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RICE PRODUCTION CONSTRAINTS IN THE CARIBBEAN

E. L. Pulver <sup>1/</sup>

M. J. Rosero <sup>2/</sup>

INTRODUCTION

BIBLIOTECA

In 1985 approximately 480,000 ha were planted in rice in the Caribbean region resulting in a production of 1.6 million tons of paddy rice. However, the region had a net rice deficit of over 200,000 tons (Table 1). Cuba is the largest producer in the Caribbean with an annual harvest of approximately 500,000 tons but this cannot satisfy domestic needs and importation in excess of 300,000 tons (paddy) is required annually. The Dominican Republic is also a major rice producer with a yearly production of 450,000 tons and like Cuba importation of milled rice (approximately 50,000 tons/year) is required to satisfy local demand. Guyana and Surinam produce approximately 300,000 and 250,000 tons respectively and are traditional exporters. Haiti has a notable annual production of 100,000 tons but demand exceeds local production in excess of 60,000 tons. Trinidad-Tobago and Jamaica are large importers with annual deficits of approximately 50,000 and 100,000 tons, respectively. Also, Belize is a minor importer due to its low national production of only 8,000 tons of paddy rice.

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<sup>1/</sup> Rice Program, CIAT A.A. 6713, Cali, Colombia.

<sup>2/</sup> IRRI Liason Scientis, IICA, P.O. Box 711, Santo Domingo, Dominican Republic.

Yields are quite variable across countries ranging from 2.2 t/ha in Haiti and Trinidad - Tobago to 4.2 tons/ha in the Dominican Republic (Table 1). Generally speaking, yields in the region are low taking into consideration that a high percentage of the rice is grown under irrigation using modern, high-yielding varieties (Table 2). This indicates that factors other than varieties are limiting production. The purpose of this paper is to identify the main production constraints thus enabling research and extension activities to be focused on these principal limitations.

#### PRODUCTION CONSTRAINTS

##### a. Varietal

The adoption of improved, high-yielding, semi-dwarf genotypes has been very successful in the Caribbean and at present more than 80% of the rice area is planted in these type of varieties (Table 2). However, more appropriate varieties are required. Present varieties are almost without exception susceptible to a range of diseases including Piricularia oryzae. Cuba requires varieties with cold tolerance and earliness combined with resistance to Piricularia and hoja blanca. Other areas such as Dominican Republic could also benefit from early, cold tolerant material with disease resistance. Future varietal improvement activities should be oriented toward localized problems and activities devoted to testing of large nurseries of widely adapted material curtailed.

However, in most cases the simple introduction of more improved genetic material will have only a minor impact on production. Varieties currently being grown have a yield potential of 6-8 tons/ha when under proper management but in farmers' fields these varieties are yielding only 2-4 tons/ha. The factors that are limiting the ability of high yielding genotypes in expressing their yield potential must be identified and corrected if significant increases in production are to occur.

b. Crop management

Most national research programs in the Caribbean have limited human and financial resources. Consequently, the need to focus activities on primary production constraints is essential. In many cases little research is required as a vast amount of knowledge is available concerning rice management. What is required is transferring the existing information to farmers.

The principal limitations to rice production in most of the Caribbean are poor land preparation, water management and weed control. Land preparation costs throughout the region are high due to inappropriate equipment (Table 3). For small irrigated rice farmers, 20 HP tractors are available in Brazil. The introduction of appropriate machinery can greatly increase land preparation efficiency. Crop protection costs are also elevated due to improper weed control and the use of chemical protection against insects and diseases. Weed control cost and efficiency can be improved through the use of integrated practices involving puddling and pre-emergent herbicides. The cost of weed control in this system is less than US\$50/ha. The use of fungicides

can essentially be eliminated with the identification of better genotypes. Insecticide use can also be greatly reduced via integrated pest management (IPM). An IPM program is developing in Cuba but is only commencing in Surinam when insecticide usage is indiscriminate.

Harvesting costs are in excess of US\$20/ton throughout the Caribbean due to lack of appropriate machinery (Table 3). Small stationary threshing have been introduced in Dominican Republic but this Asian type of equipment is suitable for extension less than 3 ha. Small combines that can harvest 2 ha/day are available in Southern Brazil at a cost of less than US\$15,000. The cost of harvesting with these small combines is less than US\$14/ton.

The above discussion illustrates that methods of improving crop management are available. Little research is required in most cases; for example, weed control. Better agronomy at the farmers' level will depend upon an active extension program.

#### SUMMARY

Rice production in the Caribbean region is at present unable to meet local consumption and if production does not increase the area will face huge deficits within the immediate future. In Figure 1 projections of future needs during the next 15 years are given assuming various levels of consumption. If consumption remains constant the area will have a deficit of approximately 700,000 tons of paddy rice by the year 1995 due

only to population growth. This projected deficit could soar to over 1.5 million tons if consumption increases accompanies population growth.

Although, it will be difficult to eliminate rice deficits in the Caribbean region, considerable progress can be made if research and extension activities are properly focused. Emphasis should be given to yield improvement as expansion of the area planted will be difficult in most of the region. In some cases such as Haiti a considerable effort is required to improve irrigation infrastructure. There is a tremendous need for national institutions to thoroughly evaluate production constraints and direct their resources toward these activities. A major effort should be devoted to crop management thus requiring an active, well-trained extension service.

Table 1. Area planted, production, yield and consumption of rice in the Caribbean region.

Country	Area Ha x 10 <sup>3</sup>	Production <sup>1/</sup> t x 10 <sup>3</sup>	Yield t/ha	Consumption <sup>1/</sup> kg/capita
Cuba	135	500	3.7	84
Dominican Republic	107	450	4.2	81
Guyana	97	297	3.1	153
Surinam	50	200	4.0	100
Haiti	50	110	2.2	25
Trinidad/Tobago	10	22	2.2	55
Belize	3	8	2.7	54
Jamaica	0.5	1.4	2.8	38
Total	452.5	1588.4		

<sup>1/</sup> In terms of paddy rice.



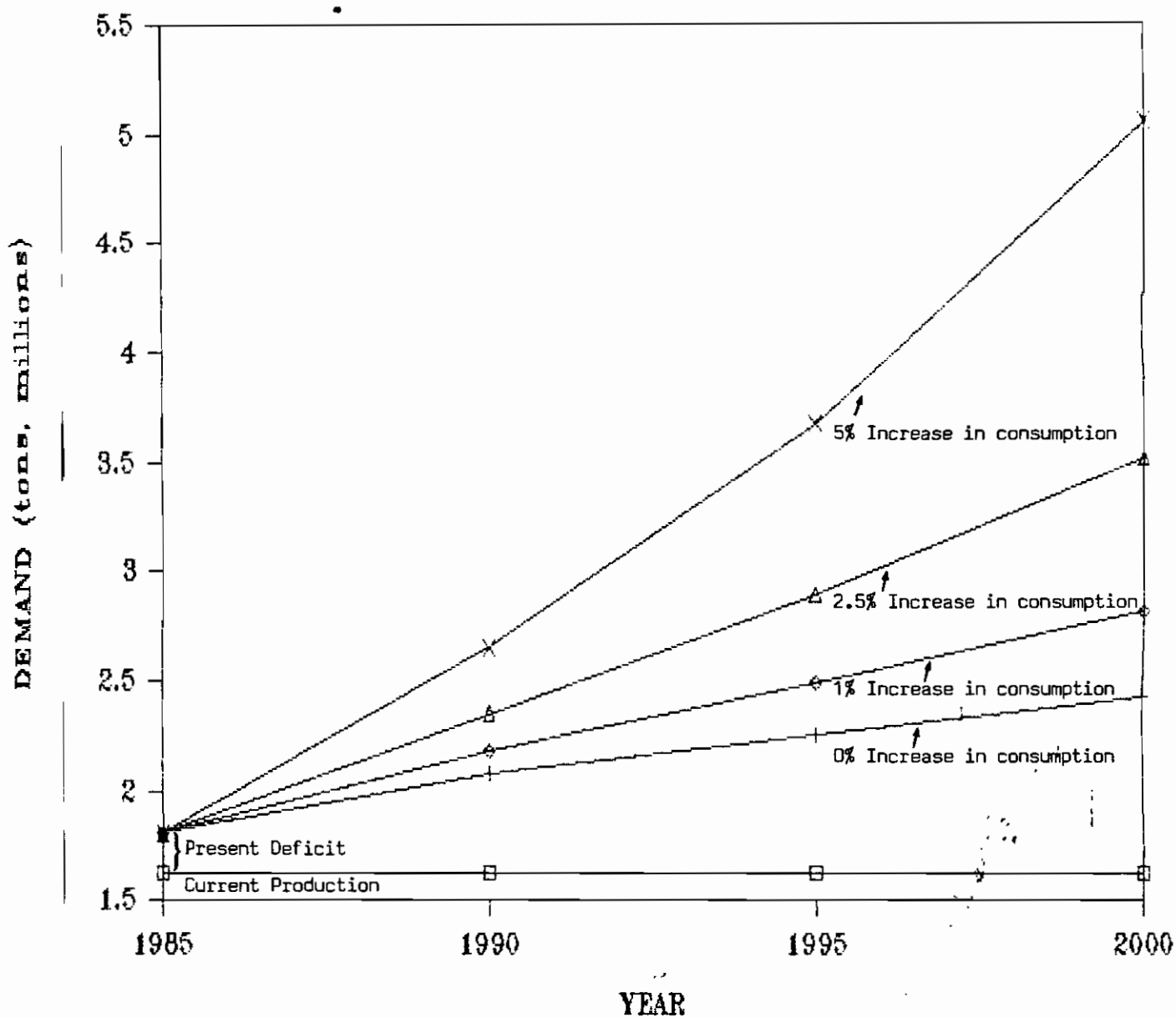


FIGURE 1. Projections of rice needs in the Caribbean region assuming various levels of consumption.