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Ranoe S.Mangal-Jhari, Lydia Ori, Abdullah Adil Ansari, and
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CFCS Treasurer
Agricultural Experiment Station
Jardín Botánico Sur
1193 Calle Guayacán
San Juan, Puerto Rico 00936-1118

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A REVIEW OF THE PROCESSING CAPACITY OF GUYANA'S RICE INDUSTRY

Dhirendranath Singh and J. Singh, Guyana Rice Development Board (GRDB)
117-118 Cowan Street, Kingston, Georgetown, Guyana. Email: dinosingh@grdb.gy

Abstract: The Guyana rice industry has experienced significant growth over the years to become one of the largest agricultural sub-sectors in Guyana. Over the last decade the industry increased yields from 3.5mt per ha to 5.2mt per ha thus increasing exports from 51,000 mt in 1990 to over 336,000tonnes in 2010. The recent success in the form of increased production due to expanded acreage and increased productivity in the increase yields; have underlined the need to assess our current processing capacity to determine whether it is sufficient to deal with the increasing production. A survey was conducted by means of questionnaires sent to all mills and data was extracted. The country has the ability to take in 13,945mt of paddy per day, however can only dry 13,281mt per day. This indicates a deficiency in drying capacity, which is more pronounced in regions 4&5 and 3. There is a deficiency in storage capacity in the country especially in regions 6 and 3 where productions far exceed storage capacity. There is an absence of the capacity to store paddy for a long term basis (more than a year), as the current system only caters for storage of 3 to 4 months. The milling capacity in the country is 256mt/hr. There is generally a lack of separate storage for finished product, since rice is mostly milled to order and is shipped within 3-4 days.

Keywords: processing capacity, drying capacity, storage.

1.0 Introduction

The Guyana rice industry has experienced significant growth over the years to become one of the largest agricultural sub-sectors in Guyana. The sale of paddy generates over G\$40 billion annually which sustains roughly 20,000 farm families directly through rice cultivation and thousands more in the milling, exporting, input supply, transport sectors. The industry is export oriented where as much as 70% of the rice produced is exported with the potential to earn over US\$250 M annually from exports.

Over the last decade the industry increased yields from 3.5mt per ha to 5.2mt per ha thus increasing exports from 51,000 mt in 1990 to over 336,000tonnes in 2010. These changes were due to the development of disease resistant rice varieties, increase in quality seed paddy produced and distributed to farmers, rehabilitation of the drainage and irrigation systems, and access to the Venezuela market. Yields have continued to increase with the recent release of new varieties where yields were averaging 5.4 mt/ha for the first crop for 2013.

The recent success in the form of increased production due to expanded acreage and increased productivity in the increase yields; have underlined the need to assess our current processing capacity to determine whether it is sufficient to deal with the increasing production. This need was emphasized during the first crop of 2013 where the delay in marketing arrangements with Venezuela led to the non-movement of paddy and rice for most of the harvesting period. During this period the industry's ability to store and dry the harvested paddy in a timely manner were put to the test. Had the marketing arrangement not been completed in May, the situation may have

arisen where the entire crop may have had to be harvested and stored. Had such a situation occurred, the question that begs an answer is whether it would have been possible. This study is aimed at answering this question by seeking to update the processing capacity of Guyana rice industry.

2.0 Methodology

Data was collected for this study by way of questionnaire and interviews. A questionnaire was designed to collect information on the various aspects of rice processing from the intake of paddy, drying, storage and milling. The questionnaire was discussed with the Quality Control Manager and Regional Supervisors at their Monthly meeting before being distributed. The questionnaire was distributed by the Regional supervisors to the mills in the various regions. Two weeks were scheduled for the distribution and collection of the questionnaire from the mills after which analysis was done.

3.0 Findings

Rice Cultivation in Guyana is spread in five of the ten administrative Regions: 2, 3, 4, 5 and 6, the summary of findings for each region is presented. Rice grown in Region 9 is part of a special project and was not considered in this study.

3.1 Intake

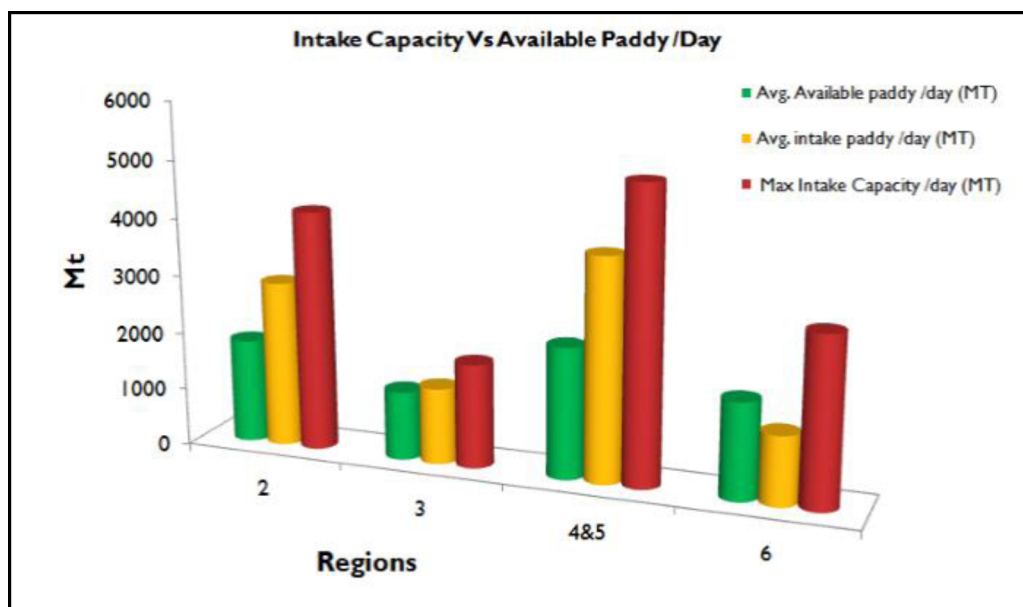


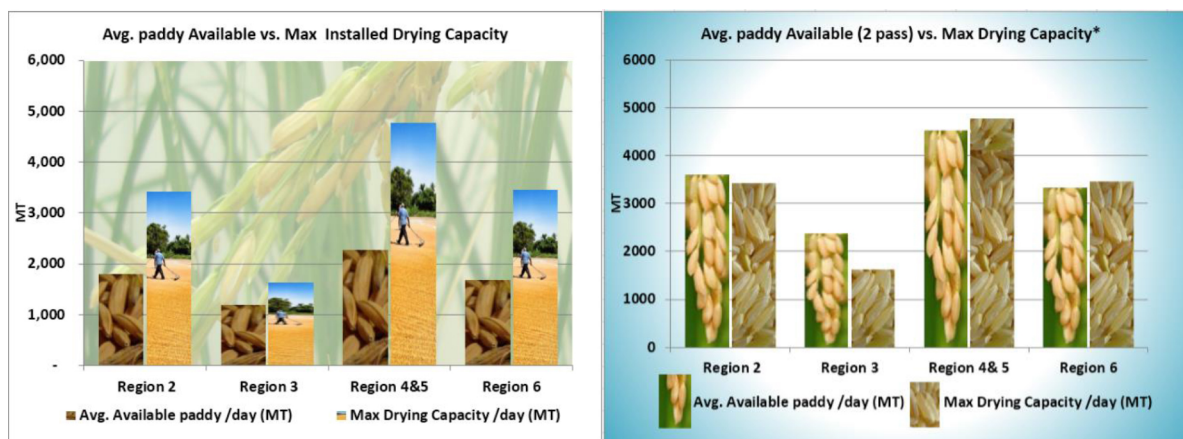
Fig. 3.1 Intake Capacity vs Estimated Average paddy available for Purchasing per day

Intake capacity refers to the amount of paddy a mill can purchase and take into its system per day, the activities during intake involves sampling, grading, weighing and discharging. Paddy starts to deteriorate immediately after harvest. This process is suspended by a reduction of the moisture content of the grains (drying) allowing for paddy to be stored safely for long periods. Thus, delays or inefficiency at any point in this system will affect the rate of harvesting and would lead to losses infield, and post-harvest losses in quality. It was found that the average intake capacity of mills in

all regions with the exception of region 6 was adequate to process the estimated average paddy available for purchasing (Fig.3.1). The estimated average paddy available for purchasing per day is calculated by determining the average hectares harvested per day times in each region and multiply it by the average yield for the region. It must be noted that this situation exist when all mills are actively purchasing paddy, if one or more mill do not purchase for the crop, the situation changes. Maximum intake refers to the total amount of paddy the mill can take in; this refers to taking in paddy but not necessarily going into the drying system immediately, usually paddy is store in heaps on the drying floor until space is available in the dryer.

3.2 Drying

Drying capacity refers to the mills ability to reduce the moisture content of the paddy it takes in (purchase) to 14% of below for safe storage. The reduction of moisture through drying stops the biological and chemical process within the grain that leads to deteriorating, thus drying and dry capacity are crucial elements in a milling system.



(a)

(b)

Fig. 3.2 Drying capacity vs. (a) One and (b) Two Passes in the dryer with Paddy Available per Day

Paddy is harvested at moisture content ranging between 18- 28% and has to be brought down to 14% for safe storage. Most mills achieve this by two passes; or a two stage reduction with tempering period between. It was found that the country has an installed drying capacity of 13,280 mt while the average paddy available for purchasing during per day was 6,931 mt. This would imply that there is an over capacity of 6,349 mt (Fig3.2a) however, when the practice of drying the paddy in two passes is considered; (the same amount of paddy has to be dried two times) a deficiency in drying capacity of 582 mt is exposed (Fig3.2b). Comparing the Regions, it is seen that deficiencies exist in Regions 2 and 3 while the margins in Regions 5 and 6 are slim. It was found that that in several instances, deficiencies in drying manifested not because of lack of dry capacity but due to factors such as lack of tempering bins and storage resulting in the dryer becoming a temporary storage facility.

3.3 Storage

Safe storage time is the period of exposure of a product at a particular moisture content to a particular relative humidity and temperature below which crop deterioration may occur and beyond which the crop may be impaired. The findings revealed that the industry possess the capacity to store 378,976 mt of paddy per crop, however the average production for the last three crops is 385,330mt, representing a deficiency in storage capacity of 6,353mt. This suggest that if needed the industry is not capable of harvesting and storing an entire crop production. Comparing the Regions, the greatest deficiency exists in Regions 5 and 6 while region two is the only Region in which capacity exceeds production (Fig. 3.3-1).

It was found that most mills store paddy for three to four months; thus all paddy is milled and sold before the commencement of the second crop. The deficiency in storage capacity has been countered by milling and exporting as paddy is being purchased from the farmers. For this system to be effective, markets have to be in place at the commencement of the crop so that as paddy is coming in, rice is being sold. It has been observed however, increased production in recent crops results in more and more carry over stock(all paddy is not sold before the commencement of the next crop), this situation further reduce the storage capacity the mills. Another factor that reduces the storage capacity is that some mills do not operate for a crop or do not operate at full capacity for various reasons.

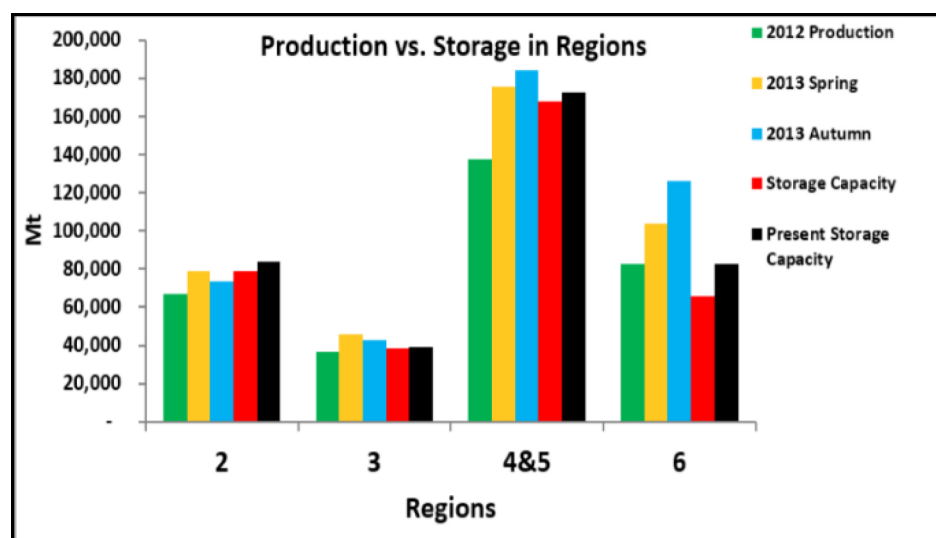


Fig.3.3-1 Storage Capacity vs. Production in Regions

4.0 Discussion

The processing capacity of the industry as the results of this study points out, could be viewed as not being in sync with production. This is evident in key areas such as drying and storage; the industry has a total storage capacity per crop of 350,278mt, a difference of 54,688mt between storage and production for the 2013 spring crop. By August 2014 storage capacity would have increased to 378,976 mt however paddy production for the 2014 spring crop was at 481,693 mt; a difference of 102,717mt. this suggest that while efforts to increase capacity is being made in the processing sector the continuous increase in production results in the status quo remains the same.

The findings of this study indicates that the industry currently lacks the capacity to store paddy on a long term basis (more than a year) without affecting normal operation. The industry currently operates on the basis that paddy harvested for one crop is milled and sold before harvesting for the next crop begins; this method ensures there is space to accommodate the next crop. However, if there is some amount of carry over stock, the capacity of the mills for the next crop will be reduced. Because of this method of operation the length of time paddy is stored for is 3 to 4 months, since paddy must be sold to bring in the cash flow to pay farmers. This system does not provide any incentive for millers to keep paddy long, since they need the space to continue operation, and the cash flow to pay farmers. The disadvantage of this system is that the prices received by millers for their rice and by extension the farmers for their paddy is subjected to fluctuations in the world market.

The drying capacity of a mill usually affects the intake capacity of the mill, this is because paddy coming in from the field must be dried before storage to maintain quality. The fact that the intake capacity is greater than that of the drying would indicate that some amount of paddy may have to be stored before it can be dried. When this occurs, quality deteriorates more rapidly and may result in discoloration. There appears to be a need for increased drying capacity so that to facilitate faster intake resulting in an increasing harvesting rate. One area of concern is the lack of separation of different qualities of paddy purchased. Most mills indicate that all paddy is stored together regardless of quality. This practice limit the ability of the mills to manage their stock and the ability to meet quality various quality requirements; may not be able to access good quality when needed , or blend good quality with poor to meet contract requirements. The industry has a milling capacity of 256mt/hr, finished product (milled rice) is generally stored within the mill area, with only a few mills having separate storage. It was also observed that interest in setting up separate storage for milled rice is limited since in most cases rice are milled close to shipment.

5.0 Conclusions

The Rice Industry of Guyana has had recent success in the form of increased production due to expanded acreage and increased productivity in the increase yields; this have underlined the need to assess our current processing capacity to determine whether it is sufficient to deal with the increasing production. Conclusions drawn from this assessment are as follows;

The country has the ability to take in 13,945mt of paddy per day, however can only dry 13,281mt per day. This indicates a deficiency in drying capacity, which is more pronounced in regions 4&5 and 3. There is a deficiency in storage capacity in the country especially in regions 6 and 3 where productions far exceed storage capacity. There is an absence of the capacity to store paddy for a long term basis (more than a year), as the current system only caters for storage of 3 to 4 months. The milling capacity in the country is 256mt/hr. There is generally a lack of separate storage for finished product, since rice is mostly milled to order and is shipped within 3-4 days.

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