

the attempt was only partially successful, these documents are useful in providing the most detailed account of this form of agriculture in the Tokugawa period.

Suyama was born in 1657, and in his youth studied at Kyōto under the celebrated Confucian teacher, Kinoshita Junan. In 1677 he entered the service of the Lord of Tsushima, and in 1699 was appointed Rural Commissioner, which office he held until 1708. Shortly afterwards he retired from official life, but until his death in 1732 he remained in close touch with the authorities and occupied himself in writing numerous books on the administration of Tsushima.<sup>1</sup>

His works which deal with the agrarian history of Tsushima are as follows.

1. *Choroku Oizume Oboegaki* (Memorandum on the Extermination of Wild Pigs and Deer). 1700.
2. *Kōjō Oboegaki* (A Collection of Reports). 1712.
3. *Dokokudan* (A Discourse on Land and Crops). 1720.<sup>2</sup> With two appendices of 1724.
4. *Rōnō Ruigo* (Classified Statements of Old Peasants). 1722.
5. *Suiri Mondō* (A Dialogue on Water Supply). 1723.
6. *Nōsei Mondō* (A Dialogue on Agrarian Administration). 1723 or 1724.
7. *Minji Kibun* (Observations on the Affairs of the Peasantry). 1725. Compiled by a relative. With two appendices of 1725 and 1726.
8. *Ina-gō Nōjiroku* (A Record of Agriculture in Ina District). 1726.
9. *Gōson Nōjiroku* (A Record of Agriculture in Various Districts). 1727.
10. *Koba-saku Gochōji Hihan Oboegaki* (Memorandum on Opinions Concerning the Prohibition of Shifting Cultivation). 1729.
11. *Juekidan* (A Discourse on Receiving Benefits). 1731. With eight appendices of 1731 and 1732.

The island of Tsushima, situated roughly in the middle of the strait separating Japan and Korea, extends some forty-five miles from north to south, while the distance separating its east and west coasts does not exceed thirteen miles. A large part of the island is more than 600 ft. above sea level, and there are several mountain peaks of between 1500 and 1800 feet.

<sup>1</sup> Takimoto, *Nihon Keizai Taiten*, 7, Introduction.

<sup>2</sup> Takimoto, in *Nihon Keizai Taiten*, 7, Introduction, gives the date of the *Dokokudan* as "probably 1712 or 1713". But this work is placed at the head of a list of Suyama's writings produced "since 1720" given at the beginning of the *Gōson Nōjiroku* (*Nihon Keizai Taiten*, 7, 513). There is also internal evidence (*Nihon Keizai Taiten*, 7, 243). The texts used are those printed in the seventh and eighth volumes of the *Nihon Keizai Taiten*. Except where otherwise stated, page references below refer to these texts.

## SHIFTING CULTIVATION IN TSUSHIMA IN THE 18TH CENTURY

by J. R. McEWAN

### I. INTRODUCTION

Vestigial forms of shifting cultivation involving the burning of areas of forest and scrub are carried on at the present day in mountainous regions of the main Japanese islands. It is known that this form of agriculture was practised during the Tokugawa period (1600-1868), and the fragmentary evidence of its distribution at that period, collected by Ono,<sup>1</sup> shows that shifting cultivation was carried on in roughly the same areas as at the present day. The modern distribution of shifting cultivation has been studied by the geographer Yamaguchi.<sup>2</sup>

Furushima has shown that there is reason to believe that before the Tokugawa period shifting cultivation was carried on over a wider area, but was gradually replaced by intensive permanent agriculture centring on irrigated rice cultivation organized by the feudal lords. The same author has pointed out that shifting cultivation survived into the Tokugawa period in areas where conditions were unsuitable for the development of permanent agriculture, and was frequently accompanied by forms of social organization (particularly serf-tenancy) which were characteristic of pre-Tokugawa times.<sup>3</sup>

There is no historical evidence that shifting cultivation was ever the dominant form of agriculture in Japan, nor is there evidence of the existence of nomadic shifting cultivation, such as that practised in Korea; Japanese shifting cultivators appear always to have operated from fixed centres.

The following study of an attempt to replace shifting cultivation on the isolated island of Tsushima by the form of intensive agriculture practised on the Japanese mainland in the eighteenth century is based on a contemporary account of the events in the writings of Suyama Donō. Although

<sup>1</sup> Ono Takeo, *Nihon Nōgyō Kigenron* (On the Origins of Japanese Agriculture) 261 ff.

<sup>2</sup> Yamaguchi Sadao, *Yakihata Nōgyō no Chiriteki Bumpu Sono Ta* (The Geographical distribution of, and other matters concerning Shifting Cultivation) in *Chirigaku Hyōron*, 14.

<sup>3</sup> Furushima Toshio, *Yakihata Nōgyō no Rekishiteki Seikaku to sono Kōsaku Keitai* (The Historical Nature of Shifting Cultivation and the Forms in which it was Practised) in *Kinsei Nihon Nōgyō no Kōron*, 265 ff.

The island's climate is similar to that of mainland Japan in the same latitude. Although precipitation is high, much is lost through evaporation and rapid run-off, and it is not uncommon for the islanders to suffer from shortage of drinking-water. Torrential rains fall between June and September (the fifth and eighth months of the lunar calendar used in Suyama's writings), but it is said that the boulder-strewn beds of the rivers are frequently laid bare three days after a heavy rainstorm.<sup>1</sup>

These geographical features, combined with the island's isolated position, provide the main reasons for the backwardness of Tsushima's agriculture. Fifteenth-century Korean sources speak of the island as barren and dependent on Korea for supplies of food.<sup>2</sup> From this period there is evidence of rice cultivation, but it was practised on a very small scale, for there were no broad expanses of deep alluvial soil in which irrigated rice could be grown. Suyama refers to this fact in one of the documents of the 1712 collection:

"In Your Lordship's lands there are many mountains and few plains, for there are no more than three or four places where the distance between the seashore and the point at which a stream leaves its gully in the mountains is as great as 2.75 miles. In the case of the majority of streams this distance is between .2 and 1.4 miles."<sup>3</sup>

An additional difficulty in rice cultivation was the absence of reliable supplies of irrigation water. Most of the rice fields in Tsushima were inundated by natural rainfall or were sited on marshy ground, while the digging of irrigation ditches from the upper reaches of streams whence a reliable supply of water could be obtained was prevented by intervening masses of rock, stretches of sand or gravel, or precipitous slopes.<sup>4</sup>

As a consequence of the relatively small area of cultivable lowland available on the island, the area of permanently cultivated land held by individual cultivators was much less than was usual on the mainland at the same period.

In these circumstances the upland areas used for shifting cultivation, where barley (*mugi*), foxtail millet (*awa*), buckwheat (*soba*), soybeans (*daisu*) and red beans (*azuki*) were grown, assumed a much greater importance in the economy of the domains of the Lord of Tsushima than did areas of shifting cultivation in fiefs on the mainland.

The island's unsuitability for rice culture was responsible for a number of differences between its feudal institutions and those of the rest of Japan. While it was usual for feudal lords to be enfeoffed with lands of a specified

assessed annual productivity reckoned in terms of *koku*<sup>1</sup> of hulled rice, the charter of the Lord of Tsushima bore only the words "the entire island of Tsushima". His revenues from the island (he also held lands in Hizen in Kyūshū) consisted mainly of barley, and the precise value of Tsushima in terms of rice, an important matter in deciding the Lord's status in the feudal hierarchy, was undetermined a century after the establishment of the Tokugawa feudal régime.

One of the most characteristic agrarian institutions of Tokugawa feudalism, the elaborate assessments of crop yields which served as the basis of calculation of the assessed productivity in rice (*kokudaka*), was absent from Tsushima. Suyama enumerates the administrative difficulties which prevented the adoption of this measure. The permanently cultivated land was scattered in minute portions round the coasts of the island, making inspection at harvest time a very laborious task for the Lord's officers, while the difficulties in estimating the productivity of the even more inaccessible areas of shifting cultivation were immense. The yields of these areas fluctuated greatly, and continuous inspection over many years would have been necessary if reliable estimates were to be obtained.<sup>2</sup>

It is estimated<sup>3</sup> that at the end of the seventeenth century the Lord of Tsushima was drawing revenue from about 60 per cent of the cultivated land on the island, the remainder being held by his retainers or by temples. As on the mainland, the fiscal unit in the Lord's lands was the village, from each of which he received annually an amount of produce which had been fixed in 1664<sup>4</sup> as approximately one quarter of a normal crop. In bad years the amount of tax was reduced after inspection of the crops in the permanently cultivated fields.<sup>5</sup> Within the village the incidence of the tax varied. In 1712 Suyama noted that the tax paid by a fairly well-to-do cultivator who could supply fertilizers to his land amounted to about one-tenth of the actual yield, while poorer men who had to use their labour in non-agricultural work such as fishing or woodcutting, and consequently got poorer yields, had to deliver between 30 and 40 per cent of the produce of their land.<sup>6</sup> Besides the members of the village responsible for fiscal burdens there were two classes of servile cultivators, *hikan*, serf-tenants of the Lord's retainers, and *nago*, landless men employed as labourers by peasants, but in numbers these do not appear to have amounted to more than one-tenth of the land-holding peasants.<sup>8</sup>

The agrarian administration of Tsushima was presided over by the

<sup>1</sup> One *koku* equals 4.96 bushels.

<sup>2</sup> 7,108

<sup>3</sup> According to Itō, *Tsushima Han no Kenkyū* (A Study of the Tsushima Fief) *Rekishigaku Kenkyū*, 96 and 97.

<sup>4</sup> 7,183; 8,28; 8,37.

<sup>5</sup> 7,111.

<sup>6</sup> 7,107.

<sup>1</sup> The topographic and climatic description is based on Nihon Jimbun Kagakukai, ed., *Tsushima Chōsa* (A survey of Tsushima), 1951.

<sup>2</sup> Quoted in Ono Hitoshi, *Nihon Sangyō Hattatsushi no Kenkyū*, 290.

<sup>3</sup> 7,86

<sup>4</sup> 7,415

Lord's Officer in Charge of Rural Affairs, under whom worked Rural Commissioners, of whom there were three in 1727.<sup>1</sup> The Commissioners dealt with the cultivators through District Officers (two in each District) who were recruited mainly from among the Lord's retainers, and through headmen. There were eight Districts on the island, comprising a total of between 110 and 120 villages.<sup>2</sup>

Although Tsushima was geographically isolated from the rest of Japan that isolation was not absolute. With the establishment of peaceful conditions at the beginning of the seventeenth century, sea communications with the mainland had improved, and the island became a centre for trade with

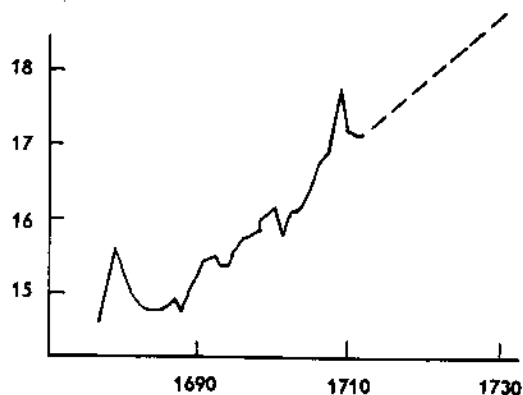


FIG. 1.  
Rural population of Tsushima (thousands).

Korea. However, the Lord maintained a monopoly of this trade and it exercised little direct influence on the peasants. The peasants' chief point of contact with money economy was in the payment of a small money tax levied in addition to their main dues in kind. To pay this they sold some of their produce in "the town", the modern Itsuhara, or, if they had no agricultural surplus, made up the required amount by fishing or wood-cutting. Suyama mentions that in about one-fifth of the villages peasants collected firewood for export to the mainland.

Suyama gives yearly figures for the population of Tsushima from 1677 to 1712 (except for the year 1678 when no census was taken), with separate figures for the rural and urban populations.<sup>3</sup> The rural population figures show a general rise over the period 1677-1712, and a figure given in one of Suyama's later works for the year 1731-18,750<sup>4</sup>—indicates that the trend

<sup>1</sup> 7,525.

<sup>2</sup> 8,268.

<sup>3</sup> 7,169-173.

<sup>4</sup> 8,24.

was maintained up to that date. The urban population increased rapidly towards the end of the seventeenth century, reaching 16,138 in 1699, but was reduced by about 25 per cent in the next ten years as a result of the deliberate policy of the Lord's officers, who feared that any interruption of sea communications might result in the starvation of the island's population. The Lord imported rice from his lands in Kyūshū, and in time of serious crop failure some of this was distributed to destitute peasants, but the desire to make the island completely self-sufficient in food supplies was always in the background of the policies of the feudal authorities. It was, indeed, the desire of the feudal authorities for an increase in agricultural production (bringing with it the possibility of increased revenue from taxation) which constituted the driving force behind the changes in agricultural practice discussed in Suyama's writings.

## II. THE AGRARIAN HISTORY OF TSUSHIMA, 1671-1732

An event which had great influence on the agricultural organization of Tsushima in the late seventeenth and eighteenth centuries was a reform of the system of land tenure which the feudal authorities carried out in 1671.<sup>1</sup> The measure was carried out for purely fiscal reasons and at the time no change in agricultural practices was envisaged, but the reform of land tenure seems to have produced conditions which made necessary the later policies for changing the methods of cultivation.

Before 1671 the ownership of land among the peasants had been concentrated in the hands of a relatively small number of men, the remainder of the cultivators being their serf-tenants (described by Suyama as *tsukuriko*, "cultivator-children") who were obliged to follow their instructions in methods of cultivation.<sup>2</sup> It appears that for some time before 1671 the peasants with large holdings had been increasing the amount of land under their control and that "the number of peasants paying feudal dues to their Lord had been decreasing".<sup>3</sup> Accordingly, the feudal authorities asserted the Lord's ownership of all land in the island and ordered a redistribution of land in roughly equal portions among the peasant cultivators. It seems that in making the redistribution care was taken to see that each household was allotted land of various qualities (denoted by the fiscal terms, first-, second- and third-class land) and in various locations (upland and lowland) in order to minimize the effects of variations in yields.<sup>4</sup>

After the redistribution had been carried out the Lord's officers were instructed to see that none of the richer peasants gained economic control

<sup>1</sup> 7,184, 7,250. In 8,295, the date of the redistribution is given as 1664, but in view of 7,183 this appears to be an error.

<sup>2</sup> 8,295.

<sup>3</sup> 7,184.

<sup>4</sup> 7,114; 7,251.

of the holdings of his poorer fellows by means of loans of money or grain.<sup>1</sup> This aspect of the redistribution seems, on the whole, to have been successful, for in a passage written in 1725 Suyama gives a hypothetical example of "a village of 30 peasant households, of which 5 are rich peasants, 20 middle peasants and 5 poor peasants",<sup>2</sup> which probably represents the typical distribution of wealth among the land-holding cultivators.

On the other hand, the redistribution of land had results which were not to the advantage of the Lord. Some of the cultivators did not live up to their new responsibilities as land-holding peasants responsible for fiscal burdens, and some of these "lazy" men had to be deprived of their land and reduced to the semi-servile status of *nago*, while their land was given to other *nago*, or to the second sons of land-holding peasants who gave promise of being "good cultivators".<sup>3</sup>

But more important in its long-term results was the effect which the change in land tenure had on the agricultural practices of the peasants. They began to use their areas of upland for shifting cultivation with increasing frequency, pleading that unless they did so they suffered hardship in bad years.<sup>4</sup> Before discussing this effect, however, it is necessary to give some account of the methods used in shifting cultivation in Tsushima in the seventeenth century.

As the first step in preparing a plot for shifting cultivation the trees and bushes were cut down, a line of trees being left standing round the four sides of the plot to serve as the foundation of a fence.<sup>5</sup> After the cut wood had become thoroughly dry the area was set on fire, a strip of up to 12 yards around the margin having been raked clear in order to prevent the fire spreading. Between three and seven men were considered necessary to control the burning of one plot. The land was dug up and the seed sown broadcast two or three days after burning; it was considered advantageous if rain fell immediately after burning and prevented the ash being blown away.<sup>6</sup> The approximate dates of sowing and harvesting of barley, soybeans and red beans, foxtail millet and buckwheat, as given in the *Rōnō Ruigo*, are shown in Fig. 2.

Immediately after sowing the area had to be fenced to protect the crop from wild pigs. The lowland Nii District was an exception in this respect, for it was relatively free from this pest and no fences were erected there.<sup>7</sup>

<sup>1</sup> 7,183.

<sup>2</sup> 7,505.

<sup>3</sup> 7,184. In 1712 Suyama recommended that the younger sons of land-holding peasants should be made *nago* in order to prevent the fragmentation of holdings by divided inheritance (7,134).

<sup>4</sup> 8,296.

<sup>5</sup> *Nihon Rinseishi Shiryo*, Itsuhara Han, 39.

<sup>6</sup> 7,372.

<sup>7</sup> 7,366; 7,242.

But over the greater part of the island the fences seem to have been a major factor in determining the scale of cultivation. A District Officer of Sasu declared that it was impossible to clear an area for shifting cultivation until the trees growing in it had reached a size which would enable them to be used in the construction of fences, and that the area could be kept under cultivation only so long as the fences remained in good repair—a period which never exceeded two years.<sup>1</sup> Normally the stumps of trees were left intact but they were removed from some of the better land, and this involved laborious transport of timber from elsewhere when the plot was cultivated on later occasions.<sup>2</sup> In spite of the great amount of labour expended in their construction, the fences gave inadequate protection to the

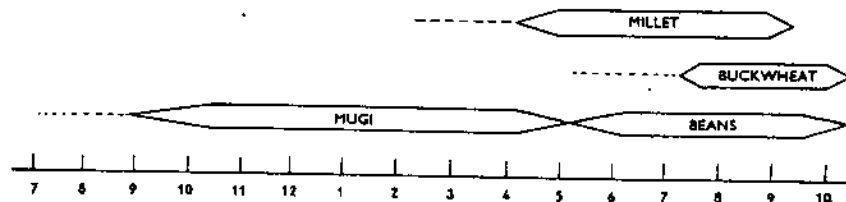


FIG. 2.  
Approximate dates of sowing and harvesting of crops in areas of shifting cultivation. The dotted lines indicate the periods during which trees and scrub were cut down and left to dry.  
(months, lunar calendar)

crops when they were ready for harvesting. To keep off the pigs at this time it was necessary for the peasants to spend each night at their fields in the mountains, where they constructed temporary shelters (*kariya*).<sup>3</sup> Suyama describes this practice in these words.

"From the time when the grain began to ripen until the harvest was completed the peasants were obliged to go up into the mountains every evening, tired as they were after their day's work, there to spend the night warding off the wild pigs, so that by morning they scarcely had spirit enough to begin work afresh. Despite their care it sometimes happened that on stormy nights the pigs broke through the fences and ate the crops, causing no small loss."<sup>4</sup>

This feature of shifting cultivation had great influence on the choice of the areas to be cleared. The peasant was forced to limit the number of areas cleared to the number of persons in his household available for guarding the plots at night. He could not cultivate a large number of small

<sup>1</sup> 7,358.

<sup>2</sup> 7,358.

<sup>3</sup> 7,93; 7,241.

<sup>4</sup> 7,154.

areas of good land, but was forced to concentrate his cultivation in a small number of plots of relatively great area, and this frequently obliged him to include pieces of land which were so poor as to be almost worthless.<sup>1</sup>

The period during which the natural vegetation was allowed to regenerate varied with the suitability of the land for cultivation. Suyama mentions the "ancient rule" for the burning of areas of shifting cultivation, a scheme probably dating from the middle of the seventeenth century, and still used for fiscal purposes at the beginning of the eighteenth century. According to the "ancient rule",

superior first-class land was burned at intervals of 10 years,

first-class land at intervals of 12 years,

second-class land at intervals of 17 years,

third-class land at intervals of 25 years.<sup>2</sup>

These figures show a rough correspondence with the statements made in the survey of 1722 on the subject of the ideal intervals between clearing land for shifting cultivation. An informant of Yora District said that land utilized in this way had formerly been cultivated at intervals of 14 to 20 years, while 10 to 15 years was regarded as the ideal period by a member of another village in the same District. In Sasu District, 12 to 23 years was considered the ideal range.<sup>3</sup>

It was said that formerly the great peasant land-holders had obliged their serf-tenants to cultivate at the intervals prescribed by the "ancient rule", but before the end of the seventeenth century the "ancient rule" was no longer being observed, and when Suyama was appointed Rural Commissioner in 1699 he was told that upland areas used for shifting cultivation had been burned at shorter intervals for some twenty years previously.<sup>4</sup> At the same time the greater frequency of cultivation had led to the erosion of some of the steeper slopes. Some of the "lazy" cultivators had been tilling their sloping plots from the top downwards, "digging the earth down the slope and making the soil thin".<sup>5</sup> In 1699 Suyama was informed by a District Officer of Sago that a certain river pool which had formerly been about 18 m. in depth was now only 10 m. deep; it had also been observed that a river which had formerly flowed in a straight channel had begun to meander.<sup>6</sup>

Shortly after his appointment in 1699, Suyama came to the conclusion that the destruction of wild pigs in Tsushima was an indispensable precondition for an increase in agricultural production. He consulted his

<sup>1</sup> 7,154.

<sup>2</sup> 8,294.

<sup>3</sup> 7,357.

<sup>4</sup> 8,296.

<sup>5</sup> 7,251.

<sup>6</sup> 8,296.

colleague Hirata and his assistant Yoneda, and as a result of their deliberations a plan was submitted for the approval of the Officer in Charge of Rural Affairs. The original plan of 1700 has been preserved as the *Memo-randum on the Extermination of Wild Pigs and Deer*. According to this plan, five great fences about 6 ft. in height were to be constructed from east to west across the island, and the areas enclosed by them were to be subdivided by other fences into smaller sections, of which there were to be 88 on the island. It was estimated that one section could be cleared of wild pigs in one day by 600 men with 200 dogs.<sup>1</sup> The work began in the autumn of 1700 and by 1706 three-quarters of the island had been cleared. The plan was completed in the spring of 1709, by which time Suyama estimated that about 300,000 man-days of conscripted peasant labour had been spent in fence-construction and hunting.<sup>2</sup> Wild pigs were the chief objective of the hunters, but deer were also killed if opportunity offered. In 1720 Suyama wrote that only thirty villages suffered damage to crops caused by deer.<sup>3</sup>

Although the plan had received the approval of the Officer in Charge, it met strong opposition from the peasants and their officers, chiefly because of the labour burdens which it entailed. Only one of the District Officers was in favour of the plan when it was proposed, and only two more were converted to Suyama's opinion after three or four years.<sup>4</sup>

In 1712 Suyama summed up the results of his plan to that date.

"The extermination of wild pigs began in 1700, and we have unbroken records of the rural and urban populations since 1679. In the years between 1679 and 1698 the rural population rose from 14,140 to over 15,780, and since 1709 it has exceeded 17,000. It appears that in spite of the increase in population the privations which are suffered in bad years are less than formerly, and that in good and bad years alike less rice is being brought from the town by the peasants, while the amounts of barley and beans which they bring to the town to sell have increased. This would seem to be due to the fact that the extermination of wild pigs has led to an increase in the production of cereals, beans, vegetables, nuts and other things which go to make up the food of the common people."<sup>5</sup>

The removal of one of the main checks on the scale of shifting cultivation led to a much wider practice of this form of agriculture. The more remote areas came into use and the intervals between cultivation were further reduced. Land which had been cleared was kept under crops for longer periods. In Mine District first-class land used for shifting cultivation

<sup>1</sup> 8,99-111.

<sup>2</sup> 7,230.

<sup>3</sup> 7,239.

<sup>4</sup> 7,525.

<sup>5</sup> 7,157.

was cultivated for four years before being abandoned.<sup>1</sup> Ox-drawn ploughs were used to a greater extent in such areas, and this was said to make the soil more susceptible to erosion than digging with a spade.<sup>2</sup>

The intervals between cultivation after the extermination of wild pigs as represented in the survey of 1722 are shown below.<sup>3</sup>

District	No. of villages to which statement applicable	Class of land		
		1	2	3
Toyosaki	3	7-8	11-12	18-19
	2	6-7	10	15-16
Sago	3	3	5	8-9
Ina	2	5-6	8-9	12-13
Mine	1	7-8	7-8	12-13
	1	"Obligated to cultivate every 5-6 years."		
Nii	2	6	7	10
Yora	1	8-9	12-13	14-15
	1	5-7		
Tsutsu	1	10	15	20-30

These figures are probably greater than reality. Suyama later found that statements made by peasants of Mine and Nii Districts in the 1722 survey were inaccurate and attempted to minimize the increase in frequency of cultivation after the extermination of the pigs.<sup>4</sup>

Soon after the extermination of wild pigs had been completed, erosion and flooding assumed more serious proportions. Floods occurred in the northern part of the island in 1710 and 1712,<sup>5</sup> and the authorities received reports that all classes of land used for shifting cultivation were being cultivated at intervals as short as 3 to 5 years, so that "when rainwater rushes down the hillsides a proportionately greater amount of soil and sand is washed into the rivers, and now a very small quantity of water will carry down soil and sand, raising the beds of the streams".<sup>6</sup> Suyama pointed out that shifting cultivation was not the only cause of erosion. Timber had been

<sup>1</sup> 7,366.

<sup>2</sup> 7,368.

<sup>3</sup> 7,355-357.

<sup>4</sup> 7,257.

<sup>5</sup> 7,84.

<sup>6</sup> 7,85.

extensively used in building by the Lord and his retainers for some 40 years before 1712, and in addition large quantities of firewood had been cut. "Thus, the quantity of rainwater retained in the foliage of trees has decreased, and when there is a heavy rain storm water rushes down the slopes, carrying with it not only the tilled soil of areas of shifting cultivation, but also that of the permanently cultivated upland fields."<sup>1</sup> Areas of shifting cultivation were said to be more susceptible to erosion now that fences were no longer constructed round them. The fences had held back soil washed from the surface of the cultivated plot, and by the time the fences had fallen into disrepair the natural vegetation had established itself sufficiently to prevent further erosion.<sup>2</sup>

As was the case on the mainland, the feudal authorities in Tsushima were not primarily concerned with the effects of erosion in reducing the fertility of the upland areas (since these yielded little revenue) but with the damage caused to the highly productive lowland fields by flooding.<sup>3</sup>

At this period Japanese river engineering was not sufficiently advanced to provide reliable retaining banks for the control of flooding. Suyama emphasized that less damage to agricultural land was caused by a river overflowing its natural channel than by the sudden collapse of an artificially reinforced bank, and he advised the continuance of the traditional method of dealing with flooding, known as "manual river-works". During the period of heavy rain parties of men were sent to dig up accumulated material in river beds and along the banks in order that it might be washed out to sea by the current.<sup>4</sup>

In 1712 Suyama made no proposals for any radical alteration of the methods of shifting cultivation; he merely suggested a number of measures

<sup>1</sup> 7,94.

<sup>2</sup> 7,376.

<sup>3</sup> This is illustrated by the following edict on soil erosion in central Japan, issued by the Shogunate in 1684.

"1. As a result of the continued practice of uprooting trees and plants on mountain sides in the lands of the Shōgun and the Lords in the provinces of Yamashiro, Yamato, Settsu, Kawachi and Ōmi, soil and sand is being washed down by rain into the rivers and is obstructing the flow of the streams. For this reason all such uprooting of trees and plants shall henceforth be strictly prohibited.

2. In places where there are no trees on the mountain slopes bordering the courses of rivers and where soil and sand is being washed down, trees and shrubs will be planted this spring in order to prevent this.

3. All land from which soil and sand is being washed down (not only upland permanent fields reclaimed along the banks of rivers and in river-courses, but also irrigated rice fields and unirrigated fields which have been under cultivation for some time, irrespective of whether they are subject to taxation or not) shall be allowed to go out of cultivation, and trees, bamboo and reeds (*yoshi* and *kaya*) shall be planted there. The reclamation of land for cultivation along the banks of rivers and in river-courses is, of course, forbidden. Note: It is forbidden to clear areas for shifting cultivation in the mountains." Text in *Ofuregaki Kampō Shūsei*, 706, No. 1335.

<sup>4</sup> 7,227.

which would lessen the rate of erosion in the upland areas. These proposals included the digging of ditches on the uphill side of cultivated areas in order to lead off water to each side of the tilled land<sup>1</sup> and the issuing of orders that none of the areas of shifting cultivation situated on steep slopes should be tilled during the period of heavy rain between the fifth and eighth months.<sup>2</sup>

It is in the *Dokokudan* of 1720 that the first outlines of a plan for changing the agricultural organization of Tsushima appear. It is significant that this book was written shortly after Suyama had read for the first time<sup>3</sup> Miyazaki Yasusada's great Compendium of Agriculture (*Nōgyō Zensho*, 1697), in which the agricultural techniques of the most advanced regions of Japan were described. In his writings after this date Suyama frequently cites the *Nōgyō Zensho* in support of his proposals.

The *Dokokudan* contains a number of proposals designed to increase the island's production of rice. This was to be done by the organization of artificial water supplies from the upper reaches of the streams by means of clay-lined channels and wooden pipes, and the services of miners were to be employed in cutting tunnels through barriers of rock. Once a system of irrigation channels had been established, Suyama hoped that it would be possible to employ land at that time used for unirrigated crops for the production of wet rice. Land was also to be reclaimed for rice-growing along the shores of the numerous inlets in the central section of the west coast. Reclamation was to be carried out by constructing a wall of stakes protruding about 1½ ft. above the ground, behind which rain-borne material was to be allowed to accumulate, the sea-wall being increased in height as the land rose. Any cultivator who reclaimed land in this fashion was to be allowed to retain the produce without any fiscal burdens for the first ten years, after which the traditional tax of one-quarter would be taken by the Lord.<sup>4</sup>

In the same book Suyama describes a method of fixing shifting cultivation of which he had heard an account during his tenure of the office of Rural Commissioner from "a man who had travelled all over Japan".<sup>5</sup> Upland areas were to be divided into two categories, the comparatively level plots which were to be permanently cultivated, and the steep slopes which were to be left uncultivated and planted with trees, bushes, reeds and grasses. Some of this vegetation was to be cut each year, spread on the level plots, and burned. By means of the fertilizer supplied in the form of ash it was said to be possible to cultivate such plots continuously under two crops each year.

<sup>1</sup> 7,99.

<sup>2</sup> 7,96.

<sup>3</sup> 7,252.

<sup>4</sup> 7,236.

<sup>5</sup> 7,229.

Suyama goes on to outline the method by which future Rural Commissioners might have this form of agriculture adopted by the peasants. The plan was to be explained to two peasants selected for their intelligence and skill as cultivators in specified villages in each of the Districts Sago, Ina, Mine and Nii. It was to be demonstrated to them that if they gave up shifting cultivation of the steep slopes, employed the labour thus saved in digging ditches round the land to be permanently cultivated, and supplied fertilizer to these plots by burning over them collected quantities of wood, reeds and grasses, the increase in the productivity of these areas (which could be cultivated continuously) would more than compensate for the loss of the poor areas of shifting cultivation on the steep slopes. Suyama believed that burning had beneficial effects in addition to the provision of fertilizer in the form of ash. He says, "I understand that if trees, bushes, reeds and grasses are burned over the area to be cultivated before each sowing, not only does the ash nourish the land, but the nature of the soil is changed by being burned, and good yields are obtained even if one cultivates the same crop repeatedly".<sup>1</sup> He suggested that peasant holdings at that time used for shifting cultivation should in future be used in three ways:

1. Level plots of the best land, to be cultivated permanently.
2. Areas in the vicinity of the above, to be preserved as a source of supply of vegetation for use as ash-fertilizer.
3. The remainder of the upland holdings, to be planted with trees, where possible with chestnuts or oaks.<sup>2</sup>

After these methods of cultivation had successfully been adopted by the selected peasants, they were to be taken over by all the cultivators. On the basis of some figures of crop yields given in the *Nōgyō Zensho* Suyama thought that a 50 per cent increase in agricultural production could be achieved by this means, and he believed that the process of the adoption of the new methods by all the peasants could be carried through in five years. On this latter point he laid down two conditions, first, that there must be no increase in the non-agricultural work required of the peasants (*i.e.*, in *corvée* work for the Lord and his retainers), and second, that the peasants should be allowed to keep all the increase of produce resulting from the change in methods of cultivation. His experience as Rural Commissioner led him to believe that the peasants would not carry out their instructions if they had any reason to believe that the change in methods of cultivation would be accompanied by increased taxation; even if they were allowed to retain three-quarters of the increase in produce they would have no confidence that the proportion taken in tax might not be increased if for some reason the Lord found that more revenue was required.<sup>3</sup>

<sup>1</sup> 7,232.

<sup>2</sup> 7,247.

<sup>3</sup> 7,234.

In 1722 the *Dokokudan* was read at the office of the Rural Commissioners<sup>1</sup> and was used by them as the basis of a positive attempt to change the agricultural practices of the peasants.

In the summer of 1723 the Commissioners issued six written instructions to the District Officers for communication to the cultivators. These orders dealt with barley harvesting, shifting cultivation, instructions regarding certain crops, storage of agricultural produce, river works and water supplies.<sup>2</sup> The texts of these orders are not preserved, but it is possible to restore the main outlines of the most important orders from the discussions of their implications in Suyama's writings. He regarded the order on shifting cultivation as of central importance, the rest being supplementary to it.

The order on shifting cultivation prescribed that level upland areas which were suitable for permanent cultivation should be made into "upland permanent fields" and should be fertilized by burning over them vegetation from the surrounding land. Good land of moderate slope was to be terraced and used in the same fashion. In cases where there was no nearby supply of vegetation for burning, "other things which can be used as fertilizers" were to be transported to the fields. Land not considered fit for permanent cultivation was to be planted with chestnuts, oaks, pines, firs and other trees.<sup>3</sup> The object of the order on barley harvesting was to cause the peasants to harvest the barley in the lowland fields before the onset of the monsoon. As Suyama noted, this depended on the implementation of the order on shifting cultivation, since it was by using their labour in forest-clearing for shifting cultivation that the peasants delayed the harvest in the lowland fields.<sup>4</sup>

These orders were not well received by the District Officers and the peasants. The "certain man" to whose objections Suyama replied in the first appendix to the *Dokokudan* seems to have been voicing the general opinion when he complained of unnecessary complexity in the Commissioners' instructions.<sup>5</sup> He also made the important point that if, as proposed, the new permanent fields were to be supplied with fertilizer from ash derived from natural vegetation grown in an area some 36 yards in width around three sides of the field (one third of which was to be used yearly) the amount of fertilizer supplied to the land would not be sufficient to allow continuous cultivation.<sup>6</sup> Suyama's answer to the objection was that the area from which vegetation might be gathered could be extended indefinitely.<sup>7</sup>

<sup>1</sup> 7,258.

<sup>2</sup> 7,263.

<sup>3</sup> 7,486; 7,255.

<sup>4</sup> 7,263.

<sup>5</sup> 7,263.

<sup>6</sup> 7,259.

<sup>7</sup> 7,261.

In a passage in the first appendix to the *Minji Kibun*, written in 1725, it is admitted that the orders issued two years before had not been carried out.

In the summer of 1725 more precise and detailed instructions for the cessation of shifting cultivation were issued by the District Officers of Ina, both of whom were in favour of the Commissioners' plans.<sup>1</sup> Villages in which it was estimated that no additional labour would be required (in such construction work as terracing) in converting land from shifting to permanent cultivation were to cease all shifting cultivation immediately. In villages where terracing was necessary, shifting cultivation was to be allowed on one-third of the area designated for conversion to permanent cultivation each year for three years, by which time the terracing would be complete.<sup>2</sup> Terraced cultivation was already practised in Nii and Yora before the authorities drew up their plans in 1723.<sup>3</sup>

A change in Suyama's attitude to the question of the supply of fertilizers to the new upland fields seems to have taken place about the year 1725, for in that year he admitted that his method for fixing shifting cultivation described in the *Dokokudan* was not practicable.<sup>4</sup> In his writings after this date burned vegetation no longer figures as the chief source of fertilizer for the new permanently cultivated land, nor does he recommend that it should be burned directly over the plot to be cultivated. In its place the whole range of fertilizers described in the *Nōgyō Zensho* is recommended.<sup>5</sup>

In spite of the comparative successes which had been achieved in Ina, Yora and Nii, strong opposition to the authorities' plans continued. An account of the nature of the opposition, together with a statement of the authorities' revised policy is given in Suyama's *Memorandum on Opinions Concerning the Prohibition of Shifting Cultivation*, of 1729, in which the views of "those who accept the authorities' instructions" and "those who do not accept the authorities' instructions" are given alternately in the form of a dialogue. The main points in the argument for the prohibition of shifting cultivation are as follows.

Peasants should cease to prepare areas for shifting cultivation of millet in the third and fourth months, and should employ the labour thus

<sup>1</sup> 7,525.

<sup>2</sup> 7,519.

<sup>3</sup> There are occasional references to the size of terraces. In width they seem to have ranged between 1 and 2 m.; in one passage a terrace of about 18 m. in length is mentioned (7,503; 7,459; 8,288).

<sup>4</sup> 8,258.

<sup>5</sup> 7,462-4; 8,39. These comprised stable manure, composts made from various kinds of green vegetation, plants and tree shoots dug directly into the fields, ash from domestic fires, ash from burned rubbish, sardines, seaweeds, nightsoil and domestic drainage water. See Miyazaki Yasusada, *Nōgyō Zensho* (ed. Tsuchiya) 69 ff., and Furushima Toshio, *Nihon Nōgakushi*, 499 ff.



saved in weeding and hoeing the barley in the lowland fields, permanent upland fields and terraced fields.

Peasants should cease to use their labour in harvesting poor crops of barley in widely scattered areas of shifting cultivation and in preparing the land for a following crop of beans, but should ensure that the barley in the lowland fields, permanent upland fields and terraced fields is harvested before the heavy rains begin.

Peasants should cease to use their labour in preparing areas for shifting cultivation of buckwheat in the seventh and eighth months, but should employ it in weeding and supplying fertilizers to their second crops in the permanent fields. The labour saved in ceasing to clear areas for shifting cultivation of barley in the eighth and ninth months should be used in the same way.

Peasants should cease to use their labour in harvesting the poor second crops in the areas of shifting cultivation and in preparing these areas for sowing with barley in the tenth and eleventh months, but should use it in early harvesting of the second crops in the permanent fields and in sowing the barley in good time.

Peasants should collect large quantities of vegetation from trees, bushes, reeds and grasses, and instead of sending their horses and oxen to pasture, they should keep them in stalls and use these materials as bedding.<sup>1</sup> They should also collect sweepings and dead grass which they should burn. With these two types of fertilizer they should fertilize the permanent fields. In time of drought they should water the fields.

When the forest has been re-established on the slopes formerly used for shifting cultivation, erosion will cease, floods will decline in frequency and there will be less need for levies of labour for river works. In addition, there will be an increased supply of firewood, timber and nuts.<sup>2</sup>

The basic principle of the authorities' policy is expressed in these words.

"As is said in the *Book of Agriculture*,<sup>3</sup> on the mainland it is considered wrong for a farmer to wish to cultivate as large an area as possible. It is thought more profitable for a man to cultivate no greater an area than is well within his capacity, but he should till that land deeply and thoroughly, treating each part of it with great care. On this island, too, good farmers have always preferred to cultivate intensively (*kuwashiku*) rather than extensively (*hiroku*)."<sup>4</sup>

The arguments of those who opposed the measures are presented in

<sup>1</sup> It appears that pasturage of animals was forbidden at some time before 1727, but in that year many villages were not observing the prohibition (7,514).

<sup>2</sup> 8,285-6.

<sup>3</sup> Apparently a reference to *Nōgyō Zensho*, 55.

<sup>4</sup> 8,287.

less detail than those of the supporters of the authorities. They complained that the terraced fields were infertile because of the poor soil of which they were composed. This was answered by a description of methods employed in Ina which enabled the coarse subsoil to be used for the building of the bases of the terraces, while the fertile topsoil was spread evenly over the surface. Again, it was pointed out that three villages in Ina District had defaulted in their payments of the money tax for the year 1728. The supporters of the authorities maintained that this was not due to causes connected with the prohibition of shifting cultivation, but to the depletion of the forests in Ina from which wood was cut for sale, combined with a recent fall in the price of wood. The arrears were said to have been paid in full by 1729.<sup>1</sup>

The opposition's views are summed up in the opinion that the prohibition of shifting cultivation was a desperate measure, designed to repair the damage caused by the ill-advised extermination of the wild pigs, but foredoomed to failure, since "the livelihood of peasants on this island has always depended on shifting cultivation, and if this is prohibited they will all be ruined".<sup>2</sup>

However, the peasants' preference for shifting cultivation was not so unreasoning as the arguments put into their mouths in the *Memorandum* seem to show. Suyama had already noted in 1720 that the fiscal system made it profitable for the peasants to concentrate their efforts on shifting cultivation at the expense of the permanent fields. The rate of tax levied on areas of shifting cultivation varied over the island, but on an average was somewhat less than one-third of that levied on permanently cultivated land. Further, the tax was levied on the assumption that the land was used for cultivation at the intervals prescribed by the "ancient rule", and cultivators found that if such land was used at shorter intervals the yields did not decline in direct proportion to the number of years during which the land was abandoned. "It is not the case that a piece of land which produces 10 *koku* when cultivated every 10 years will produce 5 *koku* if cultivated after 5 years, or 3 *koku* after 3 years; in fact the yields are greater." For this reason Suyama had found that "in some cases the peasant's income from shifting cultivation when the land is used at intervals shorter than the 'rule' is the same as that derived from the permanent fields, and in some cases it is greater".<sup>3</sup>

The figures given in the *Rōnō Ruigo* for the yields of various crops cultivated both in permanent fields and in areas of shifting cultivation indicate that in good years at least the yields of the latter were considerably greater than one-third of those of the former. The figures are said to represent the yields in good years from middle peasants' holdings, expressed

<sup>1</sup> 8,292.

<sup>2</sup> 8,294.

<sup>3</sup> 7,229.

in tenths of a *koku* per 100 *bu* (.82 acre). The figures for five of the eight Districts are reproduced below.

District	Class of land	Barley		Soybeans		Redbeans		Foxtail Millet		Buckwheat	
		Shifting	Perman-ent	S	P	S	P	S	P	S	P
Toyosaki	1	6	8.5	2	2.5	2		3	3.5	3.5	
	2	4	6	1.5	2	1.5		2.5	3	3	4
	3	2.5	3	0.8	1.5	1		2	2	2	
Sago	1	3.5	10	3	4	3.5		4	6	4.5	5
	2	3	8	2	3.5	2.5		2	4	3	2
	3	2	1.5	1.5	2	1.5		1	2	2	1
Ina	1	4	6	1	1.5	1	1	1	3	4	5
	2	2	5	0.8	1	0.8	0.8	0.7	2	2	3
	3	1	3	0.5	0.8	0.5	0.5	0.5	1	1	2
Yora	1	4	6	1.5	3	1.5	2	2.5	3	4	4
	2	2.5	4	1	2	0.7	1.5	1.5	2	3	3
	3	1.5	2.5		1.5	0.5		1		2	2
Tsutsu	1	4	8.3	1	2.5	0.5		1.5		4	5
	2	3.1	6.2		1.9	0.4		1		3	4
	3	2	3.5		0.8		0.7			1.5	2

There is ample evidence that the peasants of Tsushima were more concerned with their areas of shifting cultivation than with the more heavily taxed lowland fields. The produce of the lowland fields was used in paying taxes in kind, and for seed, the food of the cultivators being derived from shifting cultivation.<sup>1</sup> The authorities were continually distressed by the peasants' practice of neglecting to harvest the barley in the lowland fields in order that upland areas might be cleared for shifting cultivation. The authorities had found in 1712 that peasants were neglecting to supply fertilizers to their lowland fields for this reason,<sup>2</sup> and in 1724 Suyama described how the able-bodied men would go up into the mountains to prepare areas for shifting cultivation just at the time of the harvest of barley in the lowland fields, leaving this work to be done by old men, boys and women.<sup>3</sup> The peasants' indifference to the fate of the lowland crop may be explained by the fact that if it were damaged by the rains a reduction or exemption of tax would be granted, but to Suyama, writing in 1724, their

<sup>1</sup> 7,255.

<sup>2</sup> 7,94.

<sup>3</sup> 7,263.

preference for a more inefficient method of cultivation appeared completely irrational.

"They are preoccupied with the fact that occasionally a good harvest is to be got from shifting cultivation, forgetting that in most years the yields are extremely low; they are like gamblers who continue to gamble because they always think of the rare occasions when they win and put from their minds the many occasions when they lose."<sup>1</sup>

It seems clear that underlying the peasants' determined conservatism in methods of cultivation was the fear that increased production would mean only an increase in the level of exaction, for the peasant had no interest in a general increase in the productivity of agriculture, but only in an increase in the amount of produce which was not subject to feudal dues. Shifting cultivation, the productivity of which it was almost impossible to assess accurately, had definite advantages in this respect for the cultivator. In 1725 someone in the town had said that the peasants' resistance to the instructions of the Commissioners was due to the fear that the new permanent fields might be taxed at the same rate as the existing lowland fields, and Suyama, whose consistent attitude since 1712 had been that there should be no increase in taxation, indignantly repudiated the suggestion.<sup>2</sup> That the suspicions of the peasants were not unjustified is shown by Suyama's sudden change of attitude to this question in the last years of his life.

Suyama's change of view seems to have been precipitated by reading the *Honsaroku*, an early seventeenth century work on the art of government. In a section entitled "of the Governing of Peasants" this book contains the following well-known statement of feudal fiscal policy:

"The peasants are the foundation of the state, and there is a method by which they should be governed. First, the boundaries of all holdings should be clearly defined. Next, an estimate should be made of the peasants' income and expenditure, and any surplus should be taken in tax. It is right that peasants should be so governed that they neither suffer want nor have any surplus of wealth. Yearly inspection of the standing crops as the basis of taxation is the method sanctioned by the Sages. By this means all excesses and deficiencies in the amount taken in tax are avoided."<sup>3</sup>

In 1731 Suyama wrote that after reading the *Honsaroku* he had come to realize that his opinions expressed in the *Dokokudan* and other works were mistaken. He now perceived that the system of a fixed level of taxation with reductions for crop failure had the effect of making the peasant lazy,<sup>4</sup> and

<sup>1</sup> 7,258.

<sup>2</sup> 7,473.

<sup>3</sup> Honda Masanobu, *Honsaroku*, in *Nihon Keizai Taiten*, 3,21.

<sup>4</sup> 8,73.

he advocated a course which in 1712 he had declared to be too troublesome—annual inspection of crops throughout the island was to be carried out and a tax of 30 per cent of the estimated yield was to be taken from all forms of cultivation.<sup>1</sup> In this way Suyama believed that the efforts of the cultivators would be directed to the more productive forms of cultivation. A fact which is probably connected with Suyama's sudden change of view is that the Lord was in financial difficulties and that the Korean trade had been bringing in less profit for some years<sup>2</sup>: it is likely that the authorities felt that more revenue had to be obtained from agricultural production.

Although after Suyama's death attempts continued to be made to end shifting cultivation in Tsushima, this form of agriculture was still being widely practiced on the island at the beginning of the twentieth century, and its decline since then has been due not to the employment of the land for permanent agriculture, but to the development of commercial forestry.<sup>3</sup>

### III. SUMMARY

The development of shifting cultivation in Tsushima during the period under discussion appears to fall into three stages. Concerning the first of these, the period before 1671, there is practically no information in the sources, but it seems not unreasonable to assume that at this time shifting cultivation was carried on at the intervals prescribed by the "ancient rule". In the second stage, between 1671 and the end of the century, the intervals were reduced as a result of the change in the system of land tenure, and in areas where pigs and deer were not a serious menace to agriculture, the form of utilization of the land was brought nearer to permanent cultivation by the removal of stumps and the employment of more intensive techniques of tillage. In the third stage, the removal of the restriction on the practice of shifting cultivation imposed by the ravages of wild pigs made the reduction of the intervals between cultivation general throughout the island.

It appears that up to the beginning of the eighteenth century the Lord was content to allow the increase in production resulting from the more intensive methods of cultivation to be directed towards increasing the stability of the livelihood of the cultivators, probably since at this time he was receiving ample revenue from the Korean trade. But after the destruction of the wild pigs had been completed, shifting cultivation was attacked by the Lord's officers because of its adverse effect on the flow of revenue from the permanently cultivated lowland, directly through the medium of soil erosion and flooding, and indirectly by absorbing peasant labour in a less productive form of agriculture.

Suyama's various proposals aimed at the solution of this problem by

<sup>1</sup> 8,22. It does not appear that this recommendation was adopted.

<sup>2</sup> 8,74; 8,38; 8,45. The fact is shown from other sources by Itô, *op. cit.*

<sup>3</sup> *Tsushima Chōsa*, 37.

converting much of the area used for shifting cultivation into permanently cultivated land, but these proposals were not carried into effect because of the opposition of the cultivators, and because of the great natural obstacles which Suyama, basing his recommendations on a rather literal interpretation of the *Nōgyō Zensho*, seems to have underestimated.