

PADDY

SAVE OUR RICE CAMPAIGN

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RICE PADDIES NEED AN ECOSYSTEM APPROACH!

While travelling through Karnataka in October one of the striking sights that we came across was the Gudavi bird sanctuary (in our rice journey Gudavi was not in the itinerary, but that unplanned visit underscored one of our important learnings, over the years, about rice paddy systems). We were told that the birds in the sanctuary, numbering in tens of thousands, present during October- November for breeding, depended largely on the paddy eco-systems around for their food. On the other hand paddy lands in highly fertile Karnataka are being converted to arecanut orchards and turned into ginger plantations with high levels of chemical use. This is a conundrum most paddy systems are facing.

Paddy systems are inter-dependant encompassing many elements present naturally and many introduced synergistically by humans keeping in mind ecological and economic needs. The paddy and shrimp/fish cultures in areas with salt and brackish water in India and many parts of South East Asia; the paddy and duck systems; the Subak system of Bali paddies to

manage water and pests; the amazing rice terraces in Bali, China and other places are all examples of this.

Therefore, to consider rice paddies as a monoscape, the only purpose of which is to grow maximum amount of rice through means fair or foul is short sighted and damaging. This is what we tried to do in the green revolution; we picked one kind of seed, one methodology (of high synthetic fertilizer, chemical pesticides and large machines) and tried to eliminate all other systems and diversity from the rice paddies. As expected, the problems began to surface one by one and today despite everything paddy farmers are making losses, using high levels of pesticide and many are forced to give up paddy farming.

The need to go back to basics, to look at paddy eco-systems in a holistic manner is becoming an imperative to make paddy farming viable and to protect the increasingly fragile ecosystem in the face of impending climate change. In this issue of PADDY we present a small study done in Wayanad to assess the dragon fly and damselfly population in the paddies.

PADDY team

DRAGON FLY AND DAMSELFY DIVERSITY IN THANAL AGROECOLOGY CENTRE

Priyanka M

Introduction: Thanal agroecology centre, Panavally, is situated in Wayanad District located in the ecologically fragile Western Ghats. A predominantly agrarian district -the name Wayanad stands for 'vayal nadu' (which means paddy lands in Malayalam), it also has a significant tribal population. The population - tribal and non-tribal- mainly depend on cash crops and paddy for their livelihood and most of the land in the District is under cultivation. Panavally is a biodiversity rich area which is surrounded by the Kalindi river and the Brahmagiri hills. Thanal agro ecology centre is

situated in an ecologically important area enriched by a river, forest and hills. Different species of birds, butterflies, dragonflies, fishes, snails, plants, trees etc are present in significant numbers.

The agroecology centre contains 200 varieties of traditional rice, 40 varieties of tubers, 80 varieties of non cultivated leafy vegetables, more than 40 varieties of forest trees, coffee, areca nut, coconut and pepper. Wild animals like elephants, deer, monkeys, bison, tigers etc are frequently seen at the centre.



120 species of birds, 35 species of dragonflies and damselflies, around 60 species of butterflies and 80 species of non cultivated leafy vegetables have been identified from the Thanal agro ecology centre.

Background:

I began my work on biodiversity with documentation of non cultivated leafy vegetables in paddy fields and documented 20 species of non cultivated leafy vegetables. Most of these non cultivated leafy vegetables are considered as weeds and farmers destroy these valuable, medicinal, edible plants by using hazardous chemicals and herbicides. Discovering the importance of each and every species in the paddy field got me interested in further documentation of biodiversity in the wetland ecosystem-paddy field. I could understand the value of paddy fields as a biodiversity area through this study. I realised that the value of paddy fields lie not only in the value of rice produced but also in its biodiversity richness. So, I decided to document dragonflies and damselflies (Order- Odonata) - colourful insects of wetlands and great predators in paddy fields. The life history of odonates is closely associated with wetlands. Adults lay eggs in specific aquatic habitats. Male odonates are generally more brightly coloured than females.

Objective and methodology:

Objective of this study was to analyse the diversity of dragonflies and damselflies present in the Thanal agro ecology centre, Panavally. Weekly observation and photo documentation of dragonflies and damselflies was done during the second crop paddy season (September-

December, 2013 and 2014). Identification of the observed damselflies and dragonflies was done with the help of an e book named Common Odonates of Central India written by Andrew, R.J., Subramaniam, K. A. & Tiple, A. D. (2008) and with the help of Mrs. Rajasree, a researcher in biodiversity.

Dragonflies:

20 species of dragonflies under three families were identified from the Thanal agro ecology centre. They are club tails (Family: *Gomphidae*), darner (Family: *Aeshnidae*) and skimmers (Family: *Libellulidae*). Among these most of the dragonflies identified were under skimmers (Family: *Libellulidae*). Skimmers are the most diverse group of odonates. Ditch jewel (*Brachythemis contaminata*), ruddy marsh skimmer (*Crocothemis servilia*), ground skimmer (*Diplocodes trivialis*), fulvous forest skimmer (*Neurothemis fulvia*), green marsh hawk (*Orthetrum sabina*), crimson-tailed marsh hawk (*Orthetrum pruinosum*) and wandering glider (*Pantala flavescens*) are the most common dragonflies found in the paddy fields observed. Among these thousands of wandering glider were found swarming over harvested fields and surrounding playgrounds during early morning and evening.

Some dragonflies like blue darner (*Anax immaculifrons*), crimson marsh glider (*Trithemis aurora*) and black stream glider (*Trithemis festiva*) were found along the banks of the river and usually found perching among emergent water plants.

Damselflies: 15 species of damselflies under six families were identified. They are marsh darts (Family: *Coenagrionidae*), bush darts (Family: *Platycnemididae*), bambootails (Family: *Protoneuridae*), spreadwings (Family: *Lestidae*), glories (Family: *Calopterygidae*) and



stream jewels (Family: *Chlorocyphidae*). Pigmy dartlet (*Agriocnemis pygmaea*), golden dartlet (*Ischnura aurora*) and yellow-striped blue dart (*Pseudagrion indicum*) were frequent visitors to the paddy fields. Saffron-faced blue dart (*Pseudagrion rubriceps*), stream glory (*Neurobasis chinensis*), stream ruby (*Rhinocypha bisignata*), river heliodor (*Libellago lineata*) were confined to hill streams and rivers.

Conclusion:

The paddy agroecosystem is an integrated water- dependent system, which includes many kinds of living organisms among which birds, fishes, reptiles, amphibia, arthropods and plants are prominent. Paddy fields play an important role as agricultural land (to produce rice and in some cases fishes and other crops like vegetables and legumes in non-paddy season), in addition it also provides a habitat for various animals and plants. Some species complete their life cycle in the paddy

field. In the case of dragonflies and damselflies, they lay their eggs in paddy fields, and the larvae grow in paddy fields, the adults frequently visit paddy fields for predation as well. Dragonflies and damselflies are the best predators in paddy fields. If we use chemicals and pesticides in paddy field these insects will not find their food, and through this we will destroy both biodiversity in paddy fields and also an effective means of biological pest control. When we adopt biodiversity based ecological farming, such mutually beneficial interaction of multiple species will exist. It will increase the ecological and economic value of the paddy fields. Only a holistic approach towards these eco-systems can help sustain them so that our food security in the long term is also assured. Therefore, protecting such eco-systems is a necessity rather than a luxury.

Priyanka is a biodiversity researcher who has been focussing on biodiversity in paddy land eco systems.

THROUGH KARNATAKA IN SEARCH OF RICE SEEDS, FOOD AND FARMERS- Part 2

Sreedevi Lakshmi Kutty

Shikaripur- an extraordinary farmer and a wonderful family !

From Bhadravati it was almost a two hour drive to Nandish's home in Shikaripur (the name sounds straight out of a hunting story). Nandish is a prominent organic rice farmer known for his path breaking approach (legume logic and other new experiments) and we were looking forward to seeing his farm, home and experiencing his lifestyle. Our visit with him and his lovely family, his farm was all that we had heard and more.

A natural farmer, a practicing healer , with a lovely traditional home and a life style rooted in the tenets of natural methods and culture, Nandish and his young family were a revelation and kindled hope within us for the future. The visit was about innovative farming experiments, natural food habits and numerous rice delicacies. Looking back, delicious rice based foods was one of the highlights of each day, despite the fact that Usha and I did not plan for it or think about it actively when we set out. It was truly an unexpected bonus of our journey, which reinforced our thoughts and

ideas to improve traditional rice marketing and making it easily available to urban consumers.

The next day, early in the morning, Aarti (Nandish's wife) provided us with small bowls of rice from the night before, mixed in butter milk and chopped onions. Nandish exhorted us to try it and told us that old rice eaten like this first thing in the morning is excellent for health, even better, he said, was the water in which it was kept overnight. Along with it was a bowl of sprouted peanuts, green gram and bengal gram. Fortified by this wonderful time-tested power food the three of us set out to see the farm, the laboratory of his experiments. He explained each of his trials, experiments in detail with the results he got, his assumptions and his plans for other experiments. (Nandish's article on legume logic was featured in PADDY of October 2011)

The Varada river basin beckons – land of red rice

After a breakfast of rice adai and idlis we set out to visit a new seed bank in Soraba, started by Sahaja Samruddha under the organic village project. It was inaugurated by Usha and

Nandish told us that earlier he was not particularly enamoured with traditional paddy seeds, his interest has always been agronomy, improving soils and farming practices. During 2013 October, a low pressure system developed through the cyclone Palin. This happened during the flowering season of paddy in Nandish's farm. After unseasonal cyclone induced rains on one afternoon he observed around 35% loss of flowers in his regular paddy whereas the traditional varieties experienced only 10-12% losses. Nandish said that this was an eye opener for him. He added that with climate change becoming a harsh reality, which farmers have to deal with, traditional seeds have a distinct advantage and we need to conserve and promote them seriously.

In him we saw a true rice scientist with an intense feeling for the rice eco system, a deep understanding of the inter-linkages in the system and real patience for testing and trying various experiments. Such farmer-scientists, with a land to lab approach is what our agriculture needs. In addition to cultivating his 18 acres actively, Nandish is also involved in advising many farmers. Nandish, who was introduced to sustainable paddy farming by Krishna Prasad has over the years grown into an expert in rice agronomy.

the District Agriculture Officer. The women farmers had created a beautiful fresh flower arrangement for the seed bank, located in a tiny building. After the inauguration and a meal topped by rice payasam (by then we had become past masters in eating different varieties in rice in large quantities during every meal), we were taken around the fields of the farmers who were part of the Karnataka government's organic village initiative (for which Sahaja Samruddha is the implementing NGO in around 60 villages). The paddy seeds for the organic village project are being purchased from the SOR seed savers, providing them a steady source of income currently. Many SOR farmers and seed savers (who are by now known organic farmers in their areas) have also been functioning as trainers and facilitators for hand holding new farmers to begin organic paddy cultivation.

The organic village project in Karnataka hopefully will become a conduit for mainstreaming of organic paddy farming and uptake of more traditional rices, farmers are definitely interested in traditional varieties. Once they become adept at growing it, they need vibrant markets where the rice can be sold at a viable price. What the SOR campaign and partner groups have to do is to explore more innovative, collective and broad based strategies for building markets in the three southern states where traditional rice cultivation has picked up.

From the seed bank we journeyed to Banavasi in Sirsi Taluka to meet a group of farmer seed savers who began conserving traditional deep water red rice varieties (flood tolerant and salt resistant) in the Varada river basin. These farmers from the famed Malnad region of Karnataka began as a small group with the help of Sahaja and SOR. Today the small group has grown to 200 growers and 300-350 acres of land under these traditional varieties. They call themselves the Malnad Rice Growers Association, proudly taking the name of their region which is famed for its beauty, fertility, bountiful rivers, rich soil and proud history and heritage.

The 12 executive committee members including a lady member were waiting for us. Most of the seed savers are men, is it because in this campaign we have been working with landed farmers who can spare land, money and time for seed conservation, after managing their regular farming activities?

The Association which began with the intention of seed conservation is now a partner of Sahaja Organics and sells about 1-2 tonnes of red rice every month to it. In addition, the association also sells directly to organic stores in Hubli, Mysore and Shimoga. The deep water varieties grown include Karijaddu, Bilijaddu, and Mahanavami Buddha. Another variety of rice grown is Bangara gundu, as of now it is not very popular with consumers. However, the farmers said that it is excellent as first food for babies and we should examine the possibility of marketing this wonderful rice.

The conservation efforts in the Varada river basin began as hybrids and HYVs do not grow well in the flood plains and these deep water varieties naturally do well. According to the members of the Association till two years

back about 60% of the areas in their villages was under deep water varieties and 40% under HYVs; now 95% of the area is under deep water varieties.

They said that most of the deep water red rice varieties grown by conventional farmers are sold in Kerala, similarly, they want to explore selling their organic red rice also in Kerala. With a bigger market they could expand the area under organic red rice. Every meeting the theme which came up again and again was markets-consistent, reliable, with a good price- so that farmers can continue cultivation and conversation of organic traditional varieties.

Gudavi sanctuary and goodbye to Shikaripur!

It was while returning from this meeting that we experienced an amazing sight. Nandish, who had accompanied us for the meetings, suggested that we should visit a small bird sanctuary nearby in Gudavi . Located a little off our course back to Shikaripur from Banawasi , we got there just before closing time.

From the watch tower in the sanctuary we saw the amazing sight of hundreds of thousands of birds bedding for the night. We were lucky to be there in October which is the breeding season, the sanctuary though small is well known in Karnataka. The tree tops were completely covered with birds, looking like puffs of cotton. We could only hear the cacophony of different bird cries, feathers flying all around and the sound of wings flapping furiously as darkness descended. The guard told us that most were migratory birds. During their sojourn they stopped there and fed on the extensive paddy lands and adjacent greenery all around. It was a yet another validation of one of the primary pillars of the campaign: paddy fields are not merely economic systems, they are first and foremost ecosystems that are crucial for the existence of many species including us.

After that magnificent sight, we returned to delicious rice rotis for dinner, dexterously made with help from Nandish's neighbour who dropped in to help Aarti. Combined with vegetables and chutnis of various hues it was a delight. The next morning we took leave of that wonderful family who taught us many lessons about leading a wholesome life, waved away by an almost tearful Vardhita (Nandish's 3 year

old daughter who thrives on entertaining guests).

Seed savers

Our next stop was Chinnikatti village in Bedige Taluk, Haveri District, where we were slated to meet expert seed saver farmers like Shrinik Raju, Bujibalappa and other farmers in their village. They explained to us their time tested method for seed selection.

Once in three years they choose a day, two weeks before harvest, and go to the fields early in the morning before nine, stand facing the sun and keenly observe the plants. At that time they are able to locate stray varieties that are removed or sometime conserved to grow out later. Then they choose good ear heads that are not afflicted by pests or disease, have large number of grains in the panicle (300-350 for a good ear head in the case of Gandhasale and Dodda baddha in the case of Bilidada budhe it is 200-250 grains per ear head) check for the number of tillers, plants that haven't lodged and harvest about 10-15 kilos for seed selection.

They celebrate a festival called Bhoomi Hunnime, which occurs just before Diwali, for the earth goddess. The farming families prepare Karibudhi, Bilibudhi , Kumbalangi kadubu (a preparation made with pumpkins) and other food items . In all 15-20 items are prepared and the farm families proceed with the food to the farm. The offerings are made to the earth goddess and then the food is eaten. Shrinik Raju mentioned that these offerings also have an ecological purpose as birds come in large numbers to eat the food and also eat the pests in the paddy fields, thereby resulting in a round of pest cleanup.

Among other things we visited the local school , listened to the farmers about millet cultivation and processing and also the new business of growing vegetable saplings in green houses. This is a common feature in many villages, many new agri-business opportunities are emerging and the farmers are ready to try them for a better cash income. The need for a steady and fairly good cash income has become the overriding need of farming families what with the high cost of education , health care and the new consumer aspirations that have reached most of the villages. This was followed with lunch of traditional rice varieties but also

accompanied by maize bhakris and lovely chutnis made from flax seeds and ground nuts.

To meet Anjaneya at Davengere

From there to Anjaneya's farm in Kumbaluru village, Davengere was a hot ride, Anjaneya was waiting to meet us and took us to his fields. Davengere is one of the more prosperous agriculture districts with more than 80% of the land under irrigation. Consequently, the pressure for high yields and the lure of high input commercial agriculture renders most farmers unwilling to try low input organic agriculture. This is a constant pressure Anjaneya and his fellow organic farmers' experience.

We drove to Anjaneya's fields where he led us enthusiastically and took a handful of lovely soil and showed us the earthworms and the urad plants bordering them, which add to soil fertility (through nitrogen fixation) and also provides enough urad for household use. His enthusiasm was infectious, he told us about using green manure crops (picked up from Nandish) to improve soil fertility.

When we gathered in Anjaneya's house with a few other organic rice farmers from the area, the discussions again veered to markets and better prices for traditional rices. Since the village lies very close to the city, the cost of living was high and the farmers reiterated that they need good prices to be able to sustain traditional rice cultivation. Anjaneya's family had prepared a lovely snack called oggadu mandakki (popped rice) made from Dodda batha rice.



Anjaneya in front of his rice field

Sahaja organics and Desi seeds- The new direction

From here began the last leg of our journey to Bangalore where we met the team at Sahaja Organics which has emerged as one of the large wholesalers dealing with organic traditional rices. We met with the CEO of Sahaja Organics Somesh. Sahaja Organics has been promoting traditional rice varieties and has been (as part of the SOR campaign) been able to popularize many of these varieties. Rajamudi rice is one of their success stories, which is in high demand. Similarly Gandhasale, a scented variety has also become exceedingly popular. They may also begin supplying traditional rices to online retailers.

However, the discussion also highlighted a contradiction; the number of retailers for organic food and traditional rices is increasing but the number of farmers is not increasing. Also there are other supply bottle necks, issues with certification, insufficient prices etc. Somesh added that there is a need to ensure consistent and steady supply of popular varieties, if the

varieties are not consistently available people lose interest. Also, there is a case for constant conversion and introduction of new people to traditional rices. He said that on one hand the prices need to be reasonable to attract more customers, on the other hand, the supply chain is so scattered that the transportation cost of getting



Nandish and Usha discussing Paddy farming

the rices to the retail end is staggeringly high.

After Sahaja organics, we met with Praveen of the Desi seed company which is another offshoot of Sahaja and working along with the SOR campaign. The seed company is in the process of developing seed plots (and in many cases has already established) to try out various traditional rice varieties (like Rajamudi, Gandhashale, HMT, Njavara) in different geographies, in the southern states . Praveen said this is an important step to ensure the suitability and viability of the seed in various climatic and geographic zones before these are produced and sold widely. He said that there was a need to set up a Save Our Rice brand for traditional rice and seed varieties to assure quality.

The journey in search of rice, farmers and seeds ended at the home of the artist who had visualized and designed the SOR campaign logo, the woman farmer bending over the paddy field. Dhanraj had also painted the images related to the Kumbalangi convention and other images used in the campaign. Coincidentally, he is currently working on a series on paddy fields, splashes of bright green , interspersed with streaks of dark green, and golden yellow the vision is emerging . Having grown up in Kerala, paddy fields are a part of Dhanraj's subconscious and the colours and images flow naturally. After a last glance at the lovely paintings emerging out of the talented artist's brush, we ended our rice trail.....to continue in another state, another time.

VISIT TO SAGAR ISLAND, SUNDERBANS, WEST BENGAL

Usha S

Himanshu Mondal has been inviting us to visit his Sagar Island since 2011. During our last Bengal visit in 2012 we had actually reached Kakdwip, but could not cross the river due to heavy rain and storm. From there one has to take a boat to cross the river that seems like the sea (known as Hooghly river or Muriganga river locally) to reach Sagar Island. Sagar is the largest inhabited island in the Sunderbans. This is the southern most part of Bengal. This island is also known as Gangasagar or Sagardwip.

We reached Kakadwip on November 22 and took the ferry to Kachuberia where people get down to reach various places. The island is 38 km long and 20 km wide. Truly an island! Sagar is inhabited by over two lakh people, most of them farmers and fisher folk. Sagar block has the highest percentage of educational attainment in West Bengal. It has 97% literacy. While travelling from Kolkata we were discussing about the waste issue in Kolkata. But when we entered Sagar Island it looked serene and clean. We asked Himanshu, our local colleague, about it and he responded that people are aware of environmental issues and are concerned.

The other interesting thing we found is that food was very cheap. Food was diverse and cheap in the train! There was our breakfast. Rs 10 for four people! Macro economists can never

understand this culture of economical living .So they will continue to recommend food import and industrialization of the country.

We were also introduced to this new fruit, which we have never tasted before- paniphal or water chestnuts or singhada (Hindi). We ate a lot of 'paniphal', (it is the fruit of a water plant which is grown in the wetlands connected to the paddy lands) on the way.

The Save Our Rice campaign began in Sagar Island due to Himanshu Mondal's interest and commitment. The devastating Aila cyclone of 2009 devastated lives and livelihoods in Sunderbans. Farmers lost their crop and the soil became salty. The tentative trial by a few farmers in some islands showed indigenous paddy seeds worked even under these conditions. The Save our Rice campaign conducted meetings and training programmes to spread the idea of efficacy of indigenous seeds. The idea spread and Himanshu, himself an organic farmer who cultivates paddy and vegetables, visited Mumudpur to visit farmers who were practicing organic farming using indigenous seeds. He was happy to meet them , collected some seeds and began his work in Sagar Island.

Himanshu also runs an organization called Mrithyunjaya Nagar Mukthi Thirtha. Once he started cultivating Kerala sundari, a traditional paddy variety, on his land, many

people started to visit and see the results. The visiting farmers began collecting seeds, , slowly the seeds spread and this year more than 1000 farmers are cultivating Kerala sundari and Bahurupi, both traditional paddy varieties found in West Bengal.

During this trip we met some of the farmers who are cultivating Kerala sundari and Bahuroopi. All of them, both men and women farmers, were very happy to narrate their experience. They own little land, mostly 1-2 bighas (one bigha is around 30 cents). All of them told us that these varieties perform well in terms of yield and do not need much input. Therefore, these are suitable for low- input agriculture systems that help small and marginal farmers to earn a sustainable livelihood.

We interviewed Dileep Das who is cultivating Kerala sundari for the last three years. He owns 1 bigha of land and from that got around 800 kgs of paddy this year. He said that his cost of cultivation has come down to one fourth what he used to spend earlier. Another women farmer we talked to was Mayarani Mondal. She said that she has sowed Bahurupi this year and is expecting a higher yield than Kerala sundari. Alauddin, the State

Coordinator of the SOR campaign , and Himanshu narrated the crop cutting exercise done by the Agriculture Department last year in their field. It was comparable to the high yielding varieties.

We also attended two meetings, one with a women farmers' group and the other meeting with conventional farmers who still use chemical fertilizers and pesticides. The women farmers were more than willing to share their thoughts and ideas and expressed a desire to shift to organic methods and traditional seeds. During the second meeting the men were shared that the main problem in the area is the cultivation of betel vine cultivation, the main economic crop in this region. Earlier it was water melon and chillies. A number of pesticides are used on these crops. Paddy is mainly cultivated for food and not for sale. However, the farmers have begun to sell rice in the local market and the SOR campaign is planning a traditional rice mela in Kolkata in March. It is expected that these initiatives will result in creating awareness about traditional rices and also growing the market. Himanshu also has a dream to provide traditional seeds to 5,000 farmers in the next season and change them to organic practices and food security.

GREEN MANURING AIDS PADDY FARMERS!

Paddy farmers who used to line up for synthetic fertilizers have now found that green manuring with a bunch of leguminous plants will improve soil fertility enough to almost double their paddy yield. A method popularized by many paddy farmer, this was taken up by Nandish a progressive farmers, who calls it legume logic.

The farmers use seeds of sunhemp, daincha , horse gram, velvet beans, niger and cow peas. Sunhemp can withstand drought, dhaincha can withstand flooding while velvet beans, horse gram and cow peas provide biomass and fix nitrogen as well.

This traditional method had gone out of vogue with the advent of synthetic fertilizers and is making a slow and sure comeback. . In Davengere District, led by organic paddy farmer Anjaneyappa many paddy farmers have begun following the green manuring methodology. The farmers say that green manuring has decreased the incidence of diseases and weed infestation

(A green twist to paddy cultivation: Deccan herald ., February 10, 2015. <http://www.deccanherald.com/content/458733/a-green-twist-paddy-cultivation.html>)

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