

## RICE—ITS ORIGIN AND USE

A. SUBRAMANIAM, M.Sc. (Ag.),

*Rice Breeder, Agricultural College, Coimbatore*

Rice forms the principal food of more than half of the human race. During his history man has used at least 3,000 species of plants for food. Rice which is the oldest among these still enjoys the position of being the major plant species that feeds more than half the world's population. Rice has been in existence in China, India, Jawa and Africa long before the era for which historic evidence became available. In India rice has been under cultivation for more than 5,000 years.

Decandele was of the view that India might be the original home of rice. According to Watt, the chief habitat of rice is to be found in South India from where it could have spread to Indo-China. Vavilov, the Russian scientist, records in his expeditions that South West Asia might be the centre of origin of cultivated rice. The wealth of forms and varieties found in the South West Himalayas and in other neighbouring countries indicates

the probability of the South or South East Asian countries as the centres of origin of rice. In many languages of South East Asian countries, agriculture and rice or food and rice are synonymous indicating prosperity. In ancient Chinese work, it is recorded that the sowing of rice is an important ceremony nearly 5,000 years ago in China and that the emperor alone enjoyed the privilege of owning rice, the less important cereals being left over to the less exalted members of the family. There are records to show that rice was grown in Jawa as far back 1,084 B. C. Susruta (1,000 B. C.) in his ayurvedic materia medica recognised the differences among rice existing then in India. Ancient Hindu scriptures and literature bear ample evidence to the fact that in India rice is the chief offering to God. The Indian food offered as "Sraddhos" since vedic times is rice soup and honey. In Upanishad, rice is referred to as one of the ten kinds of cultivated

seeds. Magasthenes (315 BC), the Greek ambassador from Selukas to the court of Chandragupta Maurya, has mentioned the sowing of rice in his account. In Kautalya Arthashastra, Vishnugupta, the minister of the Great Mauriyan king Chandragupta refers to the names of two varieties of rice namely 'Sali' and 'Vrishi'. Rice has been mentioned in Manusmriti (200 BC), Markandeya Purans, Vishnu Purana, Purananuru etc. A type of rice with red kernal under the name 'Senneal' appears to have been the predominant variety under cultivation in Tamil Nadu during the Chola period. (Seventh Century).

The use of rice in all the social customs, festivals and Hindu religious ceremonies connected with birth, marriage or funeral, reveals its intimate association with the life of the Indian people. The custom of throwing rice upon newly married couple as a blessing is quite common in many Asian countries even today.

There is reference to paddy crop cultivation under irrigation in China in the book of poetry supposed to have been written in Chinese in about 781-771 B. C. In Ceylon rice has been grown from time immemorial. Till about 543 B. C. it was grown rainfed. The earliest references to tanks to conserve water for irrigating rice was in 420 B. C.

In Phillipines rice cultivation is of great antiquity the crop was introduced in Japan from China in about 100 B. C. In Philippines native life was largely organised around production of rice and there is a belief among the native folk that if the success of rice could be accured by ceremonial means,

other crops will a utomatically take care of themselves.

No reference to rice is found in ancient Egyptian tombs or writings. There is no mention of rice in Bible. The Greek historian Diodore of Sicily describes the plant and its cultivation from reports made to him by Aristotle who took part in the expeditions of Alexander the Great to India between 344-324 B. C. Rice was, therefore, known to Romans and its cultivation should have existed in Sicily even in very early times.

Records show that during Roman Empire rice was imported and appeared in the Roman market as a cheap product recommended by Greek doctors as a readily digestible food. Rice was introduced in the Nile delta by Arabs, in Madagascar by Malayas, in East Africa Islands by Indians, by the Moors to Spain, by Spaniards to Italy and by the Turks to South East Europe. The Portugese introduced rice into Brazil and by Spaniards to America and South America. Hawaii knew about rice in 1853 A. D., The French took it into New Guledonia and Germans to New Chinae. Farmers of New South Wales grew it under rainfed conditions as early as 1891. In Australia, its cultivation as a commercial crop started in 1924.

In Malay Peninsula, precautions are taken to ensure the well being and prosperity of the rice sown upon which the success of cultivation depends. Prayers are offered before sowing, planting and harvesting of the rice crop. A new born Malay baby is laid at birth on a platter of parched rice; on the 40th day he is taken to a river bank and parched rice, dyed with turmeric is sprink-

ed on the river water and several packets of cooked rice are offered to the spirits.

At circumcision, a boy is sprinkled with parched and dyed rice and given boiled glutinous rice coloured yellow with turmeric to eat while he is by way of ceremony rubbed with two coconuts and two small packets of rice. On the occasion of the marriages, rice is applied to the foreheads and hand of the betrothed. Building of a new house, launching of a new boat, planting of rice and new ventures of any kind demand ceremonies in which rice is used. In Thailand rice has a lucky character and plays an important part in all domestic and official ceremony. The Goddess "Ceres" presides at the sprouting of cereals and children are taught to revere her before meals.

The first successful introduction of rice culture into USA was made in 1685. A ship sailing from Madagascar suffered heavy damage on a storm and sailed into the port of Charleston, South Carolina for repairs. The captive of this ship gave a small quantity of paddy seed to a local planter as gift and this became the famous 'Carolina' rice which represented the standard of high quality rice throughout the world.

Consumers of rice vary in their preference for different types of rice. In USA, preference is for the long grain types. Chinese like long rice while Japanese preference is in the method of consumption. The Scandinavian countries consume rice mostly in the form of sweetened deserts. In parts of India, red rice is considered more

nutritious than the white grain rice. Some people prefer purple grained rice. In Burma certain mountainous varieties of rice are considered specially tasty and more nutritious than the ordinary varieties under cultivation. A quantity of raw rice is thrust into the joints of small gamboos, a little water added and the crifice is closed. It is then roasted and eaten with a little butter and salt and it is most delicious. Among certain South American hilly tribes, there is a preference to musty rice. The preference to varieties differs according to the customs rice is preferred to parboiled rice in certain locations while among certain classes of people it is consumed only in the form of parboiled rice. Parboiled rice is more nutritious than raw rice and is also utilised for breakfast preparations like Dosai, Iddlies, Idiappam etc. A few varieties are reputed for their excellent quality and they are specially suited for particular type of preparations made out of rice. The quality of rice required for making puffed rice, popped rice and beaten rice is quite different from that of the variety used for 'Puttu'. In the case of varieties used for making 'Briyani' those with aroma and taste even among the scented varieties. Varieties like Basumathi, Jeeragasamba, Rascadam, Rajabhogum Sugadas, Black Puttu, White puttu etc. fetch better prices in the market as they are particularly suited for specific preparations to suit the differing tastes of the people.

In addition to the ordinary food and feed uses of rice and its by-reproducts certain types of broken rice are utilised widely in the manufacture of specialised alcoholic beverages and drinks. There is historical evidence to show that a

kind of beer, prepared from rice has been in use throughout India. The term 'Sura' frequently mentioned in the Institutes of Manu about 2,000 years ago, refers to the spirit prepared from rice. The Portuguese soldiers in India were reported to have liked the fermented drink prepared from rice in place of the imported wine of their own country. In an appeal to the king of Portugal, the chief of the army reported that if steps were not taken to check the acquired form of intoxication, the army would be completely demoralised. It was reported by Britishers that people of India had not only known and practised the art of distillation from time immemorial but their apparatus appeared to be so simple that no fiscal regulation, however stringent, could completely control or prohibit the rural production and consumption of the intoxicating drinks. In addition to beer, rice is also utilised for the preparation of wine and spirit in Jawa where the rice is boiled and stirred with "Razi" which consists of onions, black pepper and capsicum. The resultant liquid is allowed to remain exposed in open tubs until fermentation takes place. Then it is poured in earthen vessels and buried for several months. In Thai, rice is cooked without water or steam and condiments consisting of ginger and other spices are sprinkled over and the mixture is wrapped in Banana leaves. In 24 hours after wrapping, a sweet liquid exudes which is collected, reserved and used as a drink. Broken rice is widely used in the manufacture of specialised alcoholic drinks. "Sake" is a beer of wide spread consumption in Japan and is made exclusively from broken rice. In China, much of the broken rice goes to the brewery for the manufacture of wine, known as 'Shemshu'. This colour-

less mild wine is a standard drink in many of the Chinese upper class homes where it is usually served after slight heating in the noon and evening meal. The Chinese also prepare the 'Mandarine Wine' which keeps good for many years. Some of the rice wines are also perfumed. In South East Asia, a distilled liquor known as "Rice Whisky" is produced in great quantities and it is prepared out of broken rice. The finer beers of "Brewers rice" is used for broken rice.

Besides its use as food for consumption, drinks and beverages, the by-products of rice are put to several uses also. Rice oil obtained through a solvent process is used mostly in the manufacture of margarine and soap. The rice glue or the Japanese cement is made by mixing rice flour with cold water and boiling the mixture. In Japan, the rice straw supplies the basic raw material for rural industries and for making ropes, rings, baskets, shoes, hats, raincoats and building materials such as room partitions etc.

Though rice is mostly used as food for consumption, in some countries, it is used in the manufacture of starch, beer, wine and other alcoholic beverages. Over boiled rice is used for starching cloth. Rice powder is used as a cosmetic. An alcoholic beverage known as "Saki" is the national drink in Japan and it is prepared from fermented rice.

Certain cultures of fungi turn the starch of the rice grain into glucose. Yeasts convert glucose into alcohol. Generally, glutinous varieties are considered to be better suited for the manufacture of Rice Wine. In India, the entire rice produced is

used for consumption as food in different forms and very little goes for industrial purposes. Rice production in the country is still short of its requirements and the deficit is covered with imports from other countries.

The introduction of improved plant types that do not lodge and that respond to fertilisers created a revolutionary change in the type of varieties grown in India. The utilisation of the dwarf *indica* varieties like T(N) 1, IR 8, as donor parents for improving the plant type of the tall *indica* varieties proved to be a phenomenal success and it resulted in the development of improved new varieties capable of giving yields exceeding 12 tonnes

of grain per hectare as against the normal yield of 3 tonnes per hectare recorded by the traditional local varieties under cultivation. With the spread of high yielding varieties in larger areas, it is hoped that the food deficit in our country will soon be wiped out and that India would reach a comfortable situation with regard to its food requirements.

As the possibility of a surplus production of rice in Asian countries is in sight, it is time to think of intensifying research not only on the development to high quality rice varieties with higher nutritive value but also on the scope for the utilisation of rice and rice products for industrial purposes.