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Reviving the Lost Legacy of Rice Biodiversity: The Story of Ghani Khan

Rice means life and survival for billions of people. Relying on a narrow range of rice strains grown in monocultures has led to increased pest problems and erosion of rice biodiversity. ***Anitha Reddy*** *shares a story of a farmer from India, Ghani Khan, who has successfully eschewed modern hybrid rice seeds to return to traditional varieties of rice which he believes are more nutritious and resilient.*

Bada Bagh Farm

The Farm

The lane to *Bada Bagh* is muddy, accosted by trees, shrubs and sugarcane. The last thing you would expect to find there is a farm. And yet as you walk ahead *Bada Bagh* startles you with its sudden presence.

Welcome to *Bada Bagh*. Famed all over Karnataka (a state in southern India) for its flavourful mangoes, the land on which the farm stands today was given to Syed Ghani Khan's family by the legendary Tipu Sultan himself, who ruled parts of modern Karnataka in the 18th century.

The farm is now managed by Ghani Khan, a fourth generation descendant. The mangoes come from trees that have a 250 year old history. But there is another reason why Bada Bagh is popular today, thanks to Ghani Khan's introduction and cultivation of 146 traditional rice varieties including rice strains of different combinations.

Ghani Khan

Journey to Organic Farming and the Search for Traditional seeds :

Ghani, the eldest among the four sons says that it is the quest for alternative seeds and farming practices that brought the family together. The once separated brothers are back and they owe much to the traditional rice strains.

Ghani, like many young farmers initially operated the farm adopting modern agricultural practices with synthetic fertilisers and pesticides. However, he witnessed rapid deterioration of his once fertile fields. A fellow farmer suggested alternative methods to rejuvenate the soil and with his help Ghani began experimenting with organic composts. The hybrid rice (the IR series) did not respond well to organic composts. This led him to search for a rice variety that would respond to his new cultivation methods.

This proved to be more difficult than he had imagined. Due to widespread hybrid cultivation the region had lost most of the traditional rice varieties. Traditional varieties of sturdy, drought

resistant rice distinct to the region that he knew like *Rajabhoga, Coimbatursanna, Kadibatha, Bangarusanna, Bangarukaddi and Doddibatha* were now rarely being cultivated.

Ghani's long search for traditional seeds finally bore fruit when he came across *'Rathnachudi'*- a fine variety of rice. He started experimenting with it with success. Motivated by this, he continued to cultivate the variety for about 6 years. Soon he decided to test other varieties of traditional seeds and his search yielded about six paddy varieties. All six varieties proved to be successful. The six became twenty six in the consecutive year and it more than doubled to seventy five in 2008. Today he has as many as 146 varieties.

Ghani says he owes a lot to Sahaja Samrudha (an organic farmers association) for their technical guidance and helping him with his efforts in collecting seeds from different regions. He now has a wide range of varieties from five different states of India. His diverse seed varieties include wetland, dryland, medicinal, aromatic, and irrigated rice.

His farm uses the System of Rice Intensification (SRI) method for irrigation. The SRI method saves a lot of water. The plot has been designed in a way that follows a combination a several principles, like alternate wetting and drying, increased spacing between plants, and transplanting the plants when they are young.

Paddy nearing Harvest

The Need To Preserve Traditional Rice varieties

The main drawback of hybrid seed varieties, says Ghani, is that they are sterile. The traditional seeds on the other hand have evolved over the years and have developed beneficial qualities like resistance to certain pests, and diseases. This makes them hardier and healthier than hybrids. Their unique features are preserved and each rice variety has a distinct flavour, and come in many different colors, sizes, and shapes.

Ghani and other like minded farmers believe that because the traditional varieties have evolved through the combined process of natural selection and farmer selection, it is superior to hybrid varieties. Traditional crop varieties, from their experience, maintain biodiversity and perform better when exposed to erratic climate changes. They cite the example that during floods and prolonged droughts the modern high yielding rice varieties and hybrids have shown drastically reduced performance. The farmer often suffers partial or total loss of crops.

Endorsing the farmers' view **Shanta Kumar**, Coordinator of **'Save our Rice**' campaign in Karnataka, says

"For thousands of years farmers have developed and nurtured crop genetic diversity. With their careful insight they select the plants and develop varieties with suitable traits and improve on the existing one. This system of selection and improving on the plant is what has led to an astounding diversity of ***landracres****, which still exists with some farmers. Though most of the rice diversity has been eroded, there are some farmers, who are working towards reviving and maintaining the rice diversity and Ghani is one among them"*

Prized collection of Paddy

Prized collections

Today Ghani maintains different paddy strains to keep alive the evolutionary processes and to ensure a continual supply of germplasm. He is skilled in the art of seed production and has over the years developed a fine ability to identify the best seeds. He has reserved a portion of his plot for maintaining a seed bank, to preserve them and prevent them from disappearing forever.

Mr. Krishna Prasad, of **Sahaja Samrudha** says "O*n-farm conservation of rice diversity is carried out only by farmers who are interested and willing to do so. It cannot be imposed on them. A farmer who conserves 'inter' and 'intra' species diversity needs to have an understanding as to how, what and why he does it. Organizations can only technically support and provide opportunities for the farmers in continuing their efforts at conserving crop diversity*". He further adds that on-farm conservation of crop diversity is important. This form of managing diversity of crops is easy to implement and links farmers' economic concerns with

conservation. Management for crop diversity can promote on-farm conservation of rice, and potentially other crops too, in a feasible and sustainable way.

Some of the traditional seed varieties in the Farm:

Rajabhog: *A weed Suppresser.*

Anandi: *A high yielding variety.*

Jeeriga samba*: An aromatic, non lodging and good grain yielding variety.*

Parimalasanna: A fine variety appropriate for making festoons.

Govindbhog*: Considered to be sacred and used as an offering to God Krishna.*

Sagvad: *Used for Poha (beaten rice).*

Maladi*: A medicinal rice variety used in bone fracture treatment.*

Raj gudiyapa*: A dry land medicinal rice variety used for weakness.*

HMT*: A farmer developed variety.*

Kasubai*: A scented variety.*

Other varieties include *Chinnaponni, Kempudoddi, Halublu, Rajakayame, Rasakadam,Gamgadale, Burmablack, Kagisali, Ambimohar, Gamsale, Kottayane, Bilinellu, Gandhasale, NMS2, Rajmudi, Gowrisanna, Jeerigesanna, Bilidoddi, , Gambatha, Jeerigesale, Kalakali, Dharisal, Tulasiya, Sheerabathi, Thamadisala, Rathbath, Ratnachudi."*

Roping in other regional farmers

Ghani's concern for conservation of biodiversity has got many farmers interested in traditional varieties as a result of which his farm is drawing visitors from villages near and far. His experiment has enthralled scientists and officials, who have applauded his venture and there are talks of naming the farm as a Biodiversity Heritage Centre.

Ghani Khan can be contacted at +91-9901713351

Recently Dr. Narayanagowda, Vice Chancellor, University of Agriculture Sciences, Bangalore visited his farm along with Rice Research station scientists. He praised Ghani for his endeavor and has undertaken the traditional varieties for a scientific characterisation.

India is presently facing a rice crisis due to erosion of its biodiversity and increase of monocropping in agriculture. Reliance on a narrow spectrum of cultivars grown in monoculture have increased pest problems and India being a mega diversity country has a plethora of traditional varieties which are nutritious and have been developed over centuries. The traditional strains are more resistant to drought and could be an answer to the climate change. So saving them is important lest we lose these forever.

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