CHAPTER VIII

PADI OUTPUT AND PRODUCTIVITY PER ACRE

As is the case with other lands cultivated with other crops, the productivity of padi-land in the Block is a function of not one, but many factors. All these factors contribute to the determination of output per acre, though the influence of each varies according to lots and other circumstances. Most important among these factors are the fertility of the land, the various techniques employed, the various systems of operation - such as owner/operation and tenant/operation - practised, the different varieties of padi cultivated, the water conditions and some other management and improvement measures such as the extent of the application of fertilisers and the pest control.

In this Chapter, we shall set out to examine padi output and productivity per acre in the Block mainly from three productivity per acre in the Block mainly from three perspectives: the various systems of operation practised, the various varieties of padi cultivated, and the location of lots in the Block.

Before we proceed with this examination, however, a few points must be noted. In the first place, the unit of measurement that we shall be using throughout this Chapter is 'gantang'. In the course of the interview, though most interviewees gave the quantity of padi produced in gantang, interviewees in respect of 22 lots gave so in 'tin', and those of three in 'gundi'. In each of these, the equivalent of gantang was asked for the purpose of conversion. A problem arises in the gantang equivalent of a tin. As is generally known, the capacity of a kerosene tin, which is no doubt the one used by the interviewees, is just about four gantangs. But all the relevant interviewees in the Block - and so also, I am informed, those of other Blocks - gave a tin as equivalent to five gantangs. Throughout this study, this rate of conversion is followed. It is done so on two grounds: firstly, in consideration of the whole-area consistency of interviewees' replies and secondly, in order to make this study consistent with others, which most probably follow the same rate.

It is not known how the relevant interviewees actually measure with a tin and what they do to the tin to make it accommodate five gantangs. Assuming that nothing of these is done, a tin still holds five gantangs; and all those figures which involve conversion from tin to gantang in this study are thus exaggerated by as much as 25% of the true value. And this study may be distorted to that extent.

Secondly, in arriving at the figures for the total output per lot and output per acre, no allowance is given to the area of the lot taken up by dwellings, permanent or temporary, other buildings such as shops, school, and prayer-house, and house compound and mixed kampong cultivation. As can be seen from Map V, some lots and with dwellings, temporary or permanent, and others without. Some even have two dwellings, and lot 2792 has notably four buildings comprising of two permanent dwellings, one sho-house and one school. The area of the lot taken up by these buildings varies. Further, most permanent dwellings also have compounds and areas for mixed kampong cultivation of various sizes. All these considerations affect the size of the actual area cultivated with padi, and the areas affected should be subtracted from the lot in arriving at the total output per lot and per acre. To be able to do so we need elaborate information with regard to the size of the affected areas, and this is not available from the Questionnaire. To this extent, the figures are again slightly distorted.

Thirdly, though the interviewees were asked for specific figures it appears from the figures set out in Table 8.1 and Table 8.2 that there has been rounding up on their parts. It is not known what is the magnitude of the rounding up, and perhaps it varies between them. But as far as one can judge from the figures given, there appears to be a rounding up to the nearest 50 gantangs, or 10 tins. Thus despite the fact that there may be some processes of cancellation, the accuracy of the figures is again not fully assured.

Fourthly, the figure in relation to lot 2851 is only as estimate. At the time of the interview, the lot had not yet been fully harvested, and interviewee merely made an estimate. There are some other cases of estimation, particularly when the relevant operators could not be contacted and information extracted from someone else.

Finally, as can be seen from Map V, figures are not available for 15 lots. This is either because the lots had not yet been fully harvested at the time of interview, and the interviewees did not want to make an estimate; or that the relevant interviewee could not be contacted, and no information can be extracted in any other way. The analysis of padi output and productivity per acre of the Block and the conclusions thereby arrived at are based thus only on those figures of the remaining 89 lots.

Having elaborately satisfied ourselves with these points, we may now proceed with our examination.

General Productivity of the Block

The last row of Table 8.1 shows that for the 89 lots in the Block for which we have the relevant data, the total output of padi is 67,020 gantangs. This is the output of the total 268 acres, as shown in Column 1 of the same Table, which make up those lots. The general average productivity per acre of the Block is thus 250 gantangs, as shown by Column 3.

TABLE 8.1

PADI OUTPUT AND PRODUCTIVITY PER ACRE* UNDER DIFFERENT SYSTEMS OF OPERATION IN GANTANGS

System of Operation	(1) Acreage		(2) Padi Output		(3) Average Productivity per Acre
	Acres	Percentage	Gantangs	Percentage	
Owner/operater	184½	88.8	45,570	67.9	247.0
Tenant/operator	38½	14.4	10,000	14.9	259.7
Gifted/operator	45	16.8	11,450	17.1	254.4
Total for the 89 Analysable Lots	268	100.0	67,020	99.9	250.0

*For 89 lots only.

TABLE 8.2

PADI OUTPUT AND PRODUCTIVITY PER ACRE* FOR DIFFERENT VARIETIES OF PADI

Variety	(1) Acreage		(2) Padi Output		(3) Average Productivity per Acre
	Acres	Percentage	Gantangs	Percentage	
Radin	107	39.9	26,820	40.0	250.7
Seruyong	19	7.1	4,350	6.5	229.0
Seri Raja	35	13.1	8,100	12.1	231.4
Mengkudu	9	3.4	2,150	3.2	239.0
Mixed	98	36.6	25,600	38.2	261.2
Total for the 89 Analysable Lots	268	100.0	67,020	100.0	250.0

*For 89 lots only.

From the information gathered, this is a normal year in the Block. Hence the above productivity figure is its considerably normal productivity figure per acre. Further, as the Block is one of the most fertile and advanced with regard to settlement and cultivation, we are not thus underestimating if we take the figure to represent the productivity per acre of the S.S. as a whole - though there is the possibility of overestimation.

For the sake of analysis, we shall compare this figure with the arithmetic mean of wet padi productivity per acre for 10 seasons of 1946/7 to 1955/6, set out in Appendix VI. It can be seen from the Appendix that the productivity of 250 gantangs per acre of this Block - and perhaps an overestimation of the S.S. - exceeds only the 10-season average of Kelantan which is 244 gantangs. It is less than Kadah's average of 358 gantangs by as much as 43.2%, less than Perlis' average of 334 gantangs by 33.6% and less than Province Wellesly's average of 270 gantangs by 8%.

Few reasons may be suggested as to why the productivity of the Block - and in fact that of the S.S. as a whole - is considerably lower than that of Kedah, Perlis and Province Wellesly. Firstly, padi-land in those areas had been open up long before that of the S.S. This results in those areas becoming more, to use the terminology of the padi farmers - "tanah rap" than that of the S.S. Secondly, the techniques employed are more advanced in those areas than in the S.S. Ploughing has been a normal feature in those areas for decades, and now tractors are becoming a common sight in the padi fields there. In the Block and the S.S., on the other hand, work is normally carried out by "changkul" only. Ploughing has never been heard of. And only now tractors are beginning to be employed, and even then only on experimental basis restricted to few lots. Thirdly, manure and fertilisers of all kinds have long become an inescapable requisite of padi farming in the north, while in the Block, I am informed, fertilisers have only been introduced as far as two or three years back on experimental credit. Finally, the farmers in northern Malaya an certainly more specialised than those in the Block some of those, as we have seen in Chapter II, pay as much attention to coconut as to padi.

Judging from the replies of the interviewees, the productivity of the Block as a whole appears to be on its upward trend this year. Of the 94 interviewees who give replies on whether the output of their farms has increased or decreased this year compared with last year, 42 report an increase while only 32 report a decrease. The remaining 20 report a stationery output. The rate of increase varies. The operator of lot 2804 report a very extreme increase of 133.3%. Similarly, the rate of decrease varies. A decrease of 41.6% has been reported in an extreme case.

Padi Output and Productivity per Acre by Different Systems of Operation

From this general picture of output and productivity per acre for the Block as a whole, we proceed to examine padi output and productivity per acre under the different systems of operation in the

Block. A comprehensive summary of the relevant lots or sub-lots and their acreages and outputs under each of the different systems is attached in Appendix VII of this study. Table 8.1 is derived from this summary.

From the Table, it can be seen that there are three different systems of operation practised in the Block, viz. owner/operation, tenant/operation and giftee-operation. Enough has been said of each of these three systems elsewhere; and indeed we need say no more here except to remind that we have been taking the 'owner/operator' system to include as well the situations of co-owner/co-operator and family labour of the owner.

The Table sets out padi output and productivity per acre under each of these different systems of operation. It can be seen that 184½ acres of the total 89 analysable lots are cultivated under the owner/operator system. This constitutes 68.8% of the total analysable acreage of 268 acres. The total output for this acreage is 45, 570 gantangs. Owner/operator system contributes thus 67.9% of the total output of the 89 lots.

Tenant/operator system takes up 38½ acres of 14.4% of the total acreage. It yields exactly 10,000 gantangs making up 14.9% of the total output.

The remaining 45 acres or 16.8% of the total are cultivated under the giftee/operator system. The system yields a total output of 11,450 gantangs, or 17.1%.

From the above analysis, it can be seen that owner/operator system is the largest practised in the Block, both from the point of view of acreage taken up as well as the output produced. Also, a discrepency is noticeable between the percentage of total acreage and that of total output for everyone of the systems. The reason why this occurs will become clear as we proceed.

Column 3 of the same Table shows the productivity per acre in gantangs for each of the three systems. The figures are obtained by dividing the total output of the relevant system by its corresponding acreage, shown in Column 2 and Column 1 of the Table respectively.

The average productivity per acre for the owner/operator system is thus 247 gantangs. This is notably three gantangs, or 1.2%, lower than the general average productivity for the whole Block.

The average productivity per acre of the tenant/operator system is 259.7 gantangs. Quite surprisingly, it is 9.7 gantangs, or about 3.9%, higher than the average productivity for the Block.

Finally, the giftee/operator system of operation produces an average productivity per acre of 254.4 gantangs. Again, this is 4.4 gantangs, or 1.7% higher than the general average productivity for the whole Block.

From the above account, it is interesting to note the variation of productivity per acre with regard to the three different systems of operation. As has been pointed out, owner/operator average productivity per acre is lower than the general average productivity for the Block by 1.2%, that of the tenant/operator higher by 1.7%. Looking at it from another angle, we see that the tenant/operator productivity per acre is higher by 5.1% than that of the owner/operater, and that of the giftee/operator is also higher than the same by about 3%. It appears thus that the productivity under both tenant/operator and giftee/operator systems is higher than that of the owner/operator system.

Are we here to conclude that it usually the case in the Block for productivity under tenant - and giftee-operation to exceed that of the owner-operation, for such reasons as that there is more incentive for both tenants and giftees to work their land than there is for the owners. I would personally not commit myself to do so. In the first place, as we have seen, productivity is a function and not one factor. Variation in the system of operation may here be one of those many. Secondly, the variation between the different systems as shown above is so small that it may be accidental only. Finally, even if it may be established that the above variation is due solely to the variation in the operational systems, it is still an important conclusion to be made. And for such an important conclusion to be arrived at on the basis of an isolated figure is grossly unscientific.

Padi Output and Productivity per Acre by Variety

We proceed now to examine the total output and productivity per acre by variety of padi. As shown by Table 8.2, there are four clearly separated varieties of padi cultivated in the Block, viz. Radin, Seruyong, Seri Raja and Mengkudu. The fifth category is of "mixed" varieties. Radin here is taken to include Radin Puteh, Radin Kuning, Radin China and Radin Pahang. The "mixed" category may be a combination of two or more of the stated varieties, or anyone or more of these with one or more of those varieties not stated here such as Mayang Rambai. We are not able to separate this 'mixed' category into the exact acreage of the relevant varieties, for lack of this very information. Further, it is felt that there is a unique significance in the nature of the 'mixed' category with regard to total output.

It is to be noted that in some lots, different varieties glutinous rice (pulut) such as Pulut Serai, Pulut Serang, Pulut Rambai and the like have been planted. In this analysis, for the sake of clearance, this fact has been ignored. This is justifiable on a number of grounds. Firstly, no acreage is known with regard to the area devoted to pulut; hence separation is impossible. Secondly, usually pulut is cultivated for home consumption only and the area involved is thus very small. Our negligence of it will not affect thus the result of our analysis to any appreciable extent.

A complete picture of the acreage and productivity of the relevant lots with regard to various varieties of padi is presented in a Comprehensive. Summary attached in Appendix VIII. Table 8.2 further summarises the whole situation.

It appears from the Table that the variety of Radin is cultivated in 107 acres in the Block. This makes up 39.9% of the total analysable acreage. Its total padi output is 26,820 gantang making up 40% of the total padi output of all analysable lots in the Block. Radin is thus the most popular variety in the Block.

Seruyong, on the other hand, is cultivated only in 19 acres or 7.1% of the total acreage. It contributes 4,350 gantangs which make up only 6.5% of the total padi output.

Seri Raja is more extensively cultivated in the Block than Seruyong. It is cultivated in 35 acres which are 13.1% of the total acreage. Its total padi output is 8,100 gantangs which make up only 12.1% of the total output.

The least variety cultivated in the Block is Mengkudu. Only nine acres or 3.4% of the total are taken up by this variety. Its total output 2,150 gantangs constituting only 3.2% of the total.

The 'mixed' varieties are cultivated in 98 acres, that is 36.6% of the total acreage. The total output yielded is 25,600 gantangs which form 38.2% of the total.

Radin is thus the most cultivated variety in the Block, followed closely by 'mixed' varieties. Seri Raja is third, while the fourth place is occupied by Seruyong, and Mengkudu the last.

From this consideration of the total padi output of the different varieties, we proceed now to examine the productivity per acre under each of these varieties. The figures regarding this is set out in Column 3 of Table 8.2. They are obtained by dividing the total padi output of the variety concerned by the number of acres cultivated with it.

From the Table, it is apparent that the productivity per acre varies between different varieties. Heading the list is the 'mixed' category with the average productivity of 261.2 gantangs per acre. Next comes Radin, with 250.7 gantangs, lesser by 10.5 gantangs or 3.9%. Third is the least - cultivated Mengkudu with the average productivity of 239 gantangs per acre, that is lesser than 'mixed' by 22.2 gantangs or 8.5%. Fourth in ranking is Seri Raja with 231.4 gantangs, lesser still than the highest by 29.8 gantangs making up 11.4%. Finally, the Seruyong variety occupies the last place with its average productivity per acre of only 229 gantangs, lesser than 'mixed' by 32.2 gantangs or 12.3%.

Can we thus conclude that the above variation in output is brought about solely by the difference in varieties of padi cultivated? Here again, I think it is not justified to do. As has be

stressed many a time, productivity is not the function of variety, but of many other factors as well. And we are not in a position now of knowing all these factors and to what extent is each's influence.

However, from experience and observation, other things being equal, we are quite sure that normally difference in varieties does exert an influence on the total output, though the extent may vary according to circumstances. We can say thus that the above variation in output may partly be accounted for by the difference in varieties analysed. If this contention is true, it is noteworthy that the category of 'mixed' varieties produce the highest result.

Further, if the above contention is true, we may raise an important question. Whey should farmers not do away with varieties that produce low output and concentrate on those producing high ones only? The Table shows that Seri Raja, which is fourth in our ranking, is cultivated on a total of 35 acres, or about 11.6% of the total analysable acres. Two important points may be advanced to answer this question. Firstly, output is here measured by volume. This is not the only way of doing so, and is not an all-important consideration. When padi is sold particularly to the Co-operative Society in the Block, it is measured by weight. For farmers who cultivate their padi to sell - and actually most of then do - they would thus concentrate on those varieties which would give relatively the heaviest output regardless of volume. And as a rule, the most volumenous variety is not necessarily the heaviest. Secondly, for farmers who cultivate their padi for own consumption, volume is not the only consideration. Another important consideration is the 'taste' of the rice, such as its hardness and starchiness. These farmers would cultivate the variety that suits most to their taste even at the expense of a little loss in volume.

Padi Output and Productivity per Acre by Location in the Block

Finally, we shall examine the productivity from the standpoint of location in the Block. Map VI shows the analysable lots with their respective total output in gantang.

At a first glance, it appears that no significance can be attached to the location of lots in respect of the total output. Lots with high and low outputs appear to be fairly scattered, with no distinct pattern or concentration.

Let us proceed to see if this first impression of ours is true. Lengthwise, the Block may be distinctly divided into four Rows, on the basis of canals, drains and paths. We have in the Map marked this four Rows as I, II, III and IV, starting from the left. We can thus examine the productivity of each of these rows.

In Row I, the total analysable acreage is 73, and the total output is 19,070 gantangs. This gives an average productivity per acre of 261.2 gantangs for the Row.

In Row II, the total analysable acreage is 67, and the total output is 17,700 gantangs. The average productivity per acre here is thus 264.2 gantangs.

In Row III, a total analysable acreage of 73 yields a total output of 16,500 gantangs, giving thereby an acreage productivity per acre of 226 gantangs.

Finally, in Row IV, only a total of 55 acres is analysable. This gives an output of 13,750 gantangs. The average productivity per acre is thus 250 gantangs, which is, accidentally, the average productivity for the whole Block.

It appears thus that there is not much difference between Row I and Row II; but the two are considerably different from Row IV. In these cases, the average productivity figures concerned are 261.2, 264.2 and 250 gantangs respectively. It large difference is however depicted by Row III, with its average productivity per acre of 226 gantangs. This is less than the average of the other three by 14.4%.

Other things being equal, the difference in the average productivity per acre of these Rows may reflect the fertility of the soil of the respective Rows. But here again, we must be cautious before we jump into a definite conclusion. We do not actually know what are all the other things that are relevant, and we certainly know that the chances for their being equal is exceptionally rare. Again, the proportion of acreages analysable in the Rows is not the same. All these considerations warn us against arriving at a definite conclusion regarding the fertility of the land.

We may divide the Block in another way. This we do in the same Map by dividing the whole Block into four portions of about equal areas, marked A, B, C and D from above. Making a similar calculation as that for Rows, we get the average productivity per acre of 248.6 gantangs, 250.8 gantangs, 241.1 gantangs and 258.3 gantangs for A, B, C and D respectively.

The differences between each of these portions and another range from 2.2 gantangs as that between B and A, and 17.2 gantangs as that between D and C. However, as is the case with Rows, we cannot arrive at a concrete conclusion here other than to point out the existence of the differences.

We have thus examined the padi output and productivity per acre of the Block generally, and from the point of view of the systems of operation practised, varieties of padi cultivated, and location in the Block. As we have pointed out earlier, this does not exhaust the factors which the productivity of the Block. We merely want in this Chapter to have a look at some of them. Some others, such as water conditions and the prevalence of pest and disease, will be the subjects of the following Chapters.