

Millets: Future Of Food And Farming

I live in the village of Pastapur in the southern part of Medak District in Andhra Pradesh. The soils here are highly unfertile and at some places, as shallow as 8 inches. The annual rainfall is an average of about 600 mm; that too is uncertain in these years of climate change. Most of the small and marginal farmers with whom I work through the NGO, Deccan Development Society [DDS], grow millets on their poor soils. But in the last 25 years since I started living here, not a single millet farmer has committed suicide.

As an environmental activist I also got DDS involved in a study on Bt Cotton - the first Genetically Engineered crop in India - when it was introduced in Warangal District of Andhra Pradesh. Warangal falls right in the heart of the cotton belt of A.P. This was the first district that wholeheartedly embraced Bt Cotton in 2002. In these six years, several hundred cotton-growing farmers have committed suicide here.

In Vidarbha district, which is 600 kms away from Pastapur, we've been doing a little bit of work on reintroducing millets with one community in the Dorli village. Vidarbha - which is another home for Bt Cotton - has seen at least one farmer committing suicide per day from the day it planted Bt Cotton. But fortunately

was not a single case of suicide last year among the farmers who replaced the Bt Cotton on their fields with millets.

The millet farmers around Pastapur have very poor soils. But every season, along with their millets, they also grow their soils. Their crops are intrinsically soil-fertilising, and just by growing millets in every cropping season, they are not only preserving the soil's fertility but also adding more carbon to it.

In Warangal, soils are turning toxic since the advent of Bt Cotton. Rhizoctonia, the root rot disease appeared for the first time on two percent of the Warangal soils in 2003, an aftermath of Bt Cotton. By 2006, this disease had spread to 40 percent of all Bt Cotton fields.

After they harvest cotton, Warangal farmers grow chilli as a regular agronomic practice. Since cotton crops are pampered with a lot of farmyard manure and fertilisers, the soil becomes rich for the chilly crop and farmers get a bumper harvest. But since Bt Cotton, the chilli crop sown following the Bt Cotton harvest started rotting completely - a phenomenon never witnessed before by Warangal farmers.

In Wardha District of Vidarbha, recent studies indicate that there is an enormous increase in fatigue of soils that are growing Bt Cotton. They cannot cope with the unending nourishment

the question that springs to my mind is should we be growing life-affirming crops such as millets or life-extinguishing crops such as Bt Cotton?

Though through skewed pricing policies of the government and the predatory markets, cotton may fetch a higher price than millets, is this the route we need to take?

Let us move to the fundamental question. Why millets, why not other food crops? The answers are many. Topping them all is the fact that millets are extremely eco-friendly followed by the following reasons:

- They thrive on non-chemical agronomic practices
- In a broad sense they are pest-free crops
- Millet farming is home to agro-biodiversity
- They do not need irrigation for their cultivation
- They can grow on the poorest of soils
- In the hands of traditional farmers, millet farming needs zero energy input
- They offer not only food but also fodder, health, nutrition, livelihood and ecological security. Thus, while other food crops can offer us food security, millets can offer multiple securities.

Millets can grow without synthetic fertilisers

Millets do not demand chemical fertilizers. In fact under dry land conditions, millets grow better in the absence of chemical fertilizers. Therefore most farmers grow them using farmyard manure under purely ecological conditions. In recent years, farmers have also started using bio-fertilisers such as vermicompost produced in their backyard and growth-promoters such as panchgavya, amritpani, etc. These practices make millet production not only ecological, but also keep it under the control of farmers.

Millets are pest-free crops

Grown with traditional local landraces and under ecological conditions, most millets are totally pest free and hence do not need any pesticides. Even in storage conditions, most do not have any need for fumigants. E.g. The Foxtail millet acts as an anti-pest agent in the storage of delicate pulses such as green gram.

Millets mean biodiversity

Most millets grown under traditional practices constitute a farming system and not merely a crop. Most millet fields are inherently biodiverse. This is the tradition of millet farming in the

Himalayas are a testimony to this. In this millet-led system, 12 different crop varieties are embedded in the same field at the same time. Saat Dhan in Rajasthan also is a host to a large variety of millets. The Pannendu Pantalu system of the South encourages growing millets in combination with pulses and oilseeds, thus making it a holistic farming system.

Millets can grow without irrigation

Do you know how much water we use for growing a kilo of rice? It is an incredible 3000-4000 litres of water!

Assuming that the minimum yield of rice in a chemically-grown Green Revolution model is about 2000 kilos per acre, that acre uses between six and eight million litres of water. If, on the same field you grow millets, you can save six to eight million litres of water for the nation. Even if you price this water at one paisa a litre, a millet farmer contributes nearly Rs.60, 000 per year for every acre of the farm she/he cultivates, to the national kitty.

In a sense, millet farmers are the only ones who do not demand any subsidy from the state, on the contrary subsidise the state exchequer. Consider the fact that nearly 60 million acres of land in India are under millet cultivation. This area contributes in terms of water close to Rs. 350 billion every year to the national

the august chambers of celebrated economists at the national level. Through such silences, the millet farmers have been completely marginalised.

Millets grow on the poorest of soils

Millets are adapted to a wide range of ecological conditions, often growing on soils that are less than eight inches deep. They do not demand rich soils for their survival and growth. Most millets can be grown on low fertility soils, some in acidic soils and some on saline soils. Millets such as Pearl millet can be grown on sandy soils as is done in Rajasthan; so for the vast dryland area, they are a boon.

Poor farmers especially in dryland India are owners of very poor lands. Much of the cultivable fallows and low fertility farms have been handed to them through the process of land reforms and the Jajmani system of Inam lands. The only crops that sustain agriculture and food security on these lands are millets.

The capacity of millets to grow on poor soils can be gauged from the fact that they also grow in sub - Sahelian soil conditions in West Africa - which produces 74% of all the millets grown in Africa and 28% of the world production. If they grow in such zones where rainfall can average less than 500 mm, using soils that are sandy and slightly acidic, it is a testimony to their

conditions. That is why millets can withstand drought-like conditions in the Deccan and Rajasthan and produce food and fodder.

Millets produce multiple securities

While single crops such as rice and wheat can succeed in producing food security for India, millets do more. They contribute to securities of food, nutrition, fodder, fibre, health, livelihood and ecology. Most millets have edible stalks which are the most favoured fodder for cattle. Sometimes, crops such as sorghum and pearl millet are grown only for their fodder.

Besides fodder, millets are storehouses of nutrition and hence provide nutrition security. Being hosts to diverse crops such as red gram and amaranth, millet fields produce fuel wood and fibre.

The legume crops that are companion crops for millets are also prolific leaf shedders. The fallen leaves act as natural manure and maintain soil fertility. Thus, millet farms do not just use soil fertility for their growth, but also return this fertility to the soil. Ultimately, their energy balance sheet stays clean. All the energy they import for their cultivation is returned by them to the soil

Storehouses of Nutrition

millet in the food and farming landscape, it is nutrition. By any nutritional parameter, millets are miles ahead of rice and wheat. In terms of their mineral content, millets dwarf rice and wheat. Each one of them has more fibre than rice and wheat - some millets have as much as fifty times that of rice. See the table below and you will discover this amazing quality of millets.

Finger millet has thirty times more calcium than rice, while every other millet has at least twice the amount of calcium compared to rice. In their iron content, foxtail and little millet are so rich that rice is nowhere in the race. While most of us seek a micronutrient such as Beta Carotene in pharmaceutical pills and capsules, millets offer it in abundant quantities. The much privileged rice, ironically, has zero quantity of this precious micronutrient.

In this fashion, nutrient to nutrient, every single millet is extraordinarily superior to rice and wheat and therefore is the solution for the malnutrition that affects a vast majority of the Indian population. Remember in the Global Malnutrition Index, India occupies a position far below that of sub - Sahelian Africa, a region known as the poorest in the world. Therefore, experts say that India is in a state of Nutritional Emergency.

Apart from the poverty-induced malnutrition in the disprivileged rural belts, the nutritional crisis that the urban world faces is

among the urban populations of the world can be traced back to their dietary imbalance and the presence of carbohydrates and absence of other nutritional elements in their diet. To overcome these problems, increased use of millets in our diets can be the answer. In fact, with their low glycemic index, millets can be a dietary panacea for the diabetics.

Tasty, very versatile

A question that always arises is that millets are surely nutritious, but are they also tasty? The answer is an emphatic yes. Millets are extremely tasty foods. The rotis from jowar and bajra cooked in North Karnataka and Maharashtra are a gourmet's delight. Some of the upmarket restaurants in Pune in Maharashtra shun rice and serve only millet. In Rajasthan Dal-bati-churma, made with Jowar is the traditional food and people relish its taste. Some of the most popular food joints such as Vishala in Ahmedabad and Dhola ri Dhani in Jaipur serve the most delicious millets.

Café Ethnic nestles in the small town of Zaheerabad in Medak District of Andhra Pradesh. This is the only all-millet organic restaurant in India. The café has proved that using millets one can cook every single recipe that one cooks using rice. Foxtail millet Khichdi, Vada, Idli, Muruku, Bhajiya, Payasam, Ragi Ambali and rotis from multiple millets are the specialities of the

such as traditional Guntapongalanu to modern spring rolls to sweets such as Badushah.

Millets are not just food; they are an integral part of the culture of thousands of communities all over the country. In South India, the sorghum-growing Deccan areas of Telangana, Marathwada and North Karnataka use sorghum to bless the newlyweds. In many rites of worship across castes and religions, sorghum is revered as the principal ritual grain.

In the Endlagatte Punnam, the panicle festival of the Deccan, freshly cut crop panicles from the field are offered to the village goddess and then hung as decoration on the door front. Sorghum occupies a place of pride in this array of crops. Any food that is so deeply integrated into the culture of communities cannot be taken away from them.

A ONE-STOP SOLUTION TO CLIMATE CRISIS

“Experts warn us that Climate Change will confront us with three challenges”

- Increase in temperature between two and five degrees celsius
- Increased water stress

And millets have the capacity to meet these challenges.

- Since they are already capable of growing under drought-like conditions, they can withstand higher heat regimes.
- Millets grow under non-irrigated conditions in such low rainfall regimes as between 200 mm and 500 mm. Thus, they can also face the water stress and grow.
- Every one of the millets is a storehouse of dozens of nutrients in large quantities. They include major and micro nutrients needed by the human body. Hence they can help people withstand malnutrition.

When the climate crisis deepens, two of the trusted crops for India's food security viz., rice and wheat will face a severe setback. The projected 2 degree Celsius temperature rise might force wheat to disappear from our midst since it is an extremely thermal-sensitive crop.

Similarly, the way rice is grown under standing water makes it a dangerous crop in context of the climate change conditions. Methane emanating from water-drenched rice fields is a green house gas that adds to the global warming. Millets are all-season crops cultivated round the year, whereas wheat is season-specific.

Between 1966 and 2006, 44% of millet cultivation areas in India were occupied by other crops. Declining state support in terms of crop loans and crop insurance has significantly contributed to this decline and fall of millets in Indian agriculture.

Unless this is halted urgently through a slew of policy and financial incentives, millets might disappear from the agrarian landscape of India over the next fifty years. This will not only be a loss for India's food and farming systems but also a civilizational and ecological disaster.

Therefore, there is an urgent need for Indian policy makers to refocus their attention towards millet farming systems and enact policies that create an enabling environment for millet farmers.

Post Green Revolution, there has been a systematic decline in the production of millets. This is clearly evident from the production trends of millets vis à vis, other crops such as rice and wheat, that were relentlessly promoted for intensive farming in a few select resource rich areas under irrigated conditions.

Agriculturally, nutritionally and environmentally, this is quite tragic. Wheat and rice registered a whopping increase of 285 and 125 percentage points respectively between 1956 and 2006. Simultaneously, state policies pushed millets to suffer a decline of 2.4% after the Green Revolution in agriculture.

millet cultivation areas have shrunk over the last fifty years. Between 1956 and 2006 nearly 42% of all millet growing areas moved away to other crops. In 1958, 36.2 million hectares were growing millets. By 2006, millets were being farmed in only 21.3 mha and during the same period wheat dramatically climbed from 12.8 mha to 26.2 mha to double its area of cultivation.

Similarly, while they occupied pride of place at 36% of all cereal-cultivated area in 1956, they dropped to a dismal 21% in 2006.

Millets: Path to the Future

If India needs to secure its food and farming for this century, there is an urgent need to recognize millets as the future of this country and adopt relevant steps. It is also important to realize that for a New Age crisis such as the Climate Crisis, millets are a New Age Answer.

The Millet Network of India in its recent Second National Consultation came up with the Delhi Declaration on Millets. A few major points from this Declaration are the signposts for the food and farming future of India: accord highest priority to the introduction of millets in India's Public Distribution System, incentivize millet cultivation in order to mitigate the alarming state of malnutrition in India, urgently start a massive awareness campaign on the nutritional value of millets and revise our

agricultural practices, amongst other things.

If this voice of the millet people of the country is heard, acknowledged and implemented, there is no doubt that we will see a dramatic change in the food and nutrition picture of India.

Millets are much more nutritious than rice and wheat. They can be made into tasty dishes, require no chemicals to grow and can help reduce carbon emissions. Why are we neglecting them still?