

PADDY

A NEWSLETTER FROM THE SAVE OUR RICE CAMPAIGN
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Editorial

Paddy culture and food security!

Her name was Suma. She was coming to our house for the first time with a friend of mine. She looked very young and intelligent. A small boy of 5 yrs with large bright eyes also came with her. It was her son. She started asking us about our work, our life and I asked her about her family and her work. When we told her that we are working on a campaign to protect rice culture she got very interested and began talking about her parents who are farmers and also about her young brother who is an organic farmer. Coincidentally we happen to work in the same village where her parents live.

She was very happy to listen to us about the work which we are doing in her village with farmers to move them from chemical agriculture to biodiversity based ecological agriculture. She said that her brother an organic farmer cultivates paddy, tubers, vegetables and coconuts organically but finds it difficult to sell his produce since there is no market nearby that buys organic products from the farmers.

While continuing with our talk she asked me whether we promote System of Rice Intensification (SRI). I said, 'yes, we are trying and are making some changes to suit our situation'. Then she told a story that was an eye opener for me!

She has been doing terrace cultivation with vegetables since she came to Trivandrum. She comes from a farming family and is well educated. So her terrace cultivation was systematically planned and she was getting enough produce to share with her neighbours as well. One day she got a paddy seed. One single seed! Being the daughter of a paddy farmer she sowed this seed in a sack in the terrace. In 3 months time she began her harvest, a handful of mature paddy seeds. She counted the seeds during each harvest. She said that she could not believe her eyes when she saw the large number of tillers that sprouted from that single plant. She harvested only the mature paddy seeds

leaving the plant intact. She said that her paddy plant survived for 10 months and she took the harvest from the 3rd to 10th month. She got 1000 seeds from a single seed! Her father, a traditional paddy farmer was really amazed at the fact that the plant survived this long.

What touched me more was what she did with this harvested paddy. At that time her son was around nine months old and had started crawling on the ground and picking things from around. After each harvest she processed the paddy seeds to make puffed rice and put it on the ground so that her son will pick this puffed rice instead of other things. I felt touched by the sensitivity of this mother.

Many of us have been doing some terrace paddy cultivation in sacks and other containers for seed multiplication purpose and also to undertake some experiments. But never have we thought of cultivating paddy on the terrace for our children. Out of curiosity I asked her from where she got this idea. Instantly she replied, 'there is a tradition which we practice during our marriage ceremonies. After marriage when a woman goes to her husband's house, she carries some paddy and makes puffed rice when she reaches there'. How beautifully a mother could connect her culture through some paddy seeds even in an urban environment!

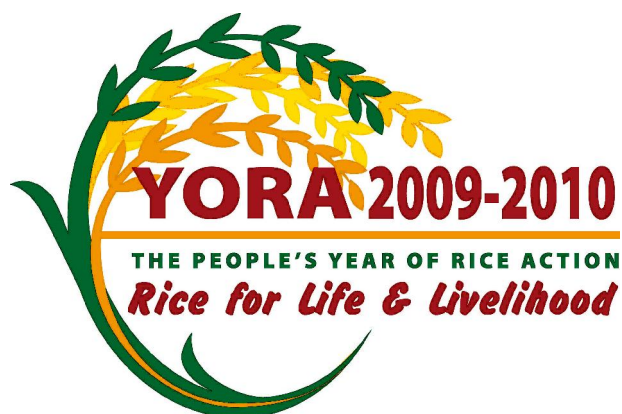
This is the importance of paddy culture. Paddy is not just food; it is also intrinsically bound to our culture. The policies targeting productivity alone can never understand this culture and its importance to food security and nutritional security. The policies do not address the aspect of emotional security (which a child gains while growing up in such a rich culture). I do not think either hybridization or genetic engineering can help build this connection leading to emotional security and through that social security.

I am not against increasing production. We have to increase production, not only of paddy but of many other food crops. But unless that produce reaches the needy through the shortest route possible, without losing its quality, and can be used according to their culture, poverty and food security cannot be addressed. Production alone cannot address food security. If this is understood, we can make every cent of land, available to us, productive and we will not be tempted to play with dangerous technologies like pesticides or genetic engineering. We will have the sanity and confidence to say NO to scientists who along with the industry (whose sole motive is profit) are playing games in the name of removing hunger and feeding the world. On one side they are destroying all the productive lands in the name of development and progress and on the other are trying to sell their technologies in the name of poverty eradication.

We need to revive our food culture and bring people together if we want to protect our food security and nutritional security.

Editor

Editors' Note: please send us poems, stories, rice traditions and other material. If you have a rice related event coming up or if you have an interesting report on rice events already conducted or on policy or new practices. Please do send us the same in word format with pictures, at paddyeditors@gmail.com.



China gives Green Light for GE Rice

by Karsten Wolff

Late in November, bad and potentially very dangerous news came from China: The Ministry of Agriculture's Biosafety Committee issued biosafety certificates to pest-resistant Bt rice, with large-scale production to start in 2-3 years. This move "has huge implications, because this is the first time a major grain producer is endorsing the use of GMO technology in a food staple," said Zhu Zhen, biotechnology professor at the Chinese Academy of Sciences.

As of now, Bt cotton and Bt papaya are the only commercial GE crops in China. Since many Asian leaders are looking up to China's economic development and commercial decisions, an approval of genetic modification of the major staple crop could open the floodgates for large-scale commercial approval for other GE crops as well.

The director of the International Rice Research Institute (IRRI) in the Philippines, Robert Zeigler, immediately praised this decision by the Chinese authorities by stating "We expect that with the Chinese approval of Bt rice it will be much easier for other countries to do this."

Other groups raised serious concerns. Greenpeace China called the move a "dangerous genetic experiment" and said it had previously exposed illegal cases of GE rice in China. "If the Ministry of Agriculture cannot even control the illegal cultivation of GE rice, how can they manage the risks of large scale cultivation?" Lorena Luo, Greenpeace's food and agriculture campaigner, asked. The two GE rice lines have both been developed by Huazhong Agriculture University in Hubei Province. Huazhong Agriculture University was implicated with the illegal commercial growing of GE rice in 2005.

A further concern is the question of control over the world's most important staple crop: At least 11 foreign patents, including patents held by Monsanto and Syngenta, are associated with the two approved GE rice lines. This control over the patents for the development of Bt rice by multinational agrochemical TNCs raises serious food security concerns. It is no surprise that at the same time, Monsanto announced that it was opening its first research centre in China to strengthen the company's ties with Chinese research institutions in plant biotechnology and genomics.

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Fighting salinity by reviving traditional rice varieties

by Anitha Reddy and Krishna Prasad, Sahaja Samrudha

Hit by crop failure due to increased salinity in soil, owing to water surge in the natural tanks, farmers of the Tumkur¹ and Chitradurga areas of Karnataka are reverting to cultivation of traditional saline tolerant paddy in the hope that it would feed them.

The fields of farmers in the region that adjoins the tank command area was rendered saline due to stagnation of water. Farmers here have always faced salinity problem but had coped with it by growing traditional saline tolerant varieties that they had conserved for generations. But in the last few decades the situation has turned grave and the salinity in the soil has increased tremendously. Farmers say that with the changes in agriculture the salinity has increased in the soil and the introduction of high yielding varieties to problem soils, with the aim of increasing production, has not only resulted in yield failure but has also contributed to the genetic erosion of traditional landraces. Intensive agriculture practices, years of monocropping and more importantly indiscriminate usage of chemicals has left the soil infertile. Earlier farmers practiced crop rotation and grew crops using traditional methods but now the younger generation of farmers lack the understanding to cope with saline soil and do not have the knowledge to use alternate crops or methods to overcome the situation.

With cultivation patterns changing since the 1970's the salinity has increased. Now the soil has no fertility and has become very hard and growing any crop here is posing a huge problem. The salinity in the soil is pushing farmers to grow the saline tolerant traditional crops their forefathers cultivated, says Mallikarjun Hosapalya of Dhanya, an organization working in Tumkur District. He says, "The high-yielding paddy dies soon after being sown in the fields. As the pH level in the soil increases with saline conditions and with low rainfall, there is leaching of calcium and automatically there is increase in sodium, which leaves salt deposits. The sodium comes to the surface and makes the soil more saline. Farmers can grow only if the salinity is low but due to low rainfall the salinity has increased and only traditional paddy varieties can tolerate it".

Some farmers have modified and adapted alternate techniques as a coping strategy to deal with the problem of salinity. But not much has been done with

regard to the yield performance of the varieties. They are familiar with local varieties and these have many positive characteristics - taste, price, and milling value are better than that of the HY varieties, though yield is less compared to rice grown in other areas. But its sustainability requires awareness and some technical involvement to increase the yield.

Sahaja Samrudha,² in collaboration with Dhanya³, and with participation of knowledgeable farmers, has evolved a reliable approach of collection, evaluation and systematic cataloguing of available saline tolerant rice varieties. This was initiated for more than twenty-five varieties that were collected from a single region. Sahaja Samrudha has combed the entire coastal belt of Karnataka and collected the salt tolerant varieties, i.e. the *Kagga* varieties that are very popular and highly salt tolerant. The collected germplasm has also been distributed to farmers for being cultivated at target sites. On-farm conservation was undertaken mainly to improve the performance of varieties that yield less due to mixture in the varieties. Participatory crop improvement selection has been found to be more effective for selection and development of these varieties. "No doubt, on-farm conservation of germplasm by farmers will save the traditional landraces for problem soils and will maintain the evolutionary processes and guarantee continual supply of germplasm", says Dr. Devkumar, a scientist at the University of Agricultural Sciences (UAS), Bangalore .

Forgotten types of indigenous rice varieties can offer a home grown solution to the increasing soil salinity. Karnataka state has many saline tolerant traditional rice varieties that are high in nutritional value and have medicinal properties, and most are resistant to extreme drought conditions, diseases and pests and are popular for their taste. Documentation of collected varieties in relation to the cultivation practices, crop management, and manure management was carried out along with the farmers by Sahaja Samrudha and Dhanya in the initial phase of the programme. A number of trials were conducted to check if they could withstand salinity. These varieties were grown using natural inputs such as organic manure, and no chemical fertilizers or pesticides were used.

As Ajjanna Nayaka of Hosahalli in Pavagada taluk, who is growing *Sanna vadlu* rice variety for the past 40 years, says, “this is a fine grained variety, infact the grains are of superior quality than sona masuri variety. Crop duration is 4 months and yield is about 20 to 25 bags per acre⁴, superior in taste and very soft when cooked”.

Some of the other significant saline tolerant varieties identified during the exercise by Sahaja Samrudha and Dhanya are :

Picha neelu – This is a most popular saline tolerant variety, with crop duration of 4½ months, and grows 4 to 5 feet in height. It has good cooking quality and the grains are grayish black and white in colour and yields about 20 to 25 quintals per acre⁵.

Beli picha neelu is highly tolerant to saline conditions of soil and grows within 4½ to 5 months. A unique method followed by the farmers for good yield is to broadcast the germinated seeds directly on to the main field. For good germination, the seeds are dried well and then germinated. This yields about 25 to 30 qt per acre and is very tasty when cooked. It is popular among the farmers of Madakasira taluk.

Thokapichaneelu - *Thoka* means tail in Telugu, as the grain has awns on both side, hence the name '*Thokapichaneelu*'. Duration of crop is 4½ months and yield is about 20 to 25 qt. per acre.

Paddy varieties like *Bilithopu vadlu*, *Kasanella* are unique and highly saline tolerant, these grow in places where salinity problem occur due to erratic rainfall.

Choluchangi – is also known as *Koralu changi*. Tip of the grain has awns⁶ and grows profusely with one application of farm yard manure. *Kasarnellu*, *Bilitokavdlu*, *Kari tokavdlu*, *Bilipichanellu*, *Pichanellu*, *Jowguri* have a crop duration of 4 to 5 months and yield about 20 -25 bags per acre. The grains are bold and long and are cultivated in Chitradurga and Pavagada. *Sannanellu* and *Tokepichanellu* are small and fine grain varieties. *Mullubatha*, *Chintapolavodlu*, *Karichannangi*, *Bilichannangi*, and *Cholu channangi* are medium grain varieties, grown in Sira and Pavagada region.

As rice is one of the major food crops, development of cultivars with enhanced salt stress-tolerance will undoubtedly have a positive effect on food production. As soil salinity tolerance of rice is a complex trait consisting of several physiological characters, research about the development of rice varieties tolerant to salinity is meagre. Hence, reviving

cultivation of traditional saline tolerant varieties and developing rice varieties that are appropriate to prevailing local conditions is imperative. If breeders work together with farmers there are possibilities for developing appropriate varieties, while maintaining and enhancing biodiversity. These would be far more relevant and superior to the new saline tolerant GE varieties being created, in the formal research systems, that may not be appropriate to prevailing local conditions.

Is genetic engineered rice that is tolerant to salinity a necessity, when our farmers for generations have developed varieties that are tolerant to saline and drought conditions?

Endnotes

¹ The Tumkur district is the third largest district in the state, next only to Gulbarga and Belgaum. Tumkur falls under the semi arid zone of Karnataka, which is considered as one of the most backward districts. The district average rainfall is 688 mm per annum but it is sporadic, erratic and inconsistent with an average of 34 to 54 rainy days in a year. All the taluks were declared as drought prone (meaning inconsistent rainfall) and the average rainfall recorded in past 10 years is 744 mm

² is an organic farmers association of Karnataka and is a people's movement to preserve India's traditional farming practices and conserve the rich biodiversity of indigenous crop varieties.

³ is an organization based at Tumkur and works on water conservation, traditional seed conservation and organic farming, they have been working for the past two years with a few farmers to conserve saline rice varieties

⁴ bags usually will be approx between 60 to 70 kgs

⁵ One quintal = 100 kilograms

⁶ an awn is either a hair- or bristle-like appendage on a larger structure



Mr. Debal Deb's thoughts on rice culture of Eastern India!

(Excerpted from an interview with *Dr. Debal Deb* by *Jaganath Chatterjee* of Living Farms)

I think revival of rice culture cannot be done in isolation. If the whole culture in all its gamut, starting from sports, to music, to food culture -- all are running downhill, we cannot stop it by putting up a dam on one stream in isolation. It will be futile. However, the food culture in India has been a very important factor in conserving the food diversity and the genetic diversity of crops, because food culture was so intertwined with the genetic diversity and crop species

diversity that one supported the other all the time. But rice in particular has also been responsible for the distortion in food culture and elimination of certain local food cultures in the past. For example rice has always been an elite crop. In the drought-prone areas, like Purulia district, in some parts of Chhattisgarh, in Rajasthan, in Gujarat – rice and wheat were elite crops. Only the rich and the powerful could afford to have rice and wheat in those days.

Different types of millets – jowar, bajra — which required little input of water and almost no management for cultivation – were the staple food of the poor of Rajasthan, Gujarat and the drought-prone districts of Bihar, Orissa and West Bengal. Today hardly any farmer grows any of those millets. The millet diversity

in terms of species diversity -- barnyard millet, pearl millet, foxtail millet and all their genetic diversity are lost. It is simply because the farmers and the village people who used to eat them have stopped considering these as their staple as they used to do earlier, as they do not ever get to see a super star or a national hero eating any of these millets in Bollywood films or in the newspapers. It is always either wheat or rice. But now rice is also suffering in the same way. Processed foods like rice crispies or *murhi*, *khoi* that is puffed rice, *chire* or the beaten rice – these are

hardly enjoyed by the younger generation because these are all considered backward. Popcorn is rather progressive, especially if that's an American brand product.

It's not just the different types of processing but also the diversity of rice which was responsible for maintaining the rice culture. We have a very prominent example in Bengal of *kanakchur* rice. *Kanakchur* is the variety whose puffed rice, *khoi*, retains the aroma. All other rice varieties lose the aroma upon roasting. Only a very small proportion of it is retained. *Basmati*, *Gobindobhog*, *Badshahbhog* – all aromatic rice varieties can retain their aroma

after boiling, but in case of dry frying, this aroma is lost because it becomes volatile. But *kanakchur*, (to my knowledge), is the only rice variety that still retains its aroma after puffing. This was the ingredient for making *Joynagarer Moa*. *Moa* is a sweet made out of this *khoi* or puffed rice and Joynagar's *moa* is so famous only because of that aroma. It's not because of the *gurrh* or jaggery that goes into it. Because of this *kanakchur* cultivation, Joynagar became very famous and the Joynagar sweetmakers always used that particular variety. There for due to cultural importance and the gustatory flavour of the food this variety of rice was surviving. Today, Joynagar's *moa* does not contain that rice any more. *Joynagarer Moa* – the name is retained. Everybody buys any *moa* in the name of Joynagarer

Moa, because that has become a brand name, but nobody knows why it was so famous. So this is an example of the vanishing of food culture leading to vanishing of a genotype.

There have been many varieties which had been incidentally associated with food culture and that actually contributed to their conservation. For example, the *jamai shoshthi* ceremony, I'm not sure whether it is practiced in Orissa, but in Bengal the *jamais* or the sons-in-law are the most pampered creatures. They have a special day. On that day the

Dr. Debal Deb is a freelance scientist with post-doctoral research in human ecology (Indian Institute of Science, Bangalore) and ecological economics (University of California, Berkeley). He is currently Fulbright scholar at the Energy and Resources Group, University of California. He is the founder Director of the Centre for Interdisciplinary Studies (CIS), Barrakpore. In view of the failure of all ex situ rice seed banks to protect the erosion of rice genetic diversity, CIS established Vrihi (Sanskrit name of "rice"), the first non-governmental rice seed bank for farmers, in 1997. Coordinated by its founder Debal Deb, Vrihi Beej Binimoy Kendra is the largest non-governmental rice seed exchange centre in eastern India, established not only to promote cultivation of folk rice varieties, but also to re-establish the vanishing culture of seed exchange. To date Vrihi has conserved around 610 varieties of rice.

son-in-law is invited and is given many gifts and the parents-in-law have to prepare some special dishes in honour of the son-in-law. A few days before this special day of Jamai Shoshthi, some special varieties of rice used to mature. So they are named *jamai shal* and *jamai nadu*. These are so named because they could be harvested just before the son-in-law's arrival and then would be cooked fresh. Because of this particular cultural use these two varieties were surviving. So a few farmers still retain some aromatic varieties, some special varieties, and many flavoured varieties for these ceremonial purposes. Again gustatory practices, cultural ceremonies, religious rituals – these have become considerable contributing factors in conserving particular varieties. But as time passes by, those varieties tend to be replaced firstly because of the devaluation of the cultural rituals, secondly because the varieties have been replaced by modern high-yield varieties. Even if one would wish to grow those varieties, one would not have access to the seeds.

This erosion has gained momentum and is very difficult to stem. One way is to inculcate that these religious or cultural ceremonies are very important, in which case you run the risk of perpetuating some social injustices and superstitions. The other option is to emphasize the intrinsic value of the genetic diversity itself and then inventing or reinstating certain cultural values like organizing a party or ceremony of rice and inviting people to have a taste of diversity. I have done this. We can call it a ceremony of diversity or festival of diversity. People should experience a diversity of taste -a taste of 40 varieties of cooked rice of different colours, aroma, and size. People would take one spoon of each variety to taste. People don't take any other thing – no vegetable or daal, – because tasting 40 spoons of rice, each spoon with a different flavour, taste and aroma is a very fulfilling experience. People are really astonished that rice could have so many different tastes and aroma. It would also make the farmers proud to say that they grow that particular variety or varieties. This may reinstate the inherent value of genetic diversity!



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...China gives Green Light for GE Rice

China had so far been cautious regarding approval of GE rice, since it fears losses in overseas markets. Exports of GE rice would be likely to face tough scrutiny abroad. Most of China's rice exports go to South Korea and West Africa, although there are buyers globally. The European Union said in July that China needed to tighten export controls on rice products because shipments might contain traces of the Bt-63 strain, which is not authorised in the European Union. So will China really hamper its export prospects by large-scale cultivation of this highly controversial Bt rice?

The Chinese Ministry for Agriculture did not disclose any information about the health and environmental studies involved in the certification process. But there are serious health and environmental concerns regarding the cultivation of GE rice: Even if rice is a self-pollinating crop, out crossing to conventional rice is unavoidable. This is especially dangerous in China, being one of the centres of origin for rice. Bt toxins also contaminate the soil and damage useful micro organisms which are essential for the plants' nutritional cycle. Furthermore, the use of Bt toxins in rice is extremely dangerous for consumers, since it can lead to allergic responses when eaten.

Here in India, the co-chairman of the Genetic Engineering Approval Committee (GEAC) Arjula R. Reddy was claiming that Bt varieties of rice "would considerably reduce the cost of cultivation and increase productivity". These claims contradict all scientific evidence that has proven that neither in China nor in the US the cultivation of Bt crops has increased productivity or reduced the usage of pesticides. But that does not stop Mr. Reddy from asserting that "India would be left behind in the race if research and development activities in Bt rice variety are delayed any further."

But does India need to follow this wrong road? As Usha S. from Thanal puts it, "If China or any other country decides to destroy itself, why should India follow? Why should we want to commit suicide?"



I Challenge Monsanto: Raghuvanshi

Suma Josson

When I told Prakash Singh Raghuvanshi that I would like to make a film on his plant breeding process, one of the things he asked me was, "Will my life be in danger?"

"Much has been written about you," I replied, "and besides Monsanto would have been among the first to know of your seeds!"

A simple nature's process which our forefather farmers have been practicing through the ages basically to feed themselves and their children is today done in fear and trepidation.

It was on this strange note that I started my film on Raghuvanshi the plant breeder living in Tadia village near Varanasi in Utter Pradesh.

When he was studying in the 10th standard he developed reaction to penicillin injection. This left him damaged physically almost on a permanent basis leading to visual impairment of his eyes. He says one eye is almost blind and has lost 80% vision in the other.

So with no school to attend he ended up spending more time on his father's fields.

One day he noticed a wheat plant which had different characteristics. When Raghuvanshi brought it to his father's attention who was a primary school teacher, he said that such things happen.

This plant was from the RR 21 variety of the Agricultural University in Pantnagar. Raghuvanshi says that his full attention was on this plant. He replanted its seeds and got two good varieties. He kept the names Kudrat-5 and Kudrat-17. Kudrat—17 was his first selected wheat plant. This was in 1995.

Five years later in the year 2000 he started experimenting with rice. He has developed 20 varieties of rice and 80 varieties of wheat and he carries out his experiments on his three and a half acre farm.

He named both his rice and wheat series Kudrat (Nature). Altogether he has 150 varieties of rice, wheat, pulses, mustard, vegetables and a few fruits.

Raghuvanshi follows the selection method of plant breeding. He takes Foundation and *desi* varieties of

seeds and after planting them observes their traits and features.

Raghuvanshi says that for him plant breeding is an intuitive process and it was the way the earth fed its population. He sees the plant and knows its strengths and weakness. He says every farmer had this special gift in him or her but lost it to Green Revolution.

Once he started it, it became a passion which he was not able to stop and he has been doing this since 1995. In his three and a half acre farm he experiments with a minimum of 15 to 20 different varieties of rice, wheat, pulses and vegetables according to the season.

Each plant is sown under the same conditions and tested for a minimum period of 5-7 years.

"From these selected seeds new changes take place and when the plant turns out to be good I select it for its high yield, good taste and nutrition."

"Seeds procreate themselves," he says. "This is a natural process. The hybrid seeds made by the universities through cross-fertilization do not last for 2-3 years. But the seeds made through selection process last between 10 and even 20 years."

In 2001 Raghuvanshi started travelling around India to distribute his seeds in packets of 100-200 gms to farmers.

He has distributed in 15 states - Assam, West Bengal, Bihar, Kerala, Jharkhand, Chhattisgarh, Himachal



Pradesh, Maharashtra, Uttaranchal, Karnataka, Haryana, Punjab, Gujarat, Madhya Pradesh and Uttar Pradesh.

He says that he does that basically to explain the story of the seeds to the farmers.

“The MNCs who are selling seeds in our country are having a business of Rs.2000 to 3000 crores and this is going from the pockets of the farmers. The farmers have the knowledge, it is their hard work, and it is in their fields that the seeds are made. The government gives the license to seed companies and they have the capital. The companies ask the farmers to make the seeds. Then they buy it, pack and sell it in the market. So the same seeds made by the farmers are packed under the label of the companies and this is bought by the farmers.”

“That’s why I’m doing this work. That’s why I distribute it free of charge. I have taught this technique of making seeds to lakhs of farmers so that the whole village can make their own seeds.”

Raghuvanshi believes that the use of chemicals is one of the factors responsible for global warming. Only organic farming he feels will retain the balance in the environment.

He feels that the seeds which are made in homes are sturdy and suited to different regions, temperatures and water requirements and are pest resistant.

“When our native varieties are giving more yields,” he comments “then why do we need these foreign seeds?”

“I have traveled to many villages and distributed seeds to lakhs of farmers. Why do I do that? To tell our farmers that seeds can be made at home. Gradually Monsanto’s seeds are being wiped out from the market. There was no *dharna*, no procession. It is my pride that I have challenged such a big Company.”

“Our ancestors left us with fertile land. But we used poisonous pesticides and chemicals and left behind deserts. What will we give the next generation? Every farmer should think about this.”

Raghuvanshi has twice won awards for grassroots innovations from the National Innovation Foundation .He lives in the Tandia village of Varanasi. For more information readers can contact Mr. Prakash Singh Raghuvanshi, Vill Tadia, P.O., Jakikhani, Varanasi, Uttar Pradesh-2213058, mobiles: 9956941993, 9839253974 and 9451277640.

Suma Josson is a documentary film maker and has made films on several social subjects. She has made two film on agrarian issues. ‘Before the Last Tree Falls’ (2006) is on the suicide of farmers in Wayanad, Kerala and ‘I Want My Father Back’ (2007) is on the suicide of farmers in Vidarbha, Maharashtra.

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Announcement

Ms.Anitha Reddy of *Sahaja Samruddha* has been declared the winner of the *ASIA PACIFIC RICE JOURNALIST AWARD 2009*. Her winning entry, “Paddy that Survives the Flood,” was originally published in the *Deccan Herald* on 4 August, 2009. Anitha is a regular contributor to PADDY, this issue carries an article by her and Krishna Prasad on saline tolerant rice.

Pesticide Action Network Asia and the Pacific (PANAP) along with the International Federation of Environmental Journalists, collectively offer this Award to encourage and recognize serious journalistic efforts on Asia’s most prized heritage; Rice. PANAP has for the last 17 years championed the food sovereignty of the grassroots, namely, farmers, agricultural workers, indigenous people and consumers and launched the SAVE OUR RICE CAMPAIGN in 2003.

The editors of PADDY congratulate Anitha on winning this honour and look forward to her contributions to PADDY in future issues as well!



Genetically Engineered Rice – Part VI (Concluding part)

Karsten Wolff

Other Players

The private sector is also deceiving the public by setting-up public-relations organisations such as the “International Service for the Acquisition of Agri-Biotech Applications” (ISAAA), which is claiming to contribute to poverty alleviation by transferring biotech applications to developing countries, but in fact is simply a lobby organisation of the GM industry. ISAAA is funded by Northern developers of GMOs, with the aim of helping developing countries in the South take up GM technology. Funders include Bayer CropScience, Monsanto, Syngenta and Pioneer Hi-Bred. ISAAA continuously provides misleading propaganda regarding global adoption rates of GM crops. In a 2003 report on GE rice (GM Rice: Will This Lead the Way for Global Acceptance of GM Crop Technology?) ISAAA raises the industry’s hope that the introduction of GM rice across Asia “may make a valuable contribution to reducing opposition to GM technology.”

Among the public institutions increasingly supporting GE (rice) are the “Food and Agriculture Organisation” (FAO) of the United Nations and the “International Rice Research Institute” (IRRI). During the “International Year of Rice” 2004, FAO stated that a lack of productivity is the reason for hunger and malnutrition and therefore technical solutions have to be developed to close the yield gap in rice cultivation. “The world population is growing and rice production must also grow.” The key to enhanced productivity is seen in modern technologies, such as genetic engineering: “Modern biotechnology can increase the productivity of rice varieties and provide protection against pests, diseases and climatic variations.” This problem analysis ignores the fact that hunger is *not* caused by a lack of productivity, but by a lack of the right of peasants to access and control the means of production.

The “International Rice Research Institute” (IRRI) was established in 1960 by the Ford and Rockefeller foundations in cooperation with the government of the Philippines. Its research activities began in 1962 and in the mid-1960s the IRRI’s launch of a high-yielding dwarf rice variety (IR8) was a significant contribution to the Green Revolution in Asia. In 2001,

IRRI had launched its controversial Golden Rice project. IRRI’s Director-General, Ronald Cantrell was quoted as saying, “The arrival of these initial samples at IRRI is a very significant step and allows us to finally start on the required testing processes using local rice varieties.” IRRI expects to play a major role in the ongoing “Golden Rice” research effort and its eventual introduction to the world’s millions of poor rice farmers and consumers. IRRI is using these resources not just to develop its genetically modified rice varieties but to release them across Asia. Instead of prioritizing genuine food sovereignty, farmers’ rights and knowledge, IRRI prioritizes collaboration with TNCs. In these “public-private partnerships”, IRRI relies on the invaluable wealth of rice diversity, freely received from farmers all over Asia and kept in its gene bank, as its main bargaining chip.

Dates Marking the Development of GE Rice

- 1988** First transgenic rice produced (using direct gene transfer into protoplasts)
- 1991** Use of shotgun method or ‘biolistics’ for generation of rice transgenics
- 1993** Insect resistance rice by using δ (delta)-endotoxin (*Bt*)
Transgenic rice with *bar* gene for sheath blight resistance
- 1994** First conclusive report of rice transformation by *agrobacterium*
- 1995** Resistance against bacterial blight obtained by using cloned *Xa21* gene
- 1996** Insect-resistance transgenic *Indica* rice harbouring *CryIAb* gene
Field trial of herbicide-resistant transgenic rice
Insect-resistant transgenic rice harbouring *pinII* gene
- 1997** Use of reconstructed *CryIAC* gene for high-level resistance against pests
- 1998** Multigene transformation
First report of *agrobacterium*-mediated rice transformation for agronomically important genes (*CryIAb* and *CryIAC*)
Terminator patent granted to Delta & Pine Land and USDA.
- 1999** Iron-fortified transgenic rice with soybean ferritin gene

Resistance against rice yellow mottle virus (RYMV) derived by pathogen-derived resistance

- 2000** Field trial of hybrid rice containing *Bt* gene
- Golden Rice announced as the answer to Vitamin A deficiency
- Monsanto announces its draft sequence of japonica rice genome
- 2001** Syngenta announces its own draft sequence of japonica rice genome
- 2002** Chinese researchers publish complete draft sequence of indica rice
- Syngenta publishes japonica draft sequence
- IRGSP's complete draft sequence of japonica rice genome
- 2004** Completion of final Japonica rice genome sequence by IRGSP
- 2004** Golden Rice 2 presented by Syngenta
- 2006/7** The global Liberty Link (LL) rice contamination scandal

5) Risks of GE Rice

Genetic Engineering is not a precise science, but a crude technology with unpredictable consequences. GE crops are presenting escalating problems for farmers and posing unacceptable risks to health and the environment.

This is especially true for GE rice, since Asia is the centre of origin of rice, with a huge variety of wild species. Although rice is a self-pollinating crop, out crossing to conventional rice and weedy relatives can happen – and has already happened. If a herbicide resistant rice variety contaminates wild rice, it is very likely that this wild rice will become a problem weed. The loss of biodiversity due to the contamination of the natural gene pool represents a huge risk to food security in Asia.

Producing Bt rice also causes huge health risks for the consumers. Since the plant produces a toxin that kills pests, nobody can say for sure that this toxin will not endanger the human health as well. The Bt cry 9c gene introduced into the rice plant is the same as the one used in Starlink corn in the USA and is suspected to have allergenic properties and therefore banned for human consumption in the US.

Equally threatening are the social, cultural and economic risks of GE rice. The real purpose of GE rice is to expand corporate control over the world's most important staple crop. "To properly understand the

means one must first understand the end. A farmer who doesn't borrow money and plants his own seed is difficult to control because he can feed himself and his neighbours. While farmers in America today are little more than tenants serving corporate interests, the rural Asian farmers has remained relatively out of the loop – until now. That is what the "Gene Revolution" is all about: Seeking control over an agricultural sector, that to a certain extent still remains outside a capitalistic logic of exploitation." The increasing commercial interest of transnational corporations in the rice sector and the incapability of the public sector to carry out rice research in favour of resource-poor farmers has led to a situation where the commodification of the whole Asian rice bowl has become an imminent threat.

Indeed, the only way to prevent contamination of food supplies, traditional rice varieties, seed supplies, and wild/ weed relatives is by not growing GE rice.

6) Why we don't need GE Rice

Farmers and consumers all over Asia are resisting GE rice. Biodiversity-based ecological rice cultivation provides alternative mechanisms for pest and disease control, without agrochemicals and genetic engineering. In a balanced rice ecosystem, most of the pests and diseases, for which GE rice claims being the cure, simply do not appear. An integrated management of rice plants, soil, water and nutrients achieves higher yield with traditional varieties as GE rice, which claims to feed the world's hungry.

Farmer groups and social movements are also demanding that governments from all over the world should not consider rice only as a market commodity, but recognise it as part of the culture, the pride and the way of life maintained in the farming societies for several centuries long. The threat of GE rice is also a threat to a whole system of values.

It is in rice that we can reclaim our right to livelihood, freedom from hunger, our culture and our future for the next generation.

Wayanad Harvest Festival and Exhibition of tribal rice foods- December 5th, 2009

Wayanad is Vayalnadu(meaning paddy land). Most of the rice cultivation is done by tribals and small and marginal farmers. They have a unique system of cultivation and Green Revolution has not made much impact in this land and farmers continue to cultivate traditional varieties of seeds.

The last 15 years of globalization has made its impact in the villages of Wayanad in terms of change in food habits, health issues and livelihood issues. Paddy lands got converted for intensive banana cultivation, followed with high fertilizer and pesticide use. Water scarcity and water pollution has become a grave issue and farmers organizations, NGOs, and social activists are working with local communities to change this situation.

This realization by the farmers and organizations led us to organize People's Year of Rice Action (YORA) event in Wayanad with a focus on traditional rice foods of tribals here along with harvest festival. It was organized jointly by Thanal, Paddy Protection Forum of Noolpuzha, Wayanad and Grama Jyothi Farmers' Club on 5th December 2009 at Kallur, Wayanad. Women from 3 tribal communities participated in the exhibition and competition. They brought a lot of varieties of tasty and nutritious food for the exhibition, made from rice and some plant materials from the forest. Hundreds of people and children from various schools attended the festival. A quiz competition was conducted earlier in various schools with a focus on rice and food security.

The event was inaugurated by Smt P.Valsala , writer from Kerala, who has written an acclaimed novel named Nellu(Paddy) about the tribal communities and their life. She shared her experiences and said that this festival is a new beginning for the revival of rice culture. Many other dignitaries attended and spoke at the event.

Haritholsavam - Arangottukara, Kerala-February 20th 2010

Biodiversity Festival organized as part of the Year of Rice Action 2009-2010

In the villages of central Kerala, rice and agriculture used to mark a way of life. Traditionally, the harvesting of crops was a time of celebration, and communities

would gather to share the happiness and burden of farming. Although over the years this culture has faded, in the last few years people have started feeling this loss and some of the old practices are being brought back.

On February 20th, 2010, the village of Arangottukara, situated near Shoranur, in central Kerala, India gathered to celebrate biodiversity (Haritholsavam), especially agro biodiversity and traditional rice varieties. This was organized by Padasala, a cultural organization in the village along with Thanal, Kerala State Biodiversity Board and the local panchayath(local government) and Maitri a women's self help group, as part of the People's Year of Rice Action (YORA). It was inaugurated by the agriculture minister of Kerala, Sri Mullakkara Ratnakaran who has made a strong policy for organic farming in Kerala and is instrumental in keeping Kerala GM free. In his inaugural address he told that agriculture is the only way humanity can go forward and children have to grow with seeds and soil and they should learn agriculture from schools itself.

More than 100 varieties of paddy seeds were exhibited and there was a session on diversity loss in paddy and the need for revival of some of them in the context of global warming. In the evening, a play was performed, by Padasala, based on the issue of paddy land conversion. People from neighboring villages also came and sat through the whole play. The farmers were excited with the idea of reviving rice culture and they decided to take the spirit of this festival back home and into society and start working . They were eager to get some seeds of the traditional varieties which they had lost during the course of Green Revolution.



Green Army in Wadakkancherry panchayat in Kerala to increase paddy production

The Wadakkancherry panchayat in Thrissur district of Kerala has come up with an innovative way to deal with the shortage of agriculture labour in Kerala, which has become a huge bottle neck for paddy cultivation in the state. The panchayat has created a skilled labour bank of people, called the “green army” who are adept in agriculture techniques and using agricultural machinery. This green army which was constituted two years back by the panchayat has gone a long way in addressing the labour shortage issue in paddy cultivation, and as a result the area under cultivation in the block panchayat has increased from 3,900 hectares to 4,750 hectares during this period.

Currently there are 300 people within the group who are skilled in using various agricultural machineries and the aim is to increase the number to 1200. In addition the objective is to provide these people with at least 200 days of work every year. There is also a plan to provide the members with insurance cover and pension.

This is definitely an innovative plan that could be adopted by other districts, panchayats and other states and could help promote paddy cultivation.

Adapted from Hindu Feb 23 , 2010 <http://www.hindu.com/2010/02/23/stories/2010022351090200.htm>

Bayer to pay multimillion dollar fines in two GM rice contamination cases

Court verdicts have been pronounced in two cases amongst a series of such cases filed against Bayer by farmers in the US whose rice supplies were contaminated by the Liberty Link rice, a product of Bayer Crop Science. Bayer and Louisiana State University had been testing the rice, which was bred to be resistant to Bayer’s Liberty-brand herbicide, at a school-run facility in Crowley, Louisiana. Almost a 1000 cases have been filed by farmers from around the US whose rice stocks were found to have trace amounts of the Bayer GM rice. The verdict in the first

case filed by two Missouri farmers (Kenneth Bell and Johnny Hunter) was a payment of 2 million dollars by Bayer Crop Science for losses incurred by the two farmers due to cross breeding. The jury awarded Bell about \$1.96 million and Hunter \$53,336. Bayer’s negligence cost Bell more than \$2.2 million. Hunter quit rice farming and lost about \$50,000 because of the contamination. The jury said that Bayer was lax in handling its experimental rice.

The Liberty Link rice variety modified to make it resistant to Bayer’s Liberty Link herbicide. Eventually “contaminated” more than 30 percent of U.S. rice lands USDA announced the contamination in 2006 and within days rice futures fell and many countries including Russia, Japan, the EU completely stopped rice imports from the US. American farmers incurred a loss of about 150 million dollars.

The second case that came up for hearing on January 11th again resulted in another telling verdict against the German seed and chemical giant. The verdict awarded a total of \$1.5 million to two Arkansas long-grain rice farmers and one farmer in Mississippi whose crops and livelihood were affected by the contamination. “Joe and Jim Penn, of Portia, Ark., were awarded \$480,692 in compensatory damages and fellow Arkansas rice farmer Jerry Catt, of Corning, Ark., was awarded \$96,996 in compensatory damages. Black Dog Planting Co., of Lyon, Miss., represented by partner Gary Goode, was awarded \$923,154 in compensatory damages.”

This was the second of the five test cases scheduled that involves rice farmers in Missouri, Arkansas, Louisiana, Mississippi, and Texas. Both the verdicts awarded only compensatory damages and no punitive damages were awarded.

In their press release dated Feb 1, 2010 the Coalition Against Bayer Dangers urged “European authorities to refuse an import approval for Liberty Link Rice (LL62) produced by Bayer Crop Science. LL62 has been modified with a gene that makes the plant tolerant to glufosinate, a weed-killer produced by Bayer under the brands Basta and Liberty. An approval of this modified rice strain would pose unknown risks for human health and the environment. Glufosinate is to be phased out in Europe due to its hazardous nature. The herbicide is classified as toxic for reproduction and can also cause birth defects. With LL62, usage levels for glufosinate would increase, also

increasing the likelihood of herbicide residues on the rice itself.”

They further added that Bayer is trying to get approval for this rice in many other countries including India, Philippines and South Africa. Even though the USA has already granted permission to plant LL62 farmers are unwilling to grow it as the rice is not approved for import in most nations.

The contamination by Bayer rice clearly demonstrates that even in a self pollinating crop like rice contamination by GM is a serious threat and could jeopardize indigenous landraces and it is incumbent upon us to preserve and protect our indigenous paddy varieties and not allow corporate control over the major food grain of the world.

Adapted from <http://www.reuters.com/article/idUSLDE61421W20100205> on Feb 5th & St. Louis Post-Dispatch, Dec 05, 2009 & Press Release, February 1, 2010, Coalition against Bayer Dangers

Drought ravages famed Philippine rice terraces

The worsening drought situation in Philippines is extracting a toll on the heritage mountain rice terraces of northern Philippines. The Banaue area with its ancient stone walled paddy fields is also one of the nation's major tourist attractions. The mountain



paddies are planted in December /January and ready to be harvested in June/July, taking six months to mature. This year the local authorities say that there would be nothing to harvest as the paddies have dried up due to the El Nino induced drought. The Banaue area has been placed under a state of calamity and it is feared that a small amount of rain could cause land slides in the parched and eroded terraces.

The Banaue terraces comprise of gigantic stone stairways that soar to several thousand feet and stretch for miles. Two of the terrace clusters in Banaue, namely Bangaan and Batad, have been inscribed by the United Nations Educational, Scientific and Cultural Organization (UNESCO) as a World Heritage Site. Created 2000 years ago by the Ifugao tribe these engineering marvels are irrigated by mountain springs and have been cultivated by families, many of them descendants of the original tribes. Ecological factors like climate change and earth quakes have damaged their irrigation systems while social factors like urbanization, migration and cash crop cultivation have led to the abandonment of the terraces by many a farming family. However, many initiatives have been set up to preserve the terraces and the paddies and they continue to be a popular tourist destination.

Adapted from <http://www.google.com/hostednews/afp/article/ALeqM5g1Kb2wXzAC7ypLuEzn8xepcLN9kQ> & <http://www.destination360.com/asia/philippines/banaue-rice-terraces> & <http://www.philstar.com/Article.aspx?articleId=555676&publicationSubCategoryId=63>

Farmer creates a record with 11,215 kg of paddy per hectare output

In Tirunelveli district, blessed with the perennial Tamirabharani, Retired army Colonel Devadoss, a Palayamkottai-based organic farmer has achieved a record yield of 11,215 kg paddy per hectare during the past season through organic farming techniques. He has been cultivating paddy since the past three years and has been approved by the Department of Organic Farming Certification. Participating in the paddy yield competition (organic farming) held on April 3, Col. Devadoss, who had cultivated the

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Organic rice Utsav “Batha Utsava”

Celebrating Rice Diversity

Rice is the principal crop grown in India, and much of the crop is used to feed the domestic population, and Indian farmers, over the centuries have selected and cultivated thousands of varieties of traditional rice. Rice is the cornerstone of our food system, culture, rituals and traditions.

A one day convention was held on the 4th April 2010, to celebrate ‘Diversity of Rice’, which is the epitome of sacredness, though consumed every day. The fest was organized as a part of the ‘Save our Rice Campaign’ with an intention to create awareness about the benefits of consuming organic rice and to exhibit the diversity of rice. Sahaja Samrudha, an organic farmers association, in collaboration with Year of Rice Action 2009-2010 (YORA), a project of Pesticide Action Network, Asia and the Pacific (PANAP), and Thanal, a Kerala-based public interest research, education and action trust, organized the event that brought in farmers – from different districts of Karnataka, consumers, scientists, nutritionists and media on to a common platform.

The utsav was inaugurated by Minister for Food, Civil Supplies and Consumer Affairs H. Halappa, by traditionally pounding paddy. He recollected, “When we were young, we used to pound rice manually. Every house in the village had a wooden pestle or pounder that was tied with ghungroos (bells) and when we pounded rice we could hear the sound of the bells. With the entry of mechanized rice mills, the traditional practice of pounding rice has almost disappeared.” He went on to add, “All the rice we ever ate was pounded unpolished rice. And when polished rice came into the markets, we changed to the polished rice. Little did we realize then that we were eating poison in the form of rice.”

He spoke about the deep water rice varieties, as he hails from the River Varada region which is the lifeline of the people of Sagara and Sourabha taluks. He said that the deep water rice diversity that existed three decades back is almost on the verge of extinction and there are hardly a few varieties that are being cultivated by very few farmers. Varieties like *Nereguli*, *Kerejeddu*, *Edi kuni* and *Jeenugoodu* are still being grown in this area for their taste and also because they are highly resistant to flood conditions.

Keynote address was delivered by **Jayakumar, Director**, Thanal. In his address he stressed that the two pesticides, endosulfan and folidol, each pose an unacceptably high risk to human health and environment. Endosulfan is toxic and has been linked to reproductive and developmental damage in both animals and humans, especially causing retardation of sexual maturity in young males. It is also a neurotoxin, causing damages to optic nerves and epilepsy.

The first experimental aerial spraying of endosulfan was carried out on cashew plantations owned by the Plantation Corporation of Kerala, a government company. The impact of spraying is evident in the maimed, mentally and physically disabled children, and in the health of men and women in the 12 villages in the area. These villages, situated between the cashew plantations, bore the brunt of this rain of poisons. “Despite a ban on its usage it is still used, skin disorders and reproductive disorders are still prevalent”, he said. Kerala State has announced relief and remediation to the community whose health has been badly damaged by endosulfan spraying.

In addition to direct monetary costs there are many hidden costs associated with the indiscriminate use of pesticides. Pesticides kill the natural predators of many insect pests, such as spiders, thus contributing to pest outbreaks instead of preventing them. Worse, excessive pesticide use has damaged the health of farmers and consumers.

He shared some of Thanal’s successful campaigns that started with concern about the decline of agriculture in Kerala and the country. In Kerala it had become hard to sustain paddy cultivation as many rice fields were converted into rubber plantations or used for real estate development. Various groups including Thanal lobbied with the Government and were able to stop conversion of rice fields. He added, “It is not enough but this is just a beginning.”

Boregowda, a farmer from Mandya, who conserves about 70 rice varieties, delivered the keynote address. In his speech he raised the problems faced by farmers producing organic rice. He requested the government to provide markets to farmers producing organic rice. Another problem faced by the farmers is storage of rice. The quality of the finished product depends a great deal on proper drying, milling and storage. Therefore government should make

provision to provide storage exclusively for organic rice.

The former Minister, **Ms. Shobha Karandlaje**, also participated in the event and enlightened the audience about the ill-effects of the increased use of pesticides. She spoke about the government witnessing the uproar of farmers, fuelled by fertiliser shortage, many of whom succumbed to the police shootout that ensued. She said this can be prevented only if the farmers replace chemicals with plant based fertilisers and pesticides, which are eco-friendly. This will not only provide a solution to the current problems, but also provide sustainability to agriculture in the years to come.

Mr. Krishna Prasad, Director, Sahaja Samrudha addressed the gathering by detailing nutritional and medicinal benefits of rice. Despite its importance as a staple food, interest in its health benefits has only recently attracted attention. Laboratory studies have shown that rice products have anti-cancer properties and the potential to treat other conditions such as diabetes, kidney stones and heart disease, he said. *Doddabiaraneelu* and *doddabath* are popular red rice varieties, and have curative values for various diseases and are beneficial for diabetic patients. *Karibatha* is used for curing herpes and *Karikalave* is a special variety that is usually served as an energiser to pregnant and lactating mothers, as it is high in calcium content. *Navara*, a variety from Kerala, has anti-carcinogenic (chemo-preventive) property -particularly effective against breast cancer.

He said that Sahaja had collected varieties of rice from different parts of the country and many were being conserved on farmers' fields. Farmers have developed many varieties like '*Mysore mallige*' (developed by Lingamadaiah), which is very popular and has spread across the state. He said that it was time to understand and appreciate farmers' biotechnology. At this juncture it is not only about conservation of diversity that is being emphasized, but fighting against global pressure for initiating Bt Rice into our country. It would be a disaster for our country as we will lose a considerable amount of the genetic material which has been grown or bred by farmers for many generations which may no longer be available in the field or with our farmers. So farmers have to raise and conserve the diversity and it is the responsibility of civil society to help farmers conserve it.

During the festival rice producers had an opportunity to sell their produce directly to consumers and also learn about the market demand and quality standards that are acceptable to the urban consumers. The event showcased some of the rare and endangered rice varieties with medicinal value, aroma, and drought resistance, flood resistance and so on.

The highlight of the event was –a 'Farmer Calendar' that was being introduced from April to April, to signify the beginning of the agriculture season and also the Hindu New Year – *Ugadi*, which marks the commencement of a new Hindu lunar calendar. The award for ASIA PACIFIC RICE JOURNALIST 2009 was handed over to Ms Anitha Reddy for her winning entry, "Paddy that Survives the Flood," which was originally published in the *Deccan Herald* on 4 August, 2009.

Esteemed speakers enriched the knowledge of people with their lectures on various topics that concerned human health. - K C Raghu, Food Technologist talked about **Concept of Diabetic Rice**, Dr. Prema, well known Dietician about **Rice & Health**, Dr. Satynaryana Bhat, Doctor of Ayurveda about **Rice and Local Health Tradition and Uses of Rice in Ayurveda**, and Dr. Venkatesh, President, Kidney Foundation spoke about **Changing Food Habits and its Impact on Health**. Finally the day drew to an end with many consumers carrying bags of rice and ordering for a few more. It was not an end to the campaign but a beginning of a movement in Karnataka.



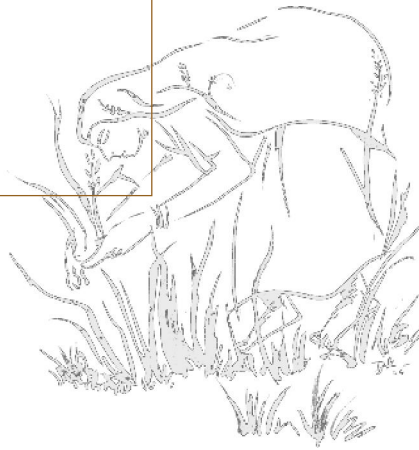
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'kitchadi samba' variety, achieved a yield of 11,215 kg per hectare.

Col.Devadoss said that he uses only organic inputs and does not need to use insecticides or pesticides on his crop and gets an excellent yield with very robust grains.

Extracted from The Hindu April 11th (<http://www.hindu.com/2010/04/11/stories/2010041158070300.htm>)

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