# CARIBBEAN FOOD CORPS SOCIETY

*Annual Meeting*
*Georgetown, Guyana*
*1971*

PUBLISHED WITH THE COOPERATION

OF THE

UNIVERSITY OF PUERTO RICO

MAYAGUEZ CAMPUS

1980

VOLUME IX

# SOME INFORMATION ABOUT PEASANT RICE FARMING IN NICKERIE (SURINAME)

R. E. Dumas[1]/

## INTRODUCTION

Rice is the most important crop of Surinam in terms of both area and export value. In 1968 of the total area under cultivation, about 47,000 ha, nearly 75% was occupied by rice.

The rice-growing area is situated on the coastal plain consisting of young and therefore fertile clay soils (60-90% clay). Under natural circumstances this area is characterized by the presence of swamps.

The total value of agricultural produce in 1968 amounted to Sf 37.6 million, rice contributing Sf 17.7 million of which Sf 9.9 million were obtained from export (31,858 tons).

In 1968 a total area of 35,273 ha produced 115,626 tons of paddy which amounts to an average yield of 3,280 kg/ha. Of the area 71% was situated in Nickerie, the most Western district of the country, supplying 76% of the total output.

### General

Since 1965 peasant farming in the Nickerie district produces more paddy than all other districts together. In 1968 the contribution of the peasant farmers in this district to the total production was about 30%, while that of the other districts amounted to about 24%. The contribution of the Wageningen rice scheme was 36%. The following table shows the distribution of the Nickerie rice area and the productions in 1968.

About 45% of the number of peasant holdings is smaller than 2 ha, while 30% and 20% of the farms are in the class of 2-4 and 4-8 ha, respectively. These farms are owned by Hindustans (62%), Javanese (30%) and Creoles (8%).

The area has a reasonably satisfactory irrigation system, which obtains its water from the Nanni swamp. During the major season (April/May - Aug/Oct) there is sufficient water for all farmers. During the minor season (November-April), however, the water supply is inadequate to enable every farmer to grow a crop.

### Tillage

The Nickerie farmer tends to pay much attention to the cultivation of his land. Dry-tillage is highly valued. The field is usually dry-cultivated

---

1/ Rice agronomist at the Agricultural Experiment Station, Paramaribo, Surinam.

| | Area (ha) | | | Production | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| | Major season | Minor season | Total | Major season tons | Major season kg/ha | Minor season tons | Minor season kg/ha | Total tons | Average kg/ha |
| Peasant farming | 8.722 | 2.035 | 10.757 | 28,521 | 3,270 | 6,614 | 3,250 | 35,135 | 3,270 |
| Large-scale farming* | 7,705 | 6,622 | 14,327 | 28,662 | 3,720 | 23,692 | 3,580 | 52,354 | 3,650 |
| Total | 16,427 | 8,657 | 25,084 | 57,183 | 3,480 | 30,306 | 3,500 | 87,489 | 3,490 |

* including medium-sized (24ha) farms.

twice, after which puddling is adopted as a last operation. The disc-plough and disc-harrow are the most used implements. The weather, however, is decisive as to the number of dry-cultivations possible, especially when two crops are grown per year. Up to now the farmers have paid little attention to the levelling of the field, which is important in the case of direct sowing.

Rice varieties

The assortment of rice varieties in Surinam consists of a number of traditional varieties and of SML*-varieties, the latter especially developed for mechanized cultivation. The old rice varieties such as Skrivimankoti, which are transplanted, have a growth duration of over 160 days. They have drooping leaves and are very susceptible to lodging. The grains are medium or long sized and have a good milling quality. When sown directly, most SML-varieties have a growth duration of 135-145 days, but when transplanted it takes 150-160 days for them to mature. They are characterized by erect leaves and extra-long grains. The SML-varieties are very high yielding and do not lodge easily. Their extra-long grains, however, break easily when not carefully treated. In order to be able to carry out a satisfactory land preparation, a growth duration of about 140 days is too long for Surinam conditions if two crops are to be grown per year. A further disadvantage of these SML-varieties is their plant height, not only affecting lodging but also the disposal of the straw after harvesting. At the rice breeding station of the SML, in the Prins Bernhard polder, several years work has been done on the development of varieties with a shorter growth duration and shorter straw. Recent three early maturing (105-120 days) varieties with short sturdy stems have been released. The extra long grain and the good yielding capacity of the "old" SML-varieties have been retained. Although the necessary experience with these varieties still has to be gained, it can already be stated that when growing these varieties, certain cultivation measures will require extra attention.

Transplanting - direct sowing

Following the example of the Wageningen rice scheme an ever increasing number of farmers have changed over to direct sowing. It is estimated that in the major season about 50% of the area cultivated by peasant farmers is sown directly. In case of continuous heavy rains at the beginning of the season the farmers tend to fall back to the transplanting method. The majority of the farmers (60%) grow SML-varieties. For those farmers who transplant, the variety Skrivimankoti is still a favourite. The rice is sown onto slightly stiffened mud using seed quantities of about 120 kg/ha. On the large mechanized farms 90-100 kg/ha is used. Prior to sowing the seed is pregerminated and subsequently broadcast by hand. At a later stage the empty patches in the field are filled in with plants from places with too close a stand.

---

*SML = Foundation for the Development of Mechanized Agriculture in Surinam.

Weed control

The need to control weeds is more apparent with direct sowing than with transplanting. Many farmers who have changed over direct sowing still are not sufficiently aware of this. Though the noticeable recent increase in the sales of herbicides and spraying equipment is an indication that the farmers are going in the right direction, the importance of this cultural measure needs constant emphasis. Field trials have shown that a correct weed control results in average yield increased of about 20%. Most weeds can be controlled with 2,4-D and propanil.

Fertilizer use

The rice in Nickerie is fertilized exclusively with nitrogen (urea). Though there are indications that there is some need for phosphate, further research will have to confirm this.

Fertilizing with nitrogen was quickly adopted by the farmers in Nickerie. According to the fertilizing schedule used until recently at the Wageningen rice scheme, nitrogen was to be applied at three stages:

during tillering (40-45 days after sowing)
during panicle initiation (60-65 days after sowing)
during flower differentiation (80-85 days after sowing)

The total quantity amounts to 120-180 kg urea/ha, split about equally over the three dressings. Now the fertilizing schedule is more detailed. Field trials in the peasant rice polders have shown that the "old" fertilizing schedule may result in yield increases of 500-1000 kg/ha for the first two dressings and about 400 kg/ha for the third. The third dressing was only introduced in 1968 but so far has not been adopted by many farmers. Most farmers fertilize twice, and some only once. There is considerable variation as to the quantity and division of the total amount of the fertilizer as well as to the stages at which it is applied. Fertilizer management can still be improved on. Urea is being broadcast by hand onto a drained field.

Pests and diseases

Until now Helminthosporium oryzae is the most widespread disease. Since this fungus is generally considered as a weak-parasite optimal cultural measures are being recommended as a preventive control.

Snails (Pomacea lineata, Pomacea glauca), caterpillars (Laphygma frugiperda) and seedbugs (Oebalus poecilus) are pests which appear season after season and are the main threat to the farmer's rice crop. In general, farmers are willing to control pests because they cause visible damage. It appears, however, that there is some need to stress proper timing as well as the importance of co-ordinated control measures. The realization of the last point will not be easy since the Nickerie rice farmer is rather individualistic. Another problem is, that following the example of the Wageningen rice scheme and the medium-sized farms, the peasant farmers also have started to use poisonous chemicals. Since the water of the rice fields

is sometimes drained into irrigation canals the water of which is being used for laundry (sometimes even for drinkwater), it will be clear that public health might be seriously endangered. Soon, however, a pesticide ordinance is expected to come into force.

Harvesting

Harvesting is done mainly mechanically. As with cultivation operations, contracting machinery for harvesting is an increasing practice. In the Nickerie district there are 47 combines which means that if the harvesting period is 2 1/2 months, during the autumn-harvest each combine must to about 3 ha a day. Still a shortage of combines was noticed during the autumn-harvests of 1969 and 1970. The cause of this can be attributed to too small a spread of the harvesting period, the state of repair of the combines, lodging of the crop, heavy weed growth on a number of farms and the quite considerable distances between farms.

It must be stated that the timely harvest and drying of the paddy is essential to obtain a good quality. Many a farmer wants to harvest early because at that time the prices are higher than later in the season. In order to achieve this the field is often drained too early which means the crop is forced to ripen. It is clear that this unfavourably affects yield and quality.

At the moment the available drying-capacity in Nickerie is 43 tons/hour. Under the present conditions this is insufficient, which is once more attributed to the small spread of the harvesting period. The buying-up of the paddy and the drying equipment are mainly in private hands. For a number of reasons many farmers are selling a considerable part of their crop before harvest to such a merchant.

Water management

With the present system of farming, where direct sowing is used, the water management is fairly complicated. During the growing season the fields have to be flooded and drained several times. which means a waste of water since the drainage is not pumped back into the irrigation canal. Other causes of the waste of water can be attributed to a lack of a clear supervision of the water use. In order to use the irrigation water as efficiently as possible serious attention will have to be paid in the near future to the cultural methods and to the supervision of the irrigation system. At present water shortage is restricted mainly to the minor season so that not every farmer can grow a second crop. Since the interest in a second crop is on the increase the need for sufficient water becomes more urgent. At the moment the water level in the irrigation canals during the minor season is brought to about 10 cm below ground level so that a water-pump is virtually essential to the farmer.

Other aspects

The income of the smallholders is low because it is largely determined by the size of the farm. Moreover it fluctuates with yields and prices.

Many youngsters, therefore, are leaving the farms whilst most of the Nickerie farmers are looking for off-farm work in order to increase their income. Part-time farming probably also promoted by the increasing mechanization, is an important aspect of peasant rice farming in Nickerie. Also because of the considerable population growth unemployment is quite a thorny problem.

A further point is that the peasant farmer is presently very dependent on the private rice buyer, who normally owns the drying and processing equipment. With their method of buying there is no incentive for the farmer to improve on the quality of this product.

Although at the moment the total output of peasant farming still does not cover home consumption, it is to be expected that in the future one has to reckon with an increasing quantity for export. In this connection it is interesting to note that presently, in cooperation with Dutch experts, a plan is being prepared to efficiently transmit to the farmers all that is known about rice growing in Surinam.

## SUMMARY

Nickerie is the most important rice district of Surinam. The majority of the rice growers have small farms which provide an insufficient income so that part-time farming is widely practiced. The progress in peasant rice farming, due to the presence of medium-sized and of large rice farms and the existence of a reasonably satisfactory irrigation system, is marked by the use of improved varieties, the switch to direct sowing, the increasing interest in growing two crops per year and the degree of mechanization. Several cultural practices can still be improved on. Extension work is being stepped up. Several other measures should be taken to promote a sound development of the rice industry.

Du/JS