private discussion (Oct. 16, 1973, and by Mrs. E. J. A. Harts-Broekhuis and Mrs. A. J. Palte-Gooszen in their M.S. theses, Institute of Geography, Utrecht University; Jepara Kabupaten, Central Java, by John Ihalauw in a seminar at Satya Wacana University (Oct. 17, 1973); Klaten Kabupaten, Central Java, by Widya Utami and John Ihalauw (see *22*, pp. 46–56); Pemalang and Kendal Kabupatens, Central Java, by William L. Collier, Gunawan Wiradi, and Soentoro (*4*, pp. 36–45); and Cianjur Kabupaten, West Java, by Mr. Siregar, Staff, Agro-Economic Survey.


JAVA - SEA
CENTRAL JAVA
WEST JAVA
EAST JAVA
INDIAN - OCEAN
Wr. Jaud
Santul
JAKARTA
Kab. Karawang
Mariuk
Cidaho
Gekbrong
Jati
BANDUNG
Kab. Pemalang
Banyurowo
Kab. Jepara
Serang
Wanarata
Rowasari
SEMARANG
Kebanggan
Kab. Kendal
Sidomulyo
SURABAYA
Gemarang
Geneng
Janti
Sukarejolor
Pateman
S.Pasantren
Kab. Klaten
YOGYAKARTA
Sukesari
Tanggulwetan
Province boundary
Kabupaten where tebasan has been reported
Capital city
Major city
Sample village (desa)

TABLE 1.—PERCENTAGE OF SAMPLE FARMERS IN KENDAL AND PEMALANG, KABUPATENS (RESIDENCY) SELLING THEIR RICE CROP TO A PENEBAS IN EACH SEASON INTERVIEWED*

Season and year	Round	Kendal		Pemalang	
		Rowosari village	Banyutowo village	Serang village	Wanarata village
Wet season 1968/69	I	0.0	0.0	0.0	0.0
Dry season 1969	II	0.0	0.0	0.0	0.0
Wet season 1969/70	III	0.0	0.0	0.0	11.1
Dry season 1970	IV	7.1	0.0	20.0	6.9
Wet season 1970/71	V	37.0	6.7	17.2	0.0
Dry season 1972	VI	26.9	3.7	37.9	75.9
Wet season 1972/73	VII[a]	37.5	42.8	[b]	[b]

* Data from the Agro-Economic Survey (AES) interview of 30 sample farmers in each sample village in Java.

[a] These percentages in Round VII are based on the farmers who had already harvested. At the time of our interviews some had not reached the stage where they would be approached by a penebas. If all the sample farmers are used, then these percentages are 30.0 percent for Rowosari and 28.6 percent for Banyutowo in the wet season 1972/73. Only in Kendal were the farmers interviewed for a seventh time.

[b] The farmers in Pemalang were not interviewed after the wet-season 1972/73 crop.

TEBASAN AND THE HIGH-YIELDING RICE VARIETIES

According to the penebas interviewed in a four village survey, some rice has always been purchased by tebasan.[2] Yet, tebasan has only become important since the arrival of the high-yielding varieties (HYV's). Based on the approximately 120 sample farmers in these four villages, tebasan has emerged in a significant fashion only since the wet season 1970/71 in Kendal and the dry season 1970 in Pemalang (Table 1). Only in the last year has tebasan been used by a fairly large number of these farmers. Clearly, this is a recent rural change which has had a major impact on farmers, middlemen, laborers, and possibly village society. Although it is not possible to document the causal effect that high-yielding varieties (HYV) had on this change, the wider adoption of these varieties was concurrent with emergence of tebasan (Table 2). At the time when selling to a penebas increased rapidly, a large majority of these sample farmers began planting HYV's (Table 3). Of the sample farmers in Rowosari in the wet season 1972/73 who sold to a penebas, 67 percent had planted HYV's. Of the sample farmers in Banyutowo who sold to penebas in the dry season, all had HYV's. Of the sample farmers in Wanarata who sold to penebas, 64 percent planted HYV's. Only in Serang was it a much lower 27 percent. Although this is not clear proof, the generalization seems valid that the high-yielding varieties have encouraged the selling of the rice crop to a penebas a few days before the harvest.

Judging by the interviewed farmers who sold their crop to penebas, the size of the rice-field operation had no influence on this decision.

[2] The Agro-Economic Survey's (AES) field research team first noticed tebasan while interviewing our 120 sample farmers for the sixth time over a five-year period in the villages of Rowosari and Banyutowo in Kendal Kabupaten and the villages of Serang and Wanarata in Pemalang Kabupaten, Central Java in December 1972 and January 1973. At that time, we interviewed various penebas in these villages.

TABLE 2.—PERCENTAGE OF SAMPLE FARMERS IN KENDAL AND PEMALANG KABUPATENS PLANTING HIGH-YIELDING RICE VARIETIES FROM THE WET SEASON 1965/69 TO THE WET SEASON 1972/73*

Season and year	Kendal		Pemalang	
	Rowosari village	Banyutowo village	Serang village	Wanarata village
Wet season 1968/69	0.0	0.0	0.0	0.0
Dry season 1969	10.3	0.0	0.0	23.3
Wet season 1969/70	0.0	0.0	0.0	10.0
Dry season 1970	3.6	0.0	0.0	13.8
Wet season 1970/71	11.1	0.0	3.3	40.0[a]
Dry season 1971	10.7	0.0	6.7	43.3
Wet season 1971/72	13.3	3.7[b]	14.3[c]	66.7
Dry season 1972	26.9	7.4	10.7	67.0[d]
Wet season 1972/73	40.0[e]	62.1[f]	[g]	[g]

* Data from the six rounds of AES interviews of the 30 sample farmers in the sample villages in Java. Varieties include the IR, C4, and *pelita* rice.

[a] 33.3 percent planting IR and 6.7 percent planting C4.

[b] One farmer growing the C4 variety.

[c] 10.7 percent growing IR and 3.6 percent *pelita.*

[d] 63.3 percent planting IR and 3.7 percent *pelita.*

[e] 30.0 percent IR, 6.7 percent of C4, and 3.3 percent *pelita.*

[f] 6.9 percent IR and 55.2 percent C4.

[g] There is no information on the varieties planted in the wet season 1972/73 in Pemalang.

The farmer sample is stratified into one representing the largest rice farmers in the village and the other representing all the other rice farmers. Twenty percent of the sample large farmers in Rowosari sold to a penebas and 32 percent in the sample other-farmer strata; in Banyutowo 60 percent large and 22 percent others; in Serang 40 percent large and 38 others, and in Wanarata 80 percent large and 75 percent others. Except for Banyutowo, these percentages do not indicate that size made any difference in the selling decision.[3]

BAWON AND THE TRADITIONAL PATRON-CLIENT RELATIONSHIP

The traditional system of rice harvesting with ani-ani in Java permits all those who want, to join the harvest in order to get a share (*bawon*) in kind.[4] This method of harvesting incorporates the farmers' social concern and the patron-client relationships. The village's rice is traditionally supposed to be shared by all the people in the village. G. H. van der Kolff writing in the 1920s and 1930s mentioned that the use of the ani-ani knife to cut the rice stalk by stalk has been used for ages in Java. The reasons he suggested were that this was the

[3] However, the reasons for doing it may be different between large farmers and small farmers. In a private communication (Feb. 7, 1974) with Mrs. E. J. A. Harts-Broekhuis and Mrs. A. J. Palte-Gooszen, Institute of Geography, Utrecht University, they wrote that "During our survey we found out that in Kelurakan Djambidan (± 10 Km. south-east of Jogyakarta) the farmers also sold part of their crop to a penebas. The rich farmers did so to gain more profit, the poor ones to get some more rice to eat by avoiding bawon. There were five very poor farmers (with an average of 300 m.² of *sawah*) in our sample containing 150 households, who did the harvest all by themselves only assisted by their women and children. They couldn't afford giving a share of the harvest (bawon) and weren't ashamed about it."

[4] Robert R. Jay mentioned that in the village where he did his research, all those who heard of the harvest could come and join in it. The owner took pride in the large number of people who joined his harvest (*12*, p. 255).

TABLE 3.—PERCENTAGE OF SAMPLE FARMERS IN KENDAL AND PEMALANG KABUPATENS PLANTING HIGH-YIELDING RICE VARIETIES, AND SELLING TO A PENEBAS, BY SEASON*

Season and year	Round	Kendal		Pemalang	
		Rowosari village	Banyutowo village	Serang village	Wanarata village
Wet season 1969/70	(III)	[a]	[a]	[a]	0
Dry season 1970	(IV)	100	[a]	0	100
Wet season 1970/71	(V)	20	—	33	[a]
Dry season 1972	(VI)	33	100	27	64
Wet season 1972/73	(VII)	67	100	—	—

* Data based on information from the 30 interviewed sample farmers in each sample village. Varieties include the IR, C4, and *pelita* rice.

[a] None of the sample farmers sold to a penebas.

way to show proper respect to the rice goddess and that the poorer people could also benefit from the rice harvest (*13*, p. 12). This system was workable in a semi-closed society that was not swamped by the unemployed or underemployed from the farmers' own village and from other villages. The patterns of communal loyalty and mutual assistance in the traditional Javanese village with its closed socioeconomic order influence all aspects of rice production and marketing (*14*, p. 415). This bawon tradition, which was once a safety mechanism to support everyone in the village, has, over the years, turned into a method that the harvesters can use to exploit the *sawah* (irrigated rice land) owners. In the past there were not enough laborers at harvest time, which compelled the farmers to give a large share of the harvest to the laborers. As population increased the scarcity of laborers at the harvest declined but tradition prevailed. Up until quite recently harvesters were still claiming traditional rights and insisting on the same bawon though they were under greatly changed circumstances. Resistance to the use of the sickle as a harvesting innovation with which to cut rice much more efficiently was described even in 1926; this resistance was due to the harvesters' fears that any change would destroy the bawon system (*8*, p. 138).

Early in the morning women and young girls in large numbers gather along the edges of the rice field that they believe will be harvested. When the owner appears there is a great rush to enter the field, get a strategic position, and use the ani-ani to cut and bundle as much paddy as possible. An entire one-hectare field can easily be finished in one hour because as many as *500 people per hectare may join the harvest.* Once the rice is cut, the tempo slows down because it is no longer a race with one's neighbor. Each woman carries her harvested rice to the owner's house where his wife separates the bundles according to the local bawon custom into two shares, one share for the harvester and one share for the owner. Every step of the way there are attempts by these harvesters, especially if they are from outside the village, to increase their share. A description of the problem was given by Utami and Ihalauw (*22*, p. 53):[5]

[5] Another example of the economic conditions changing and a traditional institution being used for a different reason is seen with the *kedokan* system where the laborers transplant, weed, and sometimes plow the field for rice without pay. They are then allowed to harvest the rice, receiving a much larger share (one-fourth) than the bawon system. One farmer mentioned that thirty years ago he used

> Uncontrolled numbers of harvesters result in various kinds of losses to the farmer: large numbers of harvesters cause more stamp-down loss, dropping loss and left over loss; in carrying the rice from the field to the farmer's house, losses occur through stealing or through real transportation loss; and finally there are losses due to the distribution of shares and handling losses.

The patron-client relationship is reflected in the farmer providing a share of his harvest to the villagers. Usually, he will give both relatives and neighbors advance notice of when he will harvest and a larger bawon. In a stable situation with little apparent change these relationships will acquire a moral force of their own (*15*, p. 11). The situation in the villages of Java cannot conceivably be considered stable. Beginning in the 1950s the status quo, even in the areas where tradition and harmony were still important, was disturbed in many ways (*11*, p. 8). Eventually, the farmers realize that this patron-client relationship is too heavy a burden and search for ways to lessen it (*19*, p. 26).

The traditional view of the harvest and the rice farmer's relationship with the villagers runs as follows (*12*, p. 260):

> The ability to present to community view a large rice crop on one's own land holding, to draw a large crowd of harvesters without resource to peer ties, and to be able to pass up opportunities for harvesting others' rice crops gives the well-to-do holder of irrigated land a yearly opportunity to act as community patron in the most highly valued of agricultural events. Demonstration of such ability over time decisively raises or reinforces the landholder's personal rank.

As the population increases, the number of harvesters also increases. But with these population increases and the rural community's traditional efforts to provide for all its members, the village's economy can no longer provide adequate subsistence (*14*, p. 419). The social responsibility of the farmers increases because of the greatly increased number of landless people. However, the introduction of the new rice technology may induce the farmers to think and act more commercially. Consequently, the reciprocal principles of the patron-client relationship begin to be felt as a heavy burden and the farmers want to avoid it.[6] This desire to improve one's position in relation to the community welfare is in direct conflict with the traditional values of the village community. In the past, those who were better off were strongly encouraged to redistribute their wealth by giving loans that would not be repaid, by sponsoring village events, and by carrying out community works (*16*, p. 243). Although there are pressures in the villages to retain the patron-client link between the farmer-operators of the rice fields and the landless laborers, this is a tenuous relationship.[7] Commenting

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kedokan to ensure that he would have enough people to harvest his rice fields. At the present time he uses kedokan to limit the number of harvesters in his fields by having given a few people the right to harvest.

[6] Perhaps population pressure has reached the point where the farmers feel it is impossible to continue supporting the landless. Most of the farmers have barely enough to provide subsistence for just their families. They can no longer provide for the greatly increased numbers of landless people. It may then be more of a survival decision rather than an economic decision.

[7] In a private communication (Nov. 20, 1973) with James C. Scott, he suggested that "in a sense the traditional harvest rights may not create a patron-client relationship. That is, if a man works on 15 or 20 harvests he isn't likely to have strong personal ties to the landowners involved because there are too many of them. Instead, it would seem that we may be dealing with a communal right, en-

on this problem, an anthropologist who has lived for one and one-half years in a Javanese village stated (*25*, p. 5):

> To a certain extent, the interest of individual rich and individual poor are bound up together, and this fact is held to point to an overall pattern of "a disaggregated peasantry attached vertically by bonds of loyalty to agrarian elites" rather than a pattern of horizontal alliances based on the opposing class interests of rich and poor. However, while patrons may compete with each other for clients and vice versa, such a model must not be allowed to obscure the fact that in Java, as in all societies where significant inequalities in wealth are found, the interests of the rich and poor as groups are fundamentally opposed. For instance, the constant demand for greater access to land by either group threatens the interests of the other; the demand of the poor for higher wages threatens the farming profits of the rich; etc. Whatever the ideological strength of the idea of mutual interdependence, "*tolong menolong*" etc. between rich farmer and poor farmer/laborer, the patron-client relationship is a much more fragile and uneasy one than might be supposed.

One way the farmers can free themselves from the bawon harvesting system is by selling their crop to a penebas rice buyer. These buyers are more able to limit the number of the harvesters because the village society thinks that the penebas is functioning as a middleman or trader who is more commercial or business minded. Symptoms of this commercial attitude are even more evident with the change from wages in kind to wages in the form of money. Previously, these buyers gave wages in kind to the harvesters but have switched to paying the harvesters a fixed amount in money for the rough rice they have cut and threshed. A weighing scale is used to measure the exact amount they harvest.

On the other hand, the spread of the tebasan system and sickles has disappointed the harvesters. The use of sickles has already narrowed the work opportunities for the women and older people because the work is harder. Besides this, the increased area under tebasan means fewer opportunities for all the harvest laborers. In Rowosari an attack occurred on a penebas by the harvesters who were prevented from joining the harvest. In an article on social change in Java between 1900 and 1930, W. F. Wertheim mentioned that a rice field owner who replaced the ani-ani with a sickle to reduce the number of harvesters would ostracize himself from the village community. He further stressed that the village's social system was one of disguised unemployment and that the villagers' system of values prevented innovations or technical improvements because it would cause misery and distress for a large portion of the people in the village (*23*, p. 228).

In the past, the padi harvest consisted of two phases. First, the group of harvesters (*penderep*) with ani-ani cut the paddy. After this was finished, there still were remnants of the paddy in the field because the stalks were much shorter and missed by the penderep. Also, the pressure to cut as much as possible caused much of the paddy to be missed, frequently intentionally. Thus, a second group of harvesters (*pengasak*) cleaned up the remaining paddy (*ngasak*). The ngasak

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forced communally, thus a collective tradition. If this is so, it implies that landholders collectively are breaking a village tradition of sharing rather than purely individual bonds. One would imagine that it would produce a more immediate sense of collective grievance than the breaking of individual ties."

TABLE 4.—PERCENTAGE OF PENEBAS ACCORDING TO THE VILLAGE LEADERS IN THE TWO KECAMATANS, WET SEASON 1972/73*

Origin	Kendal	Weleri
Within villages	18.9	47.3
Outside villages	81.2	52.7

* Percentages are averages based on estimates made by village leaders in the 13 desas in Kendal Kecamatan and 15 desas in Weleri Kecamatan.

paddy was not shared with the owner of the sawah, but belonged to these people. The ngasak harvest did not always occur the same day as the main harvest. Sometimes this second harvest took place one day after the main harvest.

With the large increases in laborers and lack of job opportunities the paddy harvesters flock to the sawah without being invited. Those who were not invited enter the sawah in a haphazard manner. In Rowosari the penderep harvesters and the pengasak harvesters begin at the same time which makes it difficult to distinguish between the penderep and the pengasak. The ngasak harvesters also may take paddy that is not a remnant. Sometimes the paddy is intentionally missed by the penderep, thus leaving it for the pengasak to harvest because these people are part of the penderep's family. As everyone files out of the field some will say they are pengasak and the crop owner has no way of disproving it. The ngasak problem and the large number of harvesters create considerable tension in the harvest between the owners and the harvesters.[8] This is a major reason why the farmers sell their rice to a penebas buyer. If a sickle is used to harvest the rice, then no paddy is left in the field—which automatically eliminates the ngasak harvest.

To get an impression of the wirespread nature of this tebasan-selling of the rice crop in a larger sample than two villages, more than one-half of the other villages in the two Kecamatans where each village is located were visited to obtain information on tebasan. An average of 28 percent of the rice farmers sold some or all of their rice crop to a penebas in Kendal Kecamatan and 53 percent sold to a penebas in Weleri. The average proportions of the villages' land which are sold to penebas are 27 percent in Kendal and 44 percent in Weleri Kecamatans.

An even more serious problem is that the majority of the penebas are not from the village in which they purchased the crop, as shown in Table 4. Usually the penebas will use his own harvesters from his own village—which means the landless in these villages are prevented from harvesting a large share of the rice crop in their own village. Of course, they can join a penebas from their village who has purchased rice crops in the nearby villages. But to join they must have a rather strong patron-client relationship.

EMPLOYMENT ASPECTS

To estimate the impact of tebasan on labor use in the rice harvest is very difficult because the farmer has no idea how many people join his bawon harvest.

[8] In a conversation with Annie Stoler White, an anthropologist living in a village in Yogyakarta Province, she mentioned watching the harvests and stressed that this situation caused by the large number of harvesters and the pengasak trying to join the regular harvest causes great tension.

Even an attempt to count the number of people in the harvest proved difficult because people continuously entered the field until the harvest was finished and because of the difficulty of distinguishing between the actual harvesters and those who were only cutting the remnants of the crop. The penebas have a better idea than the farmers of the number of people because they partly select and invite some of the harvesters.

In Banyutowo the writers witnessed two harvests and counted the harvesters. The first was carried out by a farmer and the second one by a penebas. In both of these harvests sickles were used to cut the C4 paddy crop. In the farmer's harvest, the area was .24 hectares and about 100 people joined the harvest which was 425 people per hectare. In the sawah that was harvested by the penebas, the area was .54 hectares, and 105 people were involved or 194 harvesters per hectare.[9] The penebas used only 46 percent as much labor in the harvest with a sickle as did the farmer.

An even greater difference has been reported in Jepara Kabupaten. Utami and Ihalauw noted that 96 harvesters were working in a field of .20 hectares or 480 persons per hectare. At the same time only 50 meters away only 3 persons were harvesting a field of .14 hectares or 21 persons per hectare. In the first field, the farmer-owner carried out the harvest and in the nearby field a penebas supervised the harvest of his purchased crop (*21*, p. 17). In a different report the two researchers stated that in two of the villages in their study, the labor requirements for harvesting the villages' rice fields were significantly lowered due to the spread of the tebasan system (*20*, p. 36). Comparing these numbers with a reported 675 persons per hectare on relatively large fields and an amazing 973 persons using the ani-ani per hectare on less than one-hectare fields— both for farmer harvests— in Karawang Kabupaten near Jakarta, one can easily visualize the reduced employment impact of tebasan (*1*, p. 119).

Not only does tebasan have an impact on employment, but the effect of using the sickle rather than the ani-ani may have an even greater impact. Based on the interviewed tebasan buyers' estimates of the number of persons in their restricted harvests, there were 56 percent fewer harvesters when using sickles rather than the ani-ani in Rowosari and 43 percent fewer in Banyutowo. In both types of harvest the penebas restricted the number of persons. Two-thirds of the interviewed tebasan buyers stated they restricted the number of harvesters and the other one-third probably did but were reluctant to say it. More important than just limiting the numbers of harvesters, the penebas used the same persons in each harvest, which severely restricts the number of people who benefit from harvesting. In the interviews in Rowosari none of these buyers stated that they used the same persons in each harvest, but in a brief visit in October 1973, several penebas in the village admitted they employed the same harvesters throughout the harvest season. In Banyutowo all of the penebas stated in the interviews that they used the same persons to harvest each time.

Not only is it possible for the buyers to limit the number and use the same harvesters but they also can employ harvesters from their own villages in the crop harvests in other villages. If they purchased rice crops in other villages, they

[9] This occurred at the end of the 1973 wet season which had a couple of farmers who used sickles in their own harvests but did not limit the number of harvesters.

took their neighbors to help with the harvest. At times harvesters from other villages joined the penebas' harvest in their own village. If the harvest was in the penebas' own village, an average of 70 percent of the harvesters in Rowosari and 100 percent in Banyutowo were from their own village. An important reason for taking people from one's own village is for protection. People in the other villages are not happy about the tebasan buyer limiting the number of harvesters, reducing the wage, and using outsiders to harvest in their villages. A buyer is apt to feel safer if he has friends to support him in any quarrels that might develop.[10]

These penebas gave various reasons why they restricted the numbers of harvesters. In Rowosari one-third mentioned it was easier to control the harvest and one-third stated the harvest yield was not damaged if fewer persons joined the harvest (suggesting that the traditional harvest technique now exhibits *negative* marginal labor productivity). Sixty-seven percent in Banyutowo said they did this to reduce the cost of harvesting. One buyer mentioned that he employed and would use only permanent harvesters. Another method used by both the penebas and farmers in Rowosari was to arrange their harvesting time to coincide with harvests elsewhere, thereby spreading the harvesters over a larger harvest area by employing them all simultaneously. The farmers also use this method to reduce the number of harvesters. Although the penebas in the Pemalang sample villages apparently do not limit the number of harvesters, the much smaller share that they receive from the penebas has caused a reduction in the number wishing to participate in the tebasan harvest.[11]

To actually limit the number of persons who join the harvest, one-third of the penebas in the two Kendal villages sent letters (*girig*) to selected persons in the villages giving them the right to help harvest the purchased crops. These harvesters put the letters in their hats when the harvest began so that the penebas could distinguish those selected. At times colored hats (blue or red) were used to indicate the chosen harvesters. (In this way the penebas knew who was harvesting his rice, otherwise he could not control it.) This selection method was employed for those using rice knives on local varieties as well as for those using sickles on the high-yielding varieties. These people will gather at the penebas' house before going to the rice fields. When a person receiving the letter of identification is sick or busy with something else, he gives it to a friend or relative who can then join the harvest. This selection procedure limits the harvesters to villagers and excludes the great hordes of harvesters from outside that descend on the villages. And the penebas creates a rather large number of clients dependent on him for their survival. The penebas who has become a patron can call upon these clients (harvesters) for various needs—protection and their acquiesence to the tebasan system. These client harvesters gain because there are fewer persons cutting the rice in any one harvest, thereby ensuring them a larger share of the total crop. They will be able to participate in many more harvests if they are clients of an active penebas. Because enough of these villagers profit

[10] In several of the other sample villages in Java, some larger farmers mentioned one reason why they did not want to use sickles in their harvests was that a sickle can very easily become a deadly weapon. The ani-ani is not dangerous.

[11] They may have been reluctant to admit they were limiting the number of harvesters; also, we were better acquainted with the penebas and villagers in Kendal than with those in Pemalang.

TABLE 5.—FREQUENCY OF HARVESTERS JOINING FARMERS AND PENEBAS RICE HARVESTS, WET SEASON 1972/73*

	Number of harvests joined			Number of crop owners per harvester	
	Total	Farmer	Penebas	Farmer	Penebas
Banyutowo[a]					
Average	9.8	1.1	8.7	.9	1.9
Range	1–33	0–10	0–33	0–5	0–10[b]
Rowosari[c]					
Average	26.8	4.7	22.1	3.0	3.8
Range	4–115	0–50	0–103	0–25	0–15[d]

* Data from interviewing 30 harvesters in Banyutowo and 41 in Rowosari during the wet season 1972/73 harvest period.

[a] Only 57 percent of the interviewed people harvested a farmer's crop, but 90 percent harvested a penebas' rice crop. However, the harvest in Banyutowo was only 30 percent completed at the time of our visit.

[b] The harvester who joined 10 different penebas did all of this work outside his village for penebas who were not from his village.

[c] Only 68 percent of the interviewed people harvested a farmer's crop but 98 percent harvested a penebas' rice crop.

[d] The harvester who joined 15 penebas worked for 7 from inside his village and 8 from outside it.

from this patron-client relationship, they agree to the use of the sickles and the elimination of the bawon system.

Table 5 shows the importance of the penebas in providing harvest opportunities to his clients. In Banyutowo the opportunities to work with a penebas were eight times greater than with the farmers, and in Rowosari the opportunities were almost five times greater. The harvesters in Banyutowo joined an average of 9.8 harvests and those in Rowosari an average of 26.8 harvests.

J. C. Scott and Ben Kerkvliet stressed that when the traditional patron-client relationship breaks down, the peasants will try to establish a new relationship that will provide subsistence (*16*, p. 255). The impact of the tebasan system has been to force the landless to search for other patrons. Only the penebas with his need for harvesters can fulfill this need. Consequently, the penebas has apparently become the new patron, but because of his use of semipermanent harvesters the number of clients has been greatly reduced. Many of the rice farmers' previous clients are unable to find a patron, and this means additional people are joining the ranks of the unemployed. However, those who do succeed in developing this relationship with a penebas-patron gain more than they received in the past from the farmer-patron. If they gain more, they will also be willing to support and protect the penebas more forcefully in his role as a rice buyer.

With a fairly large group of people—both poor villagers and relatively wealthy village leaders—agreeing to this cultural change, the majority of the village members are perhaps willing to accept this innovation. Having been accepted by the local villagers, it is almost impossible for the itinerant harvesters to protest effectively. Only about one-half of the bawon harvesters in general are from the same villages as where they are harvesting. Based on the interviews with the village leaders in the two Kecamatans, 55 percent of the harvesters in Weleri

TABLE 6.—AREA OF OPERATION, AND NUMBER OF DAYS HARVESTERS JOINED THE HARVEST IN SAMPLE VILLAGES IN KENDAL KABUPATEN, WET-SEASON HARVEST 1972/73*

Item	Rowosari	Banyutowo
Number of observations	41	30
Percentage of the harvesters from this village	71	100
Number of villages in which they harvest	2.9 (1–7)	2.7 (1–6)
Average distance of these villages from home (*kilometers*)	2.8	3.5
Average number of days they joined the harvests	25	27[a]
Percentage of the harvesters who felt sufficient harvesting opportunities	36.6	16.7

* These data are based on the harvester interviews which were not randomly selected. They were picked out of several harvests that took place while we were living in the villages.

[a] This number has been adjusted because at the time of the interviews in Banyutowo only 30 percent of the harvest had been completed. Therefore, their average which was 8 days has been divided by 30 percent.

Kecamatan and 58 percent in Kendal Kecamatan are from the same village as the harvest.[12]

The harvest period in the general area of the sample villages lasts for about three months, but the harvesters have opportunities to work for approximately 25 days only (Table 6). Very often these harvesters do not have work opportunities, and when this happens they usually collect the remnants of the paddy in the harvested field. Only 36.7 percent of the interviewed harvesters in Rowosari stated they had sufficient opportunities to join the harvest. In Banyutowo only 16.7 percent of them felt they had sufficient opportunities (Table 6).

Since the rice cycle is an integral part of the villagers' culture, a change from the traditional bawon system to the tebasan system represents an important cultural change in these villages. Under favorable circumstances, rural Javanese villages can undergo rapid cultural change.

A major change is that the absorptive capacity of the Javanese farmers' wet rice fields to always employ one more person has come to a halt. If the farmers no longer will honor their traditional social duties, then agricultural involution has reached its limit, and may be reversing itself. As Geertz defined it (*9*, p. 80):

> Wet rice cultivation, with its extraordinary ability to maintain levels of marginal labor productivity by always managing to work one more man in without a serious fall in per-capita income, soaked up almost the whole of the additional population that Western intrusion created, at least indirectly. It is this ultimately self-defeating process that I have proposed to call "agricultural involution."

If agricultural involution did once exist, the tebasan system is one method the larger farmers and village traders are now using, at least in various areas,

[12] Basing this information on interviews with the village leader rather than the harvesters gives a much better estimate because of the difficulty in taking a representative and random sample of the itinerant harvesters and also their much greater suspicion of strangers.

TABLE 7.—PERCENTAGE OF HARVEST LABORERS' YEARLY INCOME FROM VARIOUS SOURCES IN THE TWO SAMPLE VILLAGES IN KENDAL KABUPATEN*

Item	Rowosari	Banyutowo
Harvest labor	29	47
Rice farming[a]	10	12
Other farming activities	1	0
Hired farm labor	19	24
Hired (other than farm) labor	6	2
Fishing	22	2
Trading	4	5
Other activities	9	8

* Data from the interviews of 41 harvesters in Rowosari and 30 harvesters in Banyutowo in March 1973.

[a] Rice farming means from their own operations.

to not only prevent further involution but to also reduce the already existing involuted nature of wet rice cultivation on Java.

HARVESTER INCOME

In two villages in Kendal we interviewed farm laborers in detail about their income. In Rowosari their major source was rice-harvesting activities which provided 29 percent of their total yearly income. In Banyutowo harvest labor made up an even greater share of their income—47 percent of the total (Table 7).

This sample of interviewed harvesters did not adequately represent the group of laborers in the two villages. Only those persons who were actively engaged in the rice harvest were interviewed. All of the villagers who could no longer find harvest opportunities and most who had only a few opportunities in the wet season harvests of 1972/73 were not represented. Also, the older women who were not physically strong enough to use the sickle and only used an ani-ani on the local varieties probably did not have a penebas patron and may not have been adequately represented. However, in spite of these above limitations, the interview data can still be used to examine the impact of the penebas and the farmers on the harvesters' income. Although most of these laborers appeared to have a penebas patron, they still joined the farmer harvests whenever possible.

The interviewed harvesters joined five to eight times more harvests with the penebas than with the farmers. These laborers worked an average of 4.7 days for the farmers and 22.7 days for the penebas in Rowosari and an average of 3.8 days for the farmers and 29.0 days for the penebas in Banyutowo (Table 8). Sickles were used most of the time in Banyutowo and the ani-ani in most of the harvests in Rowosari. The farmers' wage rates used in the analysis were the traditional amounts which were still higher than the rates given by the penebas.

For the wet season 1972/73 the estimated harvest labor income for these laborers was $.57 from the farmers and $4.29 from the penebas in Rowosari. The laborers earned an average of $.87 from the farmers and $9.66 from the penebas harvests in Banyutowo (Table 8). The penebas harvest gave these laborers 88 percent and 92 percent of their total harvest income. Obviously, the

TABLE 8.—LABORERS' SEASONAL HARVEST INCOME FROM FARMERS AND PENEBAS IN THE WET SEASON 1972/73, KENDAL KABUPATEN*

Item	Rowosari		Banyutowo[a]	
	Farmers	Penebas	Farmers	Penebas
Number of days laborers joined harvests	4.7	22.7	3.8	29.0
Laborers' use of harvesting tools:[b]				
Ani-ani (*percent*)	100.0	100.0	31.0	12.5
Sickle (*percent*)	2.5	31.7	94.0	90.0
Number of days harvested with:[c]				
Ani-ani (*days*)	4.6	20.4	1.8	2.7
Sickle (*days*)	.03	2.2	2.0	26.3
Wage rate[d]				
Ani-ani (*percent of share*)	10.6	8.6	10.6	7.1
Sickle (*rp/quintal of rough rice*)	300	275	200	242
Wage per harvest day[e]				
Ani-ani (*kg/paddy*)	2.4	3.5	4.4	2.8
Sickle (*rupiahs*)	125	132	96	146
Laborers' seasonal income[e] from harvesting				
Ani-ani (*kg/paddy*)	11	71	8	8
Sickle (*rupiahs*)	4	290	192	3,840
Value of laborers' harvest income[e]				
Rupiahs	235	1,781	360	4.008
U.S. dollars	.57	4.29	.87	9.66
Seasonal harvest income				
Rupiahs	2,016		4,368	
U.S. dollars	4.86		10.53	

* Data from the 41 harvester interviews in Rowosari and 30 harvester interviews in Banyutowo in March 1973.

[a] The harvest in Banyutowo was only 30 percent completed according to the village leaders. Consequently, the number of sickle and ani-ani harvest days has been divided by 0.30. A similar adjustment was made on seasonal income.

[b] These are the percentages of the harvesters who used the ani-ani and the sickle at least once in this season.

[c] These averages are based on all of the interviewed harvesters although not all of the harvesters worked for a farmer or a penebas. In Rowosari 27 worked for farmers and 40 worked for penebas. In Banyutowo 17 worked for farmers and 26 worked for penebas.

[d] These percents and rupiah amounts are based on only the harvesters who worked for a farmer or a penebas and not the total sample.

[e] These averages are based on all of the interviewed harvesters even though some did not work for one or the other. To value the paddy bawon a price of 21 rupiahs per kilogram was used.

penebas had a great impact on the incomes of these laborers which was clearly recognized by the laborers and by the penebas.

This analysis of the harvesters' income is incomplete because we cannot compare the income of those who work primarily for the penebas and those who do not. Obviously, if the non-tebasan harvesters had fewer work opportunities, they suffered a severe decline in their income from this source of employment. We have shown earlier that a substantial reduction in employment does occur and that laborers received a substantial portion of their income from the rice harvest.[18]

[18] In a personal communication with Benjamin White and Annie Stoler White, in their analysis of villagers' income, the harvest income is very important, if not the most important income source.

TABLE 9.—TRADITIONAL AND ACTUAL BAWON, AND THE TEBASAN SHARE TO THE HARVESTERS USING THE ANI-ANI IN THE RICE HARVEST, DRY SEASON 1972*

	Bawon		
	Actual	Traditional	Tebasan
Pemalang Kabupaten:			
Wanarata			
Average	1:6	1:8	1:11
Number of observations		30	23
Serang			
Average	1:6	1:9	1:12
Number of observations		29	15
Kendal Kabupaten:			
Rowosari			
Average	1:6	1:9	1:11
Number of observations		21	3
Banyutowo			
Average	—	1:7	1:9
Number of observations		24	2

* The actual bawon information is from group interviews with village leaders, penebas, and progressive farmers. The traditional bawon is based on information from the interviewed farmers and the tebasan data are from the interviewed penebas. These interviews were carried out in January and February 1973. Averages should read 1 to 6 and so on.

The impact of tebasan on harvester income was even more serious when considered in the framework of the farm-labor situation and rural poverty in Central Java. Since the 1930s rural living standards have been falling, laborers' wage rates have been declining, and the number of days a laborer can find work each year has diminished (*7*, p. 3). Tebasan favors only a few laborers by increasing their incomes and number of workdays while preventing other less favored laborers from participating in the harvests—which also creates competing groups among the landless laborers.

HARVESTING COSTS

One of the main reasons farmers sell to a penebas is to prevent harvesters trying to exceed the traditional share (bawon). These harvesters are confronted by their increasing numbers who cannot be adequately supported by the village society. In the Javanese villages there are fewer locally controlled resources and more claimants, which diminishes the harvesters' bargaining power (*15*, p. 28). Since the harvesters are successful in gaining more than the traditional share from the farmers, the farmers turn to the penebas who are able to take advantage of the harvesters' diminished bargaining power.

In three of the sample villages the traditional harvest shares were 1:8 or 1:9, which means the harvesters theoretically received 11.1 percent or 10 percent and the crop owners 88.9 percent or 90 percent (Table 9). But the harvesters were actually able to secure bawons of 1:6 or 14.2 percent of the rice they harvested for the farmers which increased the farmers' harvesting costs.

Dr. Rukasah in his very useful study of income and expenditure patterns in Karawang Kabupaten found that (*1*, p. 123):

> Since the harvesters selected the best panicles and made a bundle for their share bigger than the others, the share for the harvesters was more than (the traditional) one fifth. Studies carried out in the survey in Cibuaya and in the other five villages indicated that the share for the harvesters was 24.5 percent in the five villages and it was 24.3 percent in Cibuaya, varying from 19.3 percent to as high as 27.1 percent instead of the standard twenty percent. For the operators, these share-wages were quite expensive, but for the harvesters, since there was a surplus of harvesters, each harvester did not earn much.

However, the penebas were able to force the harvesters to take reduced harvest shares of 1:11 and 1:12, which were 8.3 percent or 7.6 percent of the amount they harvested (Table 9). Utami and Ihalauw noted an even greater difference which was a bawon of about one-tenth from a farmer and one-sixteenth from a penebas (*22*, p. 55).

Using the yield estimates from some of the sample farmers and shares and wages under various conditions from the interviewed village leaders and farmers, the costs of harvesting can be calculated. If we assume the harvesters can manage to get a 1:6 actual share (bawon) using the ani-ani rice knife on local rice varieties, then the farmers' estimated harvesting costs were $31.93 per hectare in Rowosari and $28.00 in Banyutowo. Comparing these farmers' actual harvesting costs with the $16.04 and $13.60 per hectare that it costs the penebas to harvest local rice variety crops with the ani-ani, it is evident that the harvest costs were reduced 50 percent by the penebas (Table 10). If the harvesters used sickles, the difference between the farmers' cost and the penebas' cost was much less but still the penebas had a 17 percent lower cost, as is shown in Table 10. The reason the difference is this small is because we assumed both the farmers and the penebas paid in cash and weighed what they harvested which prevented the harvesters from increasing their share. Also, if a farmer can use sickles, then he gains control of his harvest and eliminates the ngasak harvesters.

The reason why the farmer feels the harvest cost is too great is illustrated by the difference in costs between the traditional bawon and the actual bawon. In Rowosari, tradition dictated a cost of $20.48 per hectare but the harvesters were able to increase this cost of the farmers to $31.93, and in Banyutowo it was a traditional cost of $20.76 and an actual cost of $28.00. Therefore, the harvesters were able to increase their actual harvest share in these two villages by 35 percent and 56 percent above the traditional harvest share. Due to this increased cost, the farmers searched for a less expensive method, one of which was tebasan.

PENEBAS OPERATIONS

The general impression of a rice buyer is that of a wealthy man, living in the city, and having helpers to purchase rice. Although this may be partly true, the penebas buyers were primarily people who lived in the rural villages, engaged in the purchase of the rice crop just before the harvest, and also operated a rice farm themselves. They were usually part of the most influential group in the villages and had a major decision making role in these villages. Occasionally the village leader's (*lurah*) children or close relatives were penebas. Usually, the lurah himself would not want to openly become a penebas because of the consequent loss of

TABLE 10.—HARVESTING COSTS FOR FARMERS AND PENEBAS, WET SEASON 1972/73*

	Ani-ani rice knife			Sickle	
	Farmer				
	Traditional	Actual	Penebas	Farmer	Penebas
Rice yields (*metric tons rough rice/ha.*)					
Rowosari	2.67[a]	2.67[a]	2.67[a]	3.09[b]	3.09[b]
Banyutowo	2.34[c]	2.34[c]	2.34[c]	2.81[d]	2.81[d]
Share or wage to harvesters[e]					
Rowosari					
Share (*percent*)	10.7	16.7	8.4		
Wages (*rp/kg*)				3.3	2.75
Banyutowo					
Share (*percent*)	12.4	16.7	8.1		
Wages (*rp/kg*)				3.0	2.50
Cost of harvesting (*dollars/ha.*)[f]					
Rowosari	20.48	31.93	16.04	24.57	20.48
Banyutowo	20.76	28.00	13.60	20.31	16.93

* Data from the interviews of the farmers, village leaders, and penebas in the two villages during the wet season 1972/73 harvest period.

[a] For local varieties and based on 3 farmer interviews. The number of observations was quite small because of the large number of farmers who sold to a penebas and did not know the crop yield.

[b] For the IR-5 rice variety and based on 4 farmer interviews.

[c] For local varieties and based on 2 farmer interviews.

[d] For the C4-63 rice variety and based on 4 farmer interviews.

[e] The share and wage data was based on the interviews of the village leaders in 13 desas in Kendal Kecamatan, and 13 desas in Weleri Kecamatan except for the actual farmer share for the ani-ani which is a share of 1:6.

[f] The rice prices were $94.00/ton for IR, $105.40/ton for C4-63, $71.60/ton for local varieties and were from the penebas informant in Rowosari for the rice sold after the wet season 1972/73 harvest, March 1973.

popularity—which was still important for carrying out his responsibilities in the village.

In Rowosari four out of the six interviewed tebasan buyers lived in this *desa*, and the other two lived in desas only one kilometer away. Most of the interviewed penebas buyers were also farm operators. Four of six owned farm land in Rowosari and all of them owned farm land in Banyutowo. The average sizes of their wet-rice fields were .87 hectares in Rowosari and .82 hectares in Banyutowo. One-third in both villages mentioned trading of commodities other than rice as another source of income. Not all mentioned farming as a source of income which indicated that some rented out their sawah fields.

These buyers did not operate independently because of the need to have specialized skills in estimating crop yields, bargaining with the farmers, and organizing the harvest. Since the harvest sometimes occurred simultaneously, there was also a need to be in several places at the same time. To handle these skills and needs, often several people joined together and operated as a tebasan buyer group. Two-thirds of the interviewed buyers in Rowosari were the head of a group ranging from two to six persons with an average of four in the tebasan

TABLE 11.—TEBASAN BUYERS' RICE CROP PURCHASING OPERATIONS IN THE WET SEASON 1972/73*

	Rowosari Desa	Banyutowo Desa
Average number of villages where crop purchased	5.8	3.0
Average number of farmers selling crop	37	18
Percentage of farmers from penebas' village	25	55
Average size of crop purchased	18.3	11.8
Pelita variety		
Percentage purchasing	50	0
Average area (*hectares*)[a]	.5	–
IR varieties		
Percentage purchasing	100	0
Average area (*hectares*)[a]	8.2	–
C4-63 variety		
Percentage purchasing	67	100
Average area (*hectares*)[a]	7.1	11.8
National improved varieties		
Percentage purchasing	100	0
Average area (*hectares*)[a]	4.7	–
Local varieties		
Percentage purchasing	33	0
Average area (*hectares*)[a]	1.0	–
Number tebasan buyer groups interviewed	6	3

* Data from interviews with the penebas in each desa.
[a] Excluding penebas buyers who did not purchase this variety.

group. The others in Rowosari and all in Banyutowo who operated independently employed two or three assistants.

The size of operations of these buyers varied extensively. Some purchased on a very small scale and others bought relatively large areas of rice crops. In Rowosari the largest tebasan buyer operation was 50 hectares of purchased rice crops in the wet season 1972/73 while the smallest was only 2.1 hectares. The difference in size was not as great in Banyutowo, which varied from 1.5 hectares to 30.5 hectares of rice. The average sizes of operation in the two villages were 18.3 hectares and 11.8 hectares respectively (Table 11).

There was a large difference in the rice varieties purchased by the buyers in the two villages. In Banyutowo they purchased only the C4-63 variety—which was created at the University of the Philippines College of Agriculture. However, in Rowosari the penebas buyers purchased all of the possible varieties. Their most frequent purchase was the IR rice crop, which they all bought, and the average size was 8.2 hectares (Table 12). The range was .87 to 25.0 hectares of IR. Although only introduced in the last season, one-half of the Rowosari tebasan buyers bought an average of .5 hectares of *pelita* varieties. The next most widely purchased variety was C4-63, which was bought by two-thirds of the interviewed penebas in Rowosari. The average size was 7.1 hectares for those who bought this variety. All of the Rowosari penebas purchased some national improved rice varieties, but the average was 4.7 hectares (Table 11). A few also bought local rice varieties.

TABLE 12.—PERCENTAGE OF SAMPLE FARMERS IN KENDAL AND PEMALANG KABUPATENS USING ANI-ANI AND SICKLES TO HARVEST IN DRY SEASON 1972 AND WET SEASON 1972/73*

	Tool used			
	Ani-ani		Sickle	
	Dry season 1972	Wet season 1972/73	Dry season 1972	Wet season 1972/73
Kendal[a]				
Rowosari	100	60	7.7	16.7
Banyutowo	100	41.4	7.4	34.5
Pemalang				
Serang	96.4	[b]	0.0	[b]
Wanarata	100	[b]	0.0	[b]

* Data from sample farmers interviewed.

[a] Percentages do not add up to 100 because some sold to a penebas and others used the sickle for C4 and the ani-ani for local varieties.

[b] Sample farmers in Pemalang Kabupaten were not interviewed during or after the wet season 1972/73.

By far the most widely purchased varieties in the two villages by these penebas were the new high-yielding varieties of C4-63, IR, and *pelita*. This amounted to 79 percent of all the rice purchased by these tebasan buyers in the two villages, an indication of the impact of the high-yielding varieties on the spread of this tebasan system. To further substantiate this observation, these interviewed buyers were asked which variety they preferred. In Rowosari, 100 percent stated IR and 50 percent also mentioned C4-63 as their preferred varieties. In Banyutowo, 67 percent preferred C4-63. Only one person in Banyutowo stated national improved as his preference and none mentioned local rice varieties in either village.

All of the buyers stated their reasons for liking the IR varieties were the high yields and relative ease in accurately estimating the crops' yields. Rather frequently in the villages they mentioned that it was difficult to estimate the yields of the local varieties. Part of the reason was the frequent lodging that occurred with the local varieties which supposedly did not happen with the HYV's. One of the six buyers in Rowosari also mentioned that being able to use a sickle was a reason for his preferring IR. The preference for C4 was not as clear cut. One-half of the Rowosari and two-thirds of the Banyutowo buyers stated the high yields and estimation accuracy as reasons. One-sixth and two-thirds, respectively, stated being able to use a sickle was important. Two-thirds of the tebasan buyers in Banyutowo also stressed that paying the harvesters in money and being able to thresh in the field were also reasons for preferring C4-63.

One of the main features of tebasan is the purchase of a rice field a few days to one week before the rice harvest. Usually a token payment will be made when the farmer agrees to sell for a specified price. Two-thirds of the Rowosari tebasan buyers and all of the Banyutowo buyers made a down payment from two to eight days before the harvest. Only one-third in Rowosari and none in the other village paid at the harvest time. The main payments were made on an average of six days and eleven days, respectively, in the two villages after the harvest. This allowed enough time for the tebasan buyers to sell the harvested rice and then

pay the farmers. This delayed payment was the main reason why capital was not a major consideration in the tebasan buying system.

Another benefit to the penebas was being able to pay the harvesters a fixed sum of money. In a period of high and increasing rice prices, paying a fixed amount in money to the harvesters ensures that the penebas will gain even more from this rice purchasing method. This desire to pay in money rather than in kind during periods of high prices was even reported during the boom year of 1922 (*13*, p. 19).

SICKLES AND SCALES

Just two rice seasons ago only these penebas buyers could have the harvesters use the sickle, pay in money, and limit those participating in the harvest. Apparently the rural people felt it was acceptable for a penebas buyer to do these things, but not acceptable for the ordinary farmers. Even these penebas buyers, if they owned rice fields, could not do these things in their own fields. They had to sell their own crops to other penebas who then made these changes in their role as a penebas. These changes were acceptable if done by the penebas, who the villagers thought had to make a profit, but not acceptable for the farmers who were part of the village society and bound by local traditions concerning bawon, shared-poverty, and by social obligations to the community. In fact, it could be argued that in a situation where there are many landless laborers and the old traditions of bawon are still valid, the harvesters exploit the owners of the rice fields. They enforce sharing of the harvest and frequently get much more than the traditional harvest share. Actually, an individual harvester receives very little rice from a harvest, which encourages him to try and get more than custom dictates.

In the last season this restriction on the farmers was partly removed in the two villages in Kendal Kabupaten. Some of the farmers now can also harvest their high-yielding rice varieties with the sickle.[14] A change, which began two years ago when the penebas used sickles, then gained acceptance until the ordinary farmers used them in the last season. Why did this happen so rapidly? Partly, it was due to the recent widespread planting of the C4-63 high-yielding variety that was only widely planted in the wet season 1972/73 in Banyutowo, the village where most of the farmers had made this change to sickles. The villagers realized that this variety shattered too easily to be harvested in the traditional way and grains dropped off if they transported it on their carrying poles. The C4 had to be cut with sickles, threshed in the fields, and sacked by the harvesters before carrying it to the mill or the owner's house. In areas where the ani-ani was used to harvest C4, it was cut and the entire rice stalk put into a sack, resulting in a great deal of weight for the people to carry out of the field to the crop owner's house. In Banyutowo one-third of the sample farmers who did not sell to a penebas used a sickle to harvest their rice (Table 12).

In Banyutowo sickles were limited to only the C4 rice crop but were used to harvest the IR, C4, *pelita*, and *Dewi Ratih* (National Improved) varieties in

[14] In June 1974 a complete enumeration census was carried out in Banyutowo Desa. Although the data has not been completely analyzed at the time of writing this paper, it appears that the number of farmers who used sickles had greatly increased, and some even limited the number of harvesters.

TABLE 13.—THE PENEBAS' LABORERS AND THEIR USE OF ANI-ANI AND SICKLE TO HARVEST CROPS, WET SEASON 1972/73*

Item	Ani-ani		Sickle	
	Rowosari	Banyutowo	Rowosari	Banyutowo
Average amount of labor per harvest (workdays/ha.)	153	150	55	92
Penebas' harvesters wages				
Share (*percent*)	9.0	8.3		
Wages (*rp/qt*)			300	250
Average amount harvested (*kg. gabah/harvest*)[a]	25.5	27.6	73.0	57.0
Average time to harvest (*hours/person/harvest*)	3.0	6.0	5	6

* Data from the interviews of the penebas in the two villages.

[a] A conversion factor of .69 was used to convert the paddy that was harvested with the ani-ani to gabah.

Rowosari. Only in five of the twenty sample villages in our research on Java did a substantial number (24 to 97 percent) of the sample farmers use sickles to harvest rice. Of these five villages, two were the villages in Kendal Kabupaten, and one was in an upland area with no over-population and inhabited by non-Javanese farmers.

The wage paid to the harvesters by the tebasan buyers depended on the tool used. If they cut the rice with the ani-ani, almost always they were paid a share (bawon) in kind. To divide the shares between the harvester and the buyer, the buyers used only visual inspection of the rice bundles collected by each harvester. If they used the sickle, harvesters were usually paid in money based on the amount each person harvested. Instead of visual inspection, the amount was weighed with a scale, eliminating the opportunity for the harvester to increase his share.

The tebasan buyers gave the harvesters in Rowosari a 9 percent share of the rice they harvested on the condition that they use the ani-ani (Table 13). This 9 percent was divided on the basis of one bundle of paddy for the harvester and 10 bundles for the tebasan buyer. The Banyutowo shares were 1 and 12, which was an 8.3 percent share of the harvest. If the harvesters used sickles, they received 300 rupiahs per quintal of the gabah they harvested, and 250 rupiahs per quintal in Banyutowo (Table 13).

According to the interviewed penebas, those laborers who used an ani-ani harvested an average of 25.5 kilograms of rough rice per harvest in Rowosari and 27.6 kilograms per harvest in Banyutowo (Table 13). If they were able to continue working, they could harvest more but usually a penebas does not have a sufficient number of rice fields for them to work on for a long period. The average length of time to harvest was three hours in Rowosari and six hours in Banyutowo. Much of this time was used in transporting the paddy from the field to the buyer's house, waiting for the buyer to return from the field, and dividing the paddy bundles between the penebas buyer and the harvesters.

If the harvesters used a sickle they could cut an average of 73 kilograms of gabah rice per harvest on the average in Rowosari and 57 kilograms of gabah

rice per harvest in Banyutowo. The time required was five hours and six hours, respectively, in the villages. Part of this time was spent threshing the paddy in the field on mats and putting it in sacks for transport. After they carried the rice sacks to the penebas' house or the rice mill, the harvesters waited for him to weigh the sacks and pay them. Harvesters who used the sickle must provide their own sickles, threshing mats, and rice sacks. Laborers who used sickles harvest 186 percent in Rowosari and 107 percent in Banyutowo more than if they used the ani-ani.

These harvest changes by the farmers were not restricted to these two villages. In the 13 desas in Kendal Kecamatan and 15 desas in Weleri Kecamatan, all the village leaders interviewed mentioned that penebas in their villages used sickles. Furthermore, 85 percent of the leaders in Kendal and 80 percent in Weleri stated that some farmers also were using sickles on the HYV's.

ADOPTION OF AN INNOVATION

The sickles were first introduced into Rowosari by a penebas informant who described how he was able to use the sickles in his tebasan harvest. He first used sickles in his harvest in the dry season of 1972, a year later than he used it outside of his own village. The first time he had seen a sickle used to harvest rice was in 1969, when he witnessed a demonstration of harvesting the IR variety with sickles about 30 kilometers from his own village: a farmer along with several government officials was demonstrating the use of the sickles. He saw how to use the tool, how to thresh the rice, and how to weigh the rice with a scale.

While observing this trial the penebas realized that this system was more profitable than the ani-ani if used to harvest the high yielding varieties. But at that time there was not very much IR rice grown in his own village and there were not yet any laborers in this village who knew how to harvest with a sickle. According to the penebas, the use of the sickles began in the villages nearby where the demonstration was carried out. Since that time, the use of sickles spread primarily to the roadside villages.

In the dry season of 1972 he decided to try harvesting his tebasan rice crops with a sickle. For this purpose he first used laborers from another village where sickles were already common. Based on this experience he was convinced that the sickle was more profitable than the ani-ani, because the price of the rough rice that had been threshed was higher than the paddy rice price, the laborers were paid in money, fewer laborers were employed, and they were easier to manage.

CONCLUSION

The many landless laborers and the increased number of part-time laborers with very small farms who are unable to find sufficient employment opportunities for subsistence may well cause social tension in the rural areas of Java to increase significantly. One of the factors that is and will be influencing this tension is tebasan of rice which is gaining in popularity among the rice farmers, middlemen, and village leaders. These people are able to increase their incomes by using tebasan to reduce the cost of harvesting rice. Tebasan reduces the work opportunities of the part-time and full-time farm laborers. Although it cannot be

definitely proven, there appears to be a significant relationship between the spread of the high yielding rice varieties and the expansion of tebasan.

The emergence of tebasan is only one of several indications that the ability of Javanese rice culture to always absorb an increasing population is no longer true.[15] Obviously, tebasan is an attempt by those who have rice land to reduce the involuted nature of agriculture in Java.

As tebasan expands, the associated switch by the laborer-clients from the farmer-patrons to the penebas-patrons will accelerate. Not all of these laborers can hope to find a penebas-patron because of their efforts to reduce labor-use in the rice harvest. Consequently, this may create a strong social division among those landless laborers who have a patron and those who have none. In any disputes about tebasan, the penebas will be able to call on the services of their laborer-clients to protect their position in the villages. Friction between these two groups of laborers may be inevitable as the penebas try to exploit this schism in their ranks. Not only will there be more social tension between the penebas, farmers, and village leaders on one side and the landless and part-time laborers on the other side, but also within the ranks of these laborers which will reduce even further their bargaining power.

The adoption of the high-yielding rice varieties has not helped solve the problems of unemployment and income distribution in Java. Rather, the HYV's have probably exacerbated these problems. Associated with the HYV's in certain areas in Java are the tebasan system and the use of sickles in the rice harvest. Both reduce employment and increase the incomes of the farmers, penebas, and a limited and selected group of harvesters.

Solutions other than intervention by government officials must be found that will provide rural employment to the farm laborers so that Java's rice farmers can continue to increase their incomes from planting the HYV's. One possibility for expanded employment is increasing the level of intensity in agriculture by intercropping and more crops per year per farm (*2*, p. 15). In the Kendal sample villages, many of the farmers are able to have three rice crops in thirteen months. Others will plant rice two times and one secondary crop in a year. However, these two villages are rather unique because they have good, year round, irrigation facilities. To help solve the unemployment problem one of the most useful activities would be small-scale irrigation improvement. The use of tube wells could promote more agricultural output per year. Whenever the villagers are asked what is their greatest need, they always mention first the improvement of their village irrigation.

Perhaps there are possibilities for increased employment in industry in the cities of Java, but there is very little, if any, evidence that the rural unemployed

[15] Some evidence suggests that tebasan appears and disappears depending on outside forces. According to Benjamin White (*25*, p. 1): "In the village I studied, tebasan in 1973 was quite uncommon, but all the farmers and harvesters could remember times when it had been more common; when bawons had decreased to 1/16 or 1/20 although now they had almost returned to their former rate of 1/6, 1/8, and 1/10. This experience from one village makes me think it very important to consider the factors which might lead to the decline of tebasan and an improvement in harvest wages, just as much as the factors leading to the spread of tebasan in the first place." What is most needed is in-depth research on the factors that cause these institutional changes because of the possibility that other changes will occur in response to these or different factors.

are being soaked up by work opportunities in the cities, at least on a scale that will have an impact at the farm level.

The possibility of promoting rural industry to help solve rural unemployment may have better prospects. In one of the Survey's sample villages in East Java, there are more than twenty small workshops producing sickles, hoes, and other simple agricultural equipment. Other villages have handicraft industries, e.g. one of the sample villages produces Javanese gamelan (band) instruments and wayang puppets.

Along the coasts the prospects of a blue revolution are very exciting. The technology already exists for greatly expanded fish and shrimp production in the very labor intensive brackish water ponds. The future problem for these ponds will be avoiding insecticide pollution from the rice fields. Any program to upgrade these brackish water ponds will increase employment.

CITATIONS

1 Rukasah Adiratma, "Income of Rice Farmers and Their Marketable Surplus of Rice in Karawang District, West Java" (unpub. Ph.D. diss., Bogor Agricultural Univ., 1970).

2 A. T. Birowo, "Aspek Kesempatan Kerja dalam pembangunan Pertanian di Pedesaan" [Aspects of Work Opportunities in the Agricultural Development of Rural Villages], *Prisma* (Jakarta), Aug. 1973.

3 W. L. Collier, Soentoro, Gunawan Wiradi, and Makali, "Tebasan, HYV's, and Rural Change: An Example in Java" (unpub. notes, Feb. 1974).

4 W. L. Collier, Gunawan Wiradi, and Soentoro, "Recent Changes in Rice Harvesting Methods," *Bull. Indonesian Econ. Studies* (Canberra), July 1973.

5 W. L. Collier, Gunawan Wiradi, Soentoro, and Sajogyo, "Villagers' Employment, Sources of Income, Use of High-Yielding Varieties, and Farm Laborers in the Major Rice Producing Regions of Indonesia" (Agro Econ. Survey, Research Notes No. 11, Bogor, June 1972).

6 H. Ten Dam, "Cooperation and Social Structure in the Village of Chibodas," in *Indonesian Economics, The Concept of Dualism in Theory and Practice*, by J. H. Boeke et al. (The Hague, 1966).

7 Herbert Feith, "Growth and Development in Asia: Some Criticism of Conventional Approaches." Paper presented at the Asian Leadership Development Center of the World Student Christian Federation, Tosanzo, Japan, Oct. 1972.

8 R. W. Franke, "The Green Revolution in a Javanese Village" (unpub. Ph.D. diss., Harvard Univ., June 1972).

9 Clifford Geertz, *Agricultural Involution; the Process of Ecological Change in Indonesia* (Berkeley, Calif., 1963).

10 J. van Gelderen. "The Economics of the Tropical Economy," in *Indonesian Economics, The Concept of Dualism in Theory and Practice*, by J. H. Boeke et al. (The Hague, 1966).

11 Gerrit Huizer, *Peasant Mobilisation and Land Reform in Indonesia* (Inst. Soc. Studies, Occas. Papers, The Hague, 1972).

12 R. R. Jay, *Javanese Villagers* (Cambridge, Mass., 1969).

13 G. H. van der Kolff, *The Historical Development of the Labor Relationships in a Remote Corner of Java as They Apply to the Cultivation of Rice* (Inst. Pacific Relations, New York, 1936).

14 J. M. van der Kroef, "Land Tenure and Social Structure in Rural Java," *Rur. Sociol.*, Dec. 1960.

15 J. C. Scott, "The Erosion of Patron-Client Bonds and Social Change in Rural Southeast Asia," *J. Asian Studies*, Nov. 1972.

16 J. C. Scott and Ben Kerkvliet, "The Politics of Survival: Peasant Response to 'Progress' in Southeast Asia," *J. Southeast Asian Studies* (Kyoto) Sept. 1973.

17 Herman Soewardi, "Respons Masyarakat Desa Terhadap Modernasasi Produksi Pertanian, Terutama Padi" [Village Society's Response Toward the Modernizations of Agricultural Production, Especially Rice] (unpub. Ph.D. diss., Pajajaran Univ., 1972).

18 ———, personal discussion, Pajararan Univ., Bandung, Oct. 20, 1973.

19 Widya Utami, "Tebasan, Suatu Gejala Sosial Ekonomis" ["Tebasan, One Social-Economic System"] (Tjakrawala, Satya Wacana Univ., Salatiga, Mar./Apr. 1972, mimeo.).

20 Widya Utami and John Ihalauw, "Changes in Rice Farming in Selected Areas of Asia—A Study Conducted in Klaten Regency, Central Java, Dry Season 1971 and Rainy Season 1971/1972" (Satya Wacana Univ., Res. Inst. Soc. Sci., Salatiga, 1972, mimeo.).

21 ———, "Farm Size: Its Consequences on Production, Land Tenure, Marketing, and Social Relationships in Klaten Regency, Central Java" (Satya Wacana Univ., Res. Inst. Soc. Sci., Salatiga, 1972, mimeo.).

22 ———; "Some Consequences of Small Farm Size," *Bull. Indonesian Econ. Studies* (Canberra), July 1973.

23 W. F. Wertheim and The Siauw Giap, "Social Change in Java, 1900–1930," *Pacific Affairs*, Fall 1962.

24 Benjamin White, "The Economic Importance of Children in a Javanese Village" (Bogor, 1972, mimeo.).

25 ———, "Notes on a Possible Framework for the Study of Tebasan and Other Recent Changes Which have Serious Social Implications in Javanese Rice Farming" (Bogor, 1973, mimeo.).