Rice in jeopardy

By A. C. B. Pethiyagoda

Of the cultivated rices the commonest are Oryza Sativa and O-gaberrima the former being by far the more popular. Its organised cultivation is considered one of most significant developments in the history of mankind, so much so, that rice is synonymous with agriculture itself. It has been the staple food of the greater portion of the human race for a longer period of time than any other food crop.

Its origin, in some part of Central Asia, has not been disputed but in which country has been the subject of debate. In ancient Hindu and later in Buddhist writings rice is mentioned as a staple diet indicating its antiquity while no such references have been made in Jewish scriptures of the Old Testament indicating that the grain was not known in those parts of the world then. The most acceptable evidence of early domesticated rice was put forward in 1966 by archaeologist Wilhelm G. Solheim 11. He discovered imprints of the grain and husk of O. Sativa in pieces of pottery in the Korat region of Northern Thailand dating back to 4000 BC.

It is from there that it spread first to today's main rice growing countries which benefit from monsoonal rainfall extending from India through Myanmar, Thailand, Laos, Vietnam to Southern China. From these countries the cultivation spread to the warmer parts of every continent save Antarctica. It is believed that rice growing in India dates back to 2500 BC and in Sri Lanka to 1000 BC. Areas around the Mediterranean were introduced to rice growing from India around 340 BC by the returning armies of Alexander the Great. Rice was introduced to the United States of America by men of a ship which docked in Charlton, South Carolina and in 1726 USA commenced exporting rice. It is to China's credit that cultivation was intensified by puddling the soil and transplanting 4 to 6 week old seedlings resulting in increased yields mainly by suppressing weed growth and ensuring uniform planting distances for optimum use of water and plant nutrients.

Today India, China, Japan, Indonesia, Thailand, Mynamar and Bangladesh account for 92 percent of the world's total production of rice which is in the region of some 555 million tons a year.

In all Asian countries the cultivation, harvest, storage and finally the preparation of rice as a meal are all intimately connected with the culture of the people, is tied up in ritual and carried out in great reverence. The Chinese held that the most precious things in life are 'not pearls and jade but the five grains' of which rice is the first. The Kachins of Northern Myanmar believe that they came from the centre of the earth and were sent to a perfect country where harvests of rice were bountiful. The Balinese believed that God Vishnu gifted them rice and God Indra taught them how to grow it. In ancient India rice was considered the 'sustenance of the human race'.

In Sri Lanka, particularly among the Buddhists and Hindus, rice is treated with the reverence shown to gods and parents. Right from ploughing the field, sowing, transplanting, harvesting, clearing the *kamatha* (threshing floor), threshing itself and carrying the harvest to the house are carried out at auspicious times according to age old customs and rituals. Even one's conduct in the field or *kamatha* is in keeping as in a place of worship. For instance one's speech is guarded, food consumed during sowing, transplanting, harvesting and in a *kamatha* is confined to the *'embula'* (meal) of rice and certain vegetables only, meat and fish being taboo, in reverence of the Iru Deviyo, Sanda Deviyo and Kamatha Devatha.(Sun, Moon and threshing floor Gods.)

When guarding the crop in the threshing floor *kamath 'kavi'*(verses) are sung throughout the long nights to keep awake and avoid idle gossip. Paddy land extents are expressed in units known as *'palas'* and *'amunas'* which vary in extent from region to region in the country.

There are many age old customs connected with sharing the crop between the landowner and tenant cultivator and settlement of dues for seed paddy, hire of buffaloes etc. So are the practices with regard to donations of paddy to the village headman, *vidane* (minor headman) school teacher, *vedarala* (native physician), ones parents etc.

Of Sri Lanka's 6.61 million hectares 915,000 are in paddy cultivation. While a comparatively smaller extent, particularly in the central hills, are rain fed the major portion depends on irrigation from 372 major irrigation tanks, 294 medium tanks and about 24,000 minor tanks and anicuts. Large numbers of these cannot, unfortunately, support the entire extent of paddy land depending on them for water due to silting and damaged bunds sluices and channels.

In 2000, according to the Dept. of Census and Statistics, the country produced 1,944,730 metric tons of rice and imported 14,530 metric tons together with 660,320 metric tons of wheat flour to meet the country's basic food requirement.

Brown unmilled rice contains high levels of proteins, vitamins B Complex, E and K. White rice or milled rice lack these and is considered an inferior food by nutritionists. Hence, in some countries artificial vitamins are added to milled or polished rice. Both white and brown rice contain about 25percent carbohydrates, small quantities of iodine, iron, magnesium and phosphorus and are free of fat, sodium and cholesterol and have no protein value. Rice is a complex carbohydrate with about 200 calories to a tea cupful. In Japan, China and some other Eastern countries rice forms the base for potent alcoholic drinks.

It is not often, but there are instances, where the growing of certain crops have been condemned by environmentalists and others. For instance in Sri Lanka Chena (slash and burn) cultivation from ancient times and the opening up of land at high elevations for tea plantations in the 1870s have been established, without doubt, as the cause of dwindling water supplies and heavy soil erosion through loss of forest cover. Recently, the expansion of oil palm cultivation in the Southern Province has been opposed by some for socio-economic reasons. the validity of which has still to be verified. Similarly, cultivation of rice was suspected to be a health hazard in the Mediterranean area in the 16th century when malaria was a serious disease in those parts.

It was thought that wet land rice cultivation caused 'mal air' which spread the disease resulting in the expansion of the area under cultivation being severely curtailed in Southern Europe.

In 1988, the United States Environmental Protection Agency (USEPA) and the National Science Foundation reported that the 'green house effect' is caused by increased human activity resulting in the production of certain gasses, methane being one, which 'dirty' the atmosphere. This is said to prevent the release of the earth's heat to outer space. Both organisations agree that without global intervention this problem will increase the rate of 1 percent a year. They claim that the highest production of methane is in the rice fields world over and rice plants themselves act as gas vents releasing greater concentrations into the atmosphere. The problem according to these agencies is magnified by rice areas being expanded with increasing irrigation facilities and especially by the increase of double cropped rice areas. "Rice fields are suspected of putting 115 million tons of methane into the atmosphere each year. This is at least equal to the total production from all of the world's natural swamps and wet lands" according to RE and HE Hukein in their book Rice; Then and Now.

Can this situation lead to more than half the worlds population being coerced to give up producing and eating rice and take to eating, perhaps, wheat? Most rice eating people are in the developing world and large numbers of them can hardly afford to eat , even as it is, one square meal of rice a day due to abject poverty. Can these people then afford to eat even that little of an imported food?

The developed world must give the lead or assist by solving this grave problem by finding ways and means to eliminate, reduce or better still convert methane in paddy lands to a product beneficial to man. This is not an impossibility if there is a will; did the developed world not put a man on the moon over three decades ago? Did the developed world not produce nuclear weapons about five decades ago which destroyed whole cities from the safety of several thousands of miles? Depending entirely on the developed world to come to the aid of the rice eating people, to say the least, will be unwise. The problem needs an universal approach if at some future date the whole world is to be saved from starvation.

The magnitude of this situation is hardly comparable but we have not forgotten the theory about thirty years ago that coconut oil, produced in the tropics, and used world over was a health hazard and the then less popular soya and sunflower oils produced in a wider range of climates promoted good health. Now that those vegetable oils are well established coconut oil is said to be less harmful or even harmless than thought of earlier. Likewise, if rice production is curtailed due to the methane scare and other grains such as wheat dominate the worlds markets will the danger of methane produced in rice fields be considered less harmful? In any event the wheat producing countries cannot increase production to meet the entire world's requirement as a basic food item.

The people whose staple food is rice, particularly in the developing world, must band together or face higher levels of hunger than now. Should they fail to do so oblivious of the USEPA's warning in the late 1980s of the methane threat they will be deprived of even half filled bowls of rice they contend with now.

In addition, people in the South Asian region have been warned recently by the UN of a three kilometre thick cloud of toxic particles over their lands which could cause serious damage the environment which obviously will adversely affect their food supply.

The looming crises could be the worst the entire world has ever faced with regard to its supply of food.