

I. INTRODUCTION

1. Nomenclature

Rice sensu lato is the name of a plant and its produce. In the latter sense the word is more strictly applied to the milled grain as an article of commerce and to the cooked product.

The term 'padi', which is Malayan in origin, means simply rice, the plant in the field and the grain in the rough, unhulled state, before it has undergone any milling operations, and regardless of the method of cultivation. The term is often times used in its English form 'paddy'. Both 'padi' and 'paddy' may be used as the name of a field of irrigated rice enclosed by a bund or dike. Unmilled rice is sometimes referred to as 'rice in the husk' or 'rough rice'. To avoid confusion, the term 'padi' will be used throughout this paper with its original Malayan meaning. The term 'rough rice' is also used to denote 'husked' or 'brown rice'. The process of hulling, which removes the husks or glumes (see Fig.I), reduces the weight of the grain by about 25 percent. A further pearling process removes the thin outer coverings of the seed and leaves 'cleaned', 'milled' or 'white rice', the weight of which, including both whole and broken grains, is generally taken as equivalent to 62 percent by weight of the original padi. The grain may be subjected to further processing (e.g. cleaning and polishing) but the weight is not thereby appreciably affected.

'Cargo Rice', which was sometimes exported from Burma during prewar years, consists of husked but uncleaned rice with an admixture of padi amounting formerly up to 20 percent by weight. At the present time, if any cargo rice comes on the market, it contains only two percent by weight of padi.

'Boiled' or 'parboiled' rice enters into the trade of some countries. This rice is similar to cleaned rice, but has

undergone a process of steaming or boiling before husking and pearling. A high degree of milling removes all or most of the vitamin BI or aneurin, a deficiency of which in a dietary causes the disease beri-beri. The use of parboiled rice, which is less highly milled than ordinary white rice and of undermilled white rice, is recommended in places where rice is the staple food.

2. Rice as a World Crop

Rice is believed to be the world's greatest crop. It is the principal food of about half the people in the world and it may be said that rice and wheat together are the most important of the world's grain crops. To quote Copeland (9) "no other human food is produced in quantities comparable to either of these Rice is the surest and most regular of great crops. It is probably the staple food of the greatest number of people and men live upon it more exclusively than upon any other food. The number of cultivated varieties probably exceeds that of all other grains combined." Table I shows the estimated world acreage and production of the chief cereal crops for the period 1930-45, and it can be seen that the acreage and production of rice is exceeded only by that of wheat. (7).

Rice is grown chiefly for human consumption. It forms the staple diet in most tropical Asiatic countries. Accurate figures are not available on the number of people who are largely dependent on rice as their chief energy food, but it is generally assumed to include a large part of the population of China, India, Japan, Chosen, Taiwan, Ceylon, Indochina, Siam, the Dutch East Indies, the Philippine Islands, Malaya and Madagascar (25). It is also used as a supplementary foodstuff in the dietary of many temperate countries. Rice for direct human consumption consists of the whole grain together with a mixture of the larger broken grains, the proportion of broken grains depending on the quality of the rice. It is consumed largely in

the boiled state as a vegetable or dessert. The smaller broken grains are used in the preparation of rice flour and starch and in the brewing and distilling industries. They are also used as human food and as a feed for livestock.

Rice bran and polish, byproducts of milling, are used as concentrated feed for livestock. Rice polish is used as a filler for sausages and in the manufacture of buttons. Rice husks, usually with a high content of silica, are often used in mills as fuel; as a source of cellulose for building materials like celotex, for making cardboard and for packing purposes; as a soil mulch and in the manufacture of certain gases. Rice straw can be used for thatching roofs; making ropes, mats, paper, bags; covering furniture; as bedding and feed for livestock and as a mulch or fertiliser.

The principal padi-producing countries of the world are located on the continent of Asia and the adjacent islands, but it is now grown extensively in Africa, Italy and Spain. Since 1939, with the outbreak of World War II, production has increased in the United States of America, Australia, Brazil, British Guiana, Surinam and other Central and South American countries. In these tropical and subtropical regions, padi is by far the most dependable cereal crop that can be grown. It may require irrigation and rather intensive methods of cultivation but it is the only grain crop that would do well in such low-lying areas and so humid an environment.

Owing to the large area under padi in India and Burma, the Empire plays a more important rôle in world production than is the case with other cereals. These two countries alone accounted for about one-half the world acreage during prewar years. Padi is cultivated throughout the tropical portions of the Empire, though on a small scale when compared with India and Burma. Appendices I and II serve to illustrate the Empire's position relative to world acreage and production during the prewar period 1931-32 to 1938-39 (20).