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TOO BUSY TO FARM: UNDER-UTILISATION OF FARM LAND IN CENTRAL JAVA

David A Preston

School of Geography
University of Leeds
Leeds LS2 9JT

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ABSTRACT
In two hamlets (dukuh) in south central Java, a series of situations have been identified in which some farmland is now being used less intensively than other, similar land. In an area of such high population density this appears a paradox. Although a variety of explanations exist for the less intensive use of farmland, where household livelihood strategies are highly diversified - as in central Java - and where a wide range of non-farming work exists, the intensity of use of farmland may be declining for some households.

This paper arises out of recent field work in two villages in south-central Java where evidence was found of a reduction in the intensity of use of certain kinds of farmland in an area well-known for its high population density. Explanations of this are sought in an analysis of local socio-economic contexts and in villagers' own explanations of change. In villages where farming is only a part of complex household livelihood strategies and where a range of opportunities exist for a more adequate living to be made other than from the land, it becomes increasingly necessary and attractive for some households to use some land less than before. Furthermore, the increased intensity of use of some land may lead to other land being less intensively used.

1. Land scarcity and intensification

When land resources remain static and population increases, it is

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1.Senior Lecturer in Geography, University of Leeds. The research on which this paper is based was carried out during the tenure of a Senior Research Fellowship in the Department of Human Geography at the Australian National University and in collaboration with staff of the Faculty of Geography, Gadjah Mada University. The research was authorised through the good offices of the Indonesian Institute of Sciences (LIPI).

reasonable to expect that production from the land will be intensified, whatever the degree of inequality in the distribution of land resources among households [Boserup 1965]. The thrust of Geertz's interpretation of Javanese agrarian history after 1830 was that massive population increase had been accommodated by a modification of the existing systems of production to ensure an increase in agricultural output from the land resources available - particularly from the ricefields [Geertz 1966, 1984]. Production was increased by means of the extension of irrigation and a more intensive use of lowland areas. Even so, there is now ample evidence to suggest that, by the end of the 19th century, this intensification was also accompanied by the use of a wider range of ecological zones - farming expanded into the uplands - and by households engaging in activities besides farming [Fernando 1986]. Further important changes in rural Java took place after the establishment of the New Order government in 1965. Since the 1970s the introduction of new high-yielding varieties of rice, cultivated with the aid of agro-chemicals, has permitted considerable increases in production from irrigated ricefields. One of the few studies of detailed changes in land use in Java, over a period 1917-1969 [Sutanto et al 1979], identified a major loss of irrigated ricefields as a consequence of shortage of water probably resulting from the deforestation of the upper slopes of the river basins and a less important increase in the area of housegardens. My own work in Kulon Progo Regency (Yogyakarta Special Region [DIY]) has confirmed that the only noticeable change in land use during the period 1934-1981 was the expansion of the area of houses and gardens onto unirrigated seasonally-cultivated land and that the area of ricefields had changed little over this 47 year period [Preston 1987]. This is understandable in a period when the total population of Kulon Progo increased by over 30 per cent.

In certain circumstances, changing farming systems have led to the intensification of production. The process of commoditisation of production, whereby goods were produced either for independent sale or to provide rent to landlords or colonial masters resulted

in the intensification of production of those crops needed for export, often at the expense of others. In many parts of the Third World it is this that has led to the best, most productive land being appropriated for growing cash crops and small-scale farming was restricted to the poorer and more steeply-sloping land [Odell and Preston 1978, Posner and MacPherson 1982, Blaikie 1981]. A consequence of the extension of farming to poorer land is frequently that the land becomes impoverished, production decreases and soil erosion is accelerated [Blaikie & Brookfield 1987]. In the latter circumstances abandonment of land or modification of farming systems is likely, in particular when the volume and value of production is not held to justify the investment of labour in cultivation.

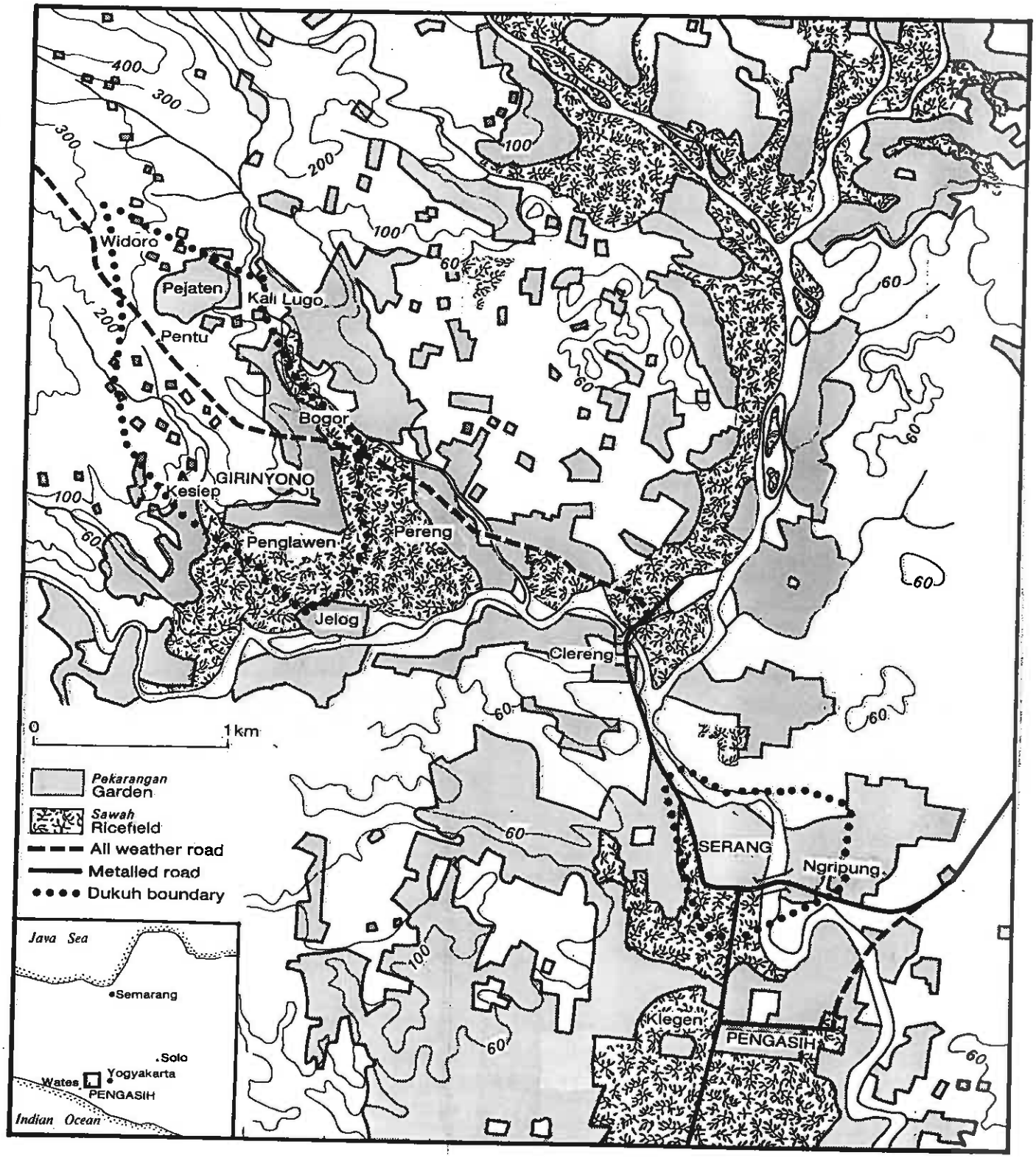
In other circumstances land may no longer be cultivated, not necessarily because it is eroded but rather because alternative means of support exist, such as remittances from overseas migrants in the case of the Caribbean [Crane 1971]. I have described scattered instances of this sort of land use change in Ecuador but there is little mention of such situations in village-level ethnographies or in migration studies [Preston 1974, 1981]. A recent series of village studies, in highland Ecuador, in the Cordillera of Luzon, Philippines and in Java, Indonesia, has brought to light a range of situations in which some fertile land is not used as intensively as other, similar land [Preston 1986a, 1986b, 1987]. In Peninsula Malaysia the phenomenon of idle land in areas of rice production has been widely recognised. It has been examined in a recent paper [Zulkifly Hj. Mustapha and Shaik Mohd Noor Alam 1985]. Malaysian government statistics suggest that the proportion of rice land unused for at least three consecutive years in the major rice-growing states varied from 3.5 per cent in Kedah to 31 per cent in Penang. The issue has been examined in a government report and it is suggested that poor returns from farming and the existence of other, more attractive economic opportunities are the main causes of such land being left idle [Malaysia 1982]. Further evidence that productive farmland may be under-utilised in cer-

tain circumstances comes from another fertile and densely-peopled part of Central Java. Schweizer's recent account of a part of Klaten (N E of Yogyakarta) includes the observation that house-gardens (averaging 600 m^2 per household) are not intensively used because there are many other ways of earning and, for the same reason, little use is made of field margins for growing crops such as taro (Schweizer 1987, 47 fn). Discussion with colleagues with recent field experience in other parts of Indonesia, west Africa, the Caribbean and India suggests that this phenomenon is widespread. While there is little to suggest that this is a change affecting large areas of land either regionally or nationally, we may well be witnessing an early stage in the development of what might become a major element of rural land use change. Since Java is an island with particularly high population densities and intensive farming, the presentation of two specific, village-level situations in which farming in some areas is less intensive than formerly may provide some evidence about the circumstances that are associated with the phenomenon.

In this paper I shall describe the organisation of the domestic economy in two hamlets with different resource endowments. Three types of land use are examined in each of which there is evidence of some households making less intensive use of the land than others. The extent to which this justifies the conclusion that there is a trend towards less intensive land use is examined and, in conclusion, a series of reasons are put forward to suggest why, at a household level, farmland is being under-utilised.

2. Household livelihoods in Kulon Progo hamlets

Two hamlets (dukuh) in a single kelurahan on the south-western edge of the lowlands of central Java, located only 3-5 kms. from Wates, the Regency capital, were studied during a 10-week period in 1986 (Figure 1). A complete census was conducted together with a detailed study of selected households [Preston 1988]. The two hamlets lie on the eastern edge of the lowlands to the west of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Penglawen
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Jelog
Clereng
SERANG
Ngripung
Klegen
PENGASIH
0
1 km
Pekarangan
Garden
Sawah
Ricefield
All weather road
Metalled road
Dukuh boundary
Java Sea
Semarang
Solo
Yogyakarta
Wates
PENGASIH
Indian Ocean

Figure 1

the Progo river. One of the hamlets - Serang - lies astride the Serang river and its land is virtually flat and comprises either well-irrigated ricefields or densely-wooded gardens. The other hamlet - Girinyono - lies three kilometres away, beyond the small market centre of Clereng along a bumpy, stony road. It lies at the foot of the Menoreh Mountains and its land is divided between the hillsides which rise some 140 m. above the river valley and the gently-sloping terraced margins of the valley.
Land in Serang (140 households) is divided between housegardens (78 per cent of cultivable land) and irrigated ricefields (22 per cent). Girinyono (201 households) has only a small part (16 per cent) of its land in seasonally irrigated ricefields in the valley; much of the village is on the hillside which includes an area of rain-fed hillside farmland (21 per cent) as well as gardens and houseplots (62 per cent).

Household livelihood strategies in the two hamlets are different, which reflects the different access to land and non-farming employment in the two communities. The composition of household livelihoods is described in Table 1. The data were collected by interviews of members of all households in the two hamlets in which informants were asked to categorise the order of importance of each of six classes of work for each household member over 15 years of age[1].

TABLE 1

Household livelihood strategies

Class of work	Serang	Girinyono
Household	31.2	27.0
Business	6.1	7.9
Craft	4.5	5.8
Blue-collar	33.3	22.4
Farming	18.5	35.7
White-collar	6.5	1.2
Other	0.5	0.1
	100.0	100.0

The average area of land per household available for cultivation in the two hamlets is just over half a hectare but 43 per cent of households in Serang have no access to land other than their housegarden, while in Girinyono only 8 per cent have no access to land. Three crops of rice are produced on the irrigated ricefields of Serang but only a single crop of rice can be grown in Girinyono because water reaches the fields only during the rainy season. A single crop of maize, soyabeans or peanuts is grown during the dry season. A variety of annual crops - cassava, maize, peanuts, soyabeans, rice and sweet potatoes - is grown on the hillside land, and trees are grown on field margins and in housegardens for both timber and fruit. The housegardens are used to provide a wide range of both annual and perennial plants whose produce is both sold and consumed.

Farming is important to most households in Girinyono - only 11 per cent of men did not identify farming as an element in their contribution to their household livelihood. In Serang farming was

much less important and over 40 per cent of men did not place farming first among their contributions to the household livelihood; indeed, 24 per cent of households did not include farming at all in their livelihood strategy. Many people also work for wages elsewhere in the hamlet; in farming, helping with domestic work, de-husking coconuts, digging ponds. cutting wood, breaking stones etc. In addition some people work in nearby towns or villages, both as labourers and as public servants and teachers. In Serang 30 individuals are teachers or office-workers in the surrounding areas. Craft work includes making screens, coconut fibre mats or carpentry, particularly during periods when less field work is necessary. Business activity employs women and some men in making soyabean cakes (tempe) and other snacks, buying and selling local produce from livestock to banana leaves and running a small store.

3. Instances of less intensive land use

In order to begin to understand the context in which farming may take a less important role in what appears to be an agrarian community, the structure of total household livelihood strategies should be appreciated and the foregoing section emphasises the wide variety of strands that make up such strategies. We referred earlier to the diversity of nineteenth century household strategies; contemporary accounts likewise stress the multiplicity of ways of getting by and one suggests that diversity has increased in recent decades (Wiradi and Manning 1984, 4). In this section it is suggested that in each of the three principal categories of land use (garden, ricefield and hillside) less intensive use may occur.

Housegarden use: The land close to the house is used intensively by many Javanese households. From it comes firewood, wood for construction and even for charcoal making, tree fruit such as coconuts, jackfruit and durian, various tubers from ground crops such as cassava, bananas and a plethora of low plants provide

leaves for cooking and for medicinal purposes. Stoler and others have calculated that the value of production per unit of time spent on cultivation is often higher for gardens than for rainfed land (Stoler 1978). Gardens are particularly important for subsistence production - producing something edible or at least usable at most times of the year - but Stoler has shown that, while low-income households used their gardens intensively to produce low-risk subsistence crops, high-income households used their gardens to produce commercial crops that needed less labour.

One female-headed household owned a housegarden of about 1000 square metres and an irrigated ricefield of about the same size. The household comprised a widow aged 40 with four children: an 18 year-old girl now in high school, a 16 year-old girl now working in a restaurant in Yogyakarta, a 14 year-old son and a 5 year-old daughter. The ricefield was farmed directly by the head of household using the labour resources of her own household and the reciprocal labour of others; it produced three crops of rice a year. Part of the housegarden was not farmed so intensively. The area behind the house had good soil and was not unduly shaded by large trees. The margins contained cassava and maize as well as papaya, mango, ten coconut trees some aubergines, **duwet** (Java plum, Eugenia cumini) and **pare** (Balsam pear, momordica charantia). The central area, some 100 m^2, had been planted with chili peppers; it was poorly fenced and much of the crop had been destroyed by a neighbour's chickens. It clearly produced little in comparison with the rest of the household land. The garden area in front of the house, on thinner soil over a limestone outcrop, was sharecropped. Although the head of household was formerly a coconut merchant in the local market, her working capital was recently used to pay for a school visit to Jakarta for her elder daughter. She has subsequently earned money regularly (about 4500 Rp. weekly) breaking up stones for a local contractor in the adjacent river course. Her explanation for the lack of care for her chili peppers emphasised the almost daily need for cash, for items of food and for schooling costs which

could not be met by selling garden produce or rice. She just did not have enough time to tend the crop sufficiently. She could not survive the wait for a cash crop to be harvested and sold, and earning the cash necessary for daily living took too much time to enable her to cultivate all her garden intensively. Even before her husband died, the garden was seldom cultivated intensively. He was away for long periods working as a labourer, her children were young and demanded constant attention and her commercial activities were also time-consuming.

Observation of this particular garden belonging to a household that was being intensively interviewed led to questions being asked of two groups of villagers and a number of individuals to see if they perceived less use being made of some gardens than others. Their view was that the gardens of the households one or more of whose members worked for others for money, often away from the village, were used in a less labour-intensive way, and had more trees, simply because the household had less time available for working in the garden. Coconut palms produce marketable nuts during several months of the year and demand little maintenance. Coconuts are frequently sold on the tree and the owner of the tree thus need spend no time on harvesting.

Ricefields: Embanked fields for wet rice cultivation, watered from irrigation channels, such as those in Serang, were cultivated continuously. When ricefields are rainfed, or irrigated from an unreliable source, only a single crop of rice is planted followed by a dry season crop of soyabeans or maize. This cropping system is followed in Girinyono where ricefields are watered by a local irrigation system that only distributes sufficient water for rice cultivation during the wet season.

In late 1986, an area to the south of Girinyono had been left fallow during the dry season. Adjacent, physically similar fields belonging to the nearby hamlet of Jelog had been planted with dry season crops. Water buffalo from Jelog pastured freely on the unused fallow plots belonging to Girinyono. Most of the

fallow plots belonged to households from Kali Lugu, about 1700 metres away on the hillsides in the northern part of Girinyono. The explanations for this decision from those with land that had been fallowed and from villagers from others parts of Girinyono coincided. The collective decision not to plant a dry season crop was reached because (i) dry season crops had sometimes failed as a result of drought, and the risk of planting and then having nothing to harvest was too great, (ii) people from Jelog were busy in their gardens, where a number of people have planted cloves and other trees suggested by the government, and (iii) the fields were distant from the homes in Kali Lugu. A further contributory factor mentioned by one informant was that a number of people from Kali Lugo had decided to plant on hillside land claimed by the government for forestry and they therefore had more land to farm than usual.

Hillside fields: The hillside land of Girinyono was probably well-forested early in the 19th century but, during the period of the Cultivation System[2] (**cultuurstelsel**), oral tradition says that coffee was planted on the hillsides above the area cultivated by the villagers for their food crops. By the beginning of the present century coffee had ceased to be planted and the land was returned to the villagers. Some of the hillside terraces apparently date from this time while others have been constructed recently. The hillsides are used for a variety of annual crops - dry rice, cassava, maize, peanuts, soyabeans and sweet potatoes - but trees also grow in and on the margins of the hillside land, both for firewood, for wood for building and for their fruit.

In Pejaten and Widoro, an area of well-preserved and adequately maintained terraced hillsides, the fields of one of my principal informants and those of his father and brother are planted with annual crops, such as cassava, in alternate years, whereas previously they had been cultivated annually. The less intensive cultivation was explained by my informant saying that the fields were some distance from his house (about 500 metres) and that he was busy elsewhere. He was the leader of a local farmers' group.

His father suggested that this new practice was the result of shortage of labour; people were busy these days earning money and organising meetings so that there was less time for farming.

4. Establishing trends in land use

A series of instances of less intensive use of land in two hamlets provides only circumstantial evidence that such changes are occurring. When set in a broader context of changes in employment and the increasing preference, at a village level, for work other than in farming the probability of there being a trend towards less intensive land uses is increased.

Evidence of changes in land use since the 1930s from maps and aerial photographs shows that the only noticeable overall change in land use in this area is the encroachment of houses and their gardens on to ricefields and dry-farmed land. There was no evidence of any decrease in the area of cultivated land. The decrease in intensity of use of farmed land is probably of recent origin and changes in the cropping cycle on unirrigated land and different use of gardens would be impossible to detect on aerial photographs. Evidence related to changes in land use also comes from both macro and micro studies. Manning has suggested that, since the late 1970s, there has been an increase in the importance of high-income activities (particularly for men) outside the village, facilitated by improved communications and Hart, based on village-level work in the late 1970s, has come to similar conclusions (Manning 1987, Hart op. cit.). Moreover Manning also shows that there has been a 31 per cent decrease in labour inputs into rice cultivation over the past 100 years in Java, most notably in field preparation (Manning op. cit. Table 9). This corresponds exactly with the views of informants in a rice-producing area of highland Luzon (Preston 1986c).

A tendency to work less intensively in farming in comparison with other forms of work also coincides with the widespread preference

of young people for work other than on the land. This is as common in Java as elsewhere in the Third World where mass schooling has facilitated the diffusion of a more urban-biased set of cultural values. This is reflected in the great difference in exposure to schooling by different age groups in the two hamlets. The 18-25 age group had an average of 7.1 and 8.8 years of school in Girinyono and Serang respectively, while the 36-50 years old group had 3.2 and 5.2 years and the over 51 years old had 1.0 and 1.8 years. Many older informants comment on young people's preference for non-agricultural work.

If there are readily understandable contextual reasons for less intensive land use, alternative explanations for the situations that were observed should also be considered. In the hillside land some terraces are eroded and there is scattered evidence of considerable soil erosion. Soils are deep and the areas of obvious erosion are on hillsides that seem not to be intensively cultivated. While the Pejaten and Widoro examples of alternate year cropping could have been a response to soil erosion, the fields in question were not particularly subject to erosion, falling yields were not an important part of the reasons offered for alternate year fallowing and other farmers not far away still planted cassava annually.

Within the complex pattern of cultivation of annual and perennial plants in Javanese gardens a wide range of variations of practices exist. For poorer households, gardens will be used to provide food for household sustenance whenever there are no possibilities for earning money to satisfy immediate needs. A possible explanation of the widow's neglected chili crop is that it would probably have constituted only a small part of the total value of the goods harvested from the garden and, if the seed was cheap and speedily sown, there was the possibility of a worthwhile harvest the loss of which would not be critical to the domestic economy. For richer households the seeming low intensity of garden use may be more apparent than real, as more income-generating trees are planted so ground-level production under the

trees will fall, for lack of adequate light for the plants.

The absence of a dry season crop in the ricefields of Jelog may be explained as an exceptional occurrence, for no informant said that it had happened previously. The explanation of the event did, however, refer to a longer-term situation: more hillside land is available and there is more intensive garden cultivation. This suggests that the situation might recur, although not necessarily annually.

In this analysis there is continual comparison of specific and general situations. I argue that, although specific events may be random occurrences, if they have taken place in a number of households and if the explanation of these events has more general and widespread relevance, it is logical to accept that the series of situations in which less intensive use of different land types takes place may be part of a longer-term trend.

5. Household strategies and resource use

The explanation of land use decisions solely in terms of production in response to labour and capital inputs by cultivators is unsatisfactory. Decisions about jobs to be undertaken are usually made with reference to the household as a production unit and to the urgency of needs to be satisfied. Thus, a necessary farming job may be postponed if there is an immediately-available opportunity of earning cash elsewhere in the village. It is important, therefore, to consider land use in the context of total household livelihood strategies. In Java, this is particularly necessary because of the widespread and longstanding highly-diversified livelihood strategies pursued by many village households.

Farming is only one of several important elements of household work. In Serang it was less important than housework and labouring; in Girinyono, however, it was the most important element

(Table 1). Several detailed studies in Java have demonstrated, for a range of situations, the proportion of household activity that is devoted to farming. White's study of a village close to Serang and Girinyono showed that 41 per cent of all time spent on directly productive work was devoted to agriculture [White 1976, Table 6.2]. Hart, studying a rice-producing village in northern Java, found that 33 per cent of directly-productive household time was spent in farming [Hart 1986, Table 18]. Data collected in eight villages by the Agro-Economic Survey, analysed by Wiradi and Manning, showed a marked diversification of livelihoods and a recent increase in the importance of non-agricultural work but still a major part of household income came from farming or farm work, varying from 61 per cent for landless householders to 83 per cent for those with more than 0.5 ha. of ricefields [Wiradi & Manning 1984, Table V.4].

In these situations farming is competing with a range of other activities for the available time of household members. If other activities are more agreeable, remunerative or less onerous, farming may be given a lower priority, and take less time. Although the same crops can often be grown with less application of labour, land use will often change, and less labour-demanding uses will be made of available land and livestock. Farming may rarely meet the needs of some households, even if they do own land, as the case of the female-headed household in Serang illustrates. White has rightly emphasised the importance of the length of time between the performance of work and the returns from it in the choice of a particular activity and villagers in Kulon Progo several times stressed just this when explaining why one task was preferred to another [White 1976, 153]. Paid work is a crucial source of quick-return money to the poor who may thereby have little time to spend in farming. The better-off too, may see that their capital and entrepreneurial skill is better employed in non-farming enterprises. Indeed, several studies have suggested that the two categories of villagers who derive most from non-farm activities are those with no land and those with more than average land [Nibbering & Schrevel 1982,

Rietveld 1986, Mizumo 1985]. The degree of risk and the problem of timetabling competing demands is also important in the assignment of priority to different strands in the complex web of activities that make up a total household livelihood strategy.

In Serang and Girinyono the sexual division of labour is much as has been described in the literature on Central Java and excellently quantified by White (White, op. cit., Table 6.2). Men work in farming and animal care to a much greater extent than women; women do much of the work of childcare, housework and food preparation. Women do twice as much trading and over twice as much waged farm work as men. Men do most of the non-farm wage labour. Overall livelihood strategies showed variations according to the amount of land farmed: people in households with most land did less paid non-farm work but engaged in more commerce than those with little land. Commerce was also more important for households with most labour power and such households also were much more involved in outside work. The diversity of household livelihood strategies was not related to either the amount of farmland or the size of the domestic labour force.

It is argued that less intensive use of natural resources is a logical consequence of the increasing importance of work outside the village and outside farming. It is clear though, that a highly-diversified household livelihood strategy has long been commonplace in this part of Java. What is new is the ease of travel and the range of work available in towns and cities to people from rural hamlets. In the absence of baseline household data for the villages studied with which to compare my own data and to demonstrate change, the villagers' views of change are outlined. The two villages have different degrees of ease of access to urban centres. Serang is on a metalled road and has frequent mini-buses and horse carriages going to Wates, the nearest regional centre which is on a major highway and the railway line. Girinyono people envy the increased centrality of Serang and speak of themselves as being more isolated, even though they are only an hour on foot from Wates. This difference

in access to urban centres is in part reflected in the greater importance of wage labour in Serang, in particular in office and school employment, although this is also a consequence of the highly unequal distribution of land[3]. Previously, much of the day to day wage labour and trading took place in the vicinity of the hamlets. With the increased mobility of rural people periodic markets have sprung up; Clereng market is little more than 20 years old and yet provides opportunities for small-scale trade to village people.

Men, in particular, have taken advantage of new employment opportunities. In Serang stone-breaking was formerly done by men and women but it is now largely women's work because men earn more money by working elsewhere and have no immobilising childcare duties. Longer-term migration, measured by the absence of the children of hamlet households, has affected both women and men equally. The full range of traditional work is still performed in each village, but more people do more work for money, frequently outside the hamlet. This situation seems similar to that documented by Manning in quantitative data gathered in 1976 and 1983 in West Java villages (Manning 1986b). He reports that "the proportion of individuals for which (sic) agriculture was a major source of employment ... had declined over time " (ibid. p.66) and that for all socio-economic groups "the proportion of urban workers had increased substantially over the seven year period" (Ibid. p.69).

6. Are people really too busy to farm?

The major advantage of a diversified household livelihood strategy is the ease with which the relative importance of different components can change in order to maximise welfare and to respond to changing opportunities. Many of these opportunities in the mid 1980s were in urban places and in government-sponsored work in the countryside. Two such projects were underway in Girinyono and Serang during the course of field work. If more work is

available outside agriculture then farm work will be carried out by women and younger children and less of the household's time is spent on farming. Within farming activity, as new trees are planted in gardens (cloves were being promoted in 1986), and triple cropping of well-watered ricefields becomes universal as in Serang, the distribution of labour within the farm unit will logically shift. Thus, some people are 'too busy to farm' because they are earning immediate cash on a town building site. Others are 'too busy' tending clove trees or cultivating ricefields - where cultivation schedules are very tight if three crops are to be fitted into an annual cycle - to look after other parts of the farm enterprise.

Farming is being squeezed in central Javanese livelihoods by a period of economic wellbeing with work available in cities and created by government in town and country. The use of land still remains important in household livelihoods but, when more economically and culturally-attractive work is available, land use will become less intensive. However, if work opportunities decrease then, as in the 1930s, the rural population may be "forced back into an economy based on self-sufficiency and barter" (O'Malley, 1977. 191)

NOTES

(1)The categories of work were agreed by our hamlet field assistants to encompass the most important forms of work using terminology that was readily understood by local people. We subsequently sub-divided 'working for others' into blue-collar and white-collar work according to the more detailed information given by informants. We devised a method whereby this prioritisation of activities was given a numerical value expressed as a percentage. The first priority category was usually given a value of 50, the second 25 and the third 15 (where, as most commonly, only three categories of work were identified). To calculate the livelihood strategy for each household we totalled the values for each category across the household and then calculated the percentage values for each category. In this way the data represent the collective importance attributed by household members to each of the categories of work. Comparison of the survey data for each of the sample households that we knew well suggested a close correspondence between what we had learned about the household's livelihood strategies and the reported prioritisation of activities.

(2) Yogyakarta was never subject directly to the Cultivation System because it was one of the Principalities. Some Javanese appanage holders did permit the production of cash crops for the eventual profit of the Dutch in much the same way as elsewhere in Java.

(3)Taking into account the varying levels of production from different categories of land, Serang has rather more land per household than does Girinyono but 40 per cent of its households have no land other than a housegarden compared with 8 per cent in Girinyono.

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