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TASKS FOR INDIA’S MILLET REVOLUTION

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A field with millet in Medapram in Dharmavaram mandal of Anantapur/Anantapuramu district, Andhra Pradesh | Photo Credit: R.V.S. PRASAD

The Food and Agriculture Organization of the United Nations (FAO) has declared 2023 as the International Year of Millets. Millets have special nutritive properties (they are high in protein, dietary fibre, micronutrients and antioxidants) and special agronomic characteristics (drought-resistant and suitable for semi-arid regions). If millets are good for nutrition and are climate-resilient, what then are the constraints to increased millet cultivation and consumption?

I provide a brief outline of the economics of millet cultivation (its production, consumption and procurement), followed by some lessons from the experience of the M.S. Swaminathan Research Foundation (MSSRF) in conserving millet biodiversity and promoting the production and consumption of millets in the Kolli hills, Tamil Nadu, a model that can be adapted to other areas. In writing this article, the inputs of Oliver King and D.J. Nithya of the MSSRF have been valuable.

Two groups of millets are grown in India. Major millets include sorghum, pearl millet and finger millet, while minor millets include foxtail, little millet, kodo, proso, and barnyard millet.

In 2019-20, the total offtake of cereals through the Public Distribution System (PDS) and the Integrated Child Development Scheme (ICDS) and also school meals was around 54 million tonnes. If about 20% of rice and wheat were to be replaced by millet, the state would have to procure 10.8 million tonnes of millet.

In 2019-20, the total production of nutri-cereals (earlier called coarse cereals) was 47.7 million tonnes. The bulk of this was maize (28.8 million tonnes), a non-millet crop used mainly as feed (M.S. Swaminathan had suggested that coarse cereals be replaced by nutri-cereals). The production of sorghum (4.8 million tonnes), pearl millet (10.4 million tonnes), and finger millet along with other millets (3.7 million tonnes) put together was 18.9 million tonnes. With this production, the inclusion of millets in the PDS would only be feasible if more than 50% production were procured — an unlikely scenario. Currently, millets are procured in only a few States, and stocks in the central pool are small. In May 2022, central stocks had 33 million tonnes of rice and 31 million tonnes of wheat, but only four lakh tonnes of nutricereals.

The real problems are: first, the decline in the area under millet cultivation, and, second, the low productivity of millets. Over the last decade, the production of sorghum (jowar) has fallen,the

production of pearl millet (bajra) has stagnated,and the production of other millets, including finger millet (ragi), has stagnated or declined. The productivity of jowar and bajra has increased, but only marginally. The average yield of jowar was 957 kg per hectare in 2011-12 and 989 kg per hectare in 2019-20. The yield of bajra was 1,079 kg per ha in 2010-11 and 1,237 kg per ha in 2017-18.

Unless productivity and production are increased substantially, all exhortations to consume millets will come to naught.

The millet project of the MSSRF had three objectives — to preserve crop diversity in local millet varieties; to increase production and the consumption of millets, and to enhance farm incomes. The Kolli hills block of Namakkal district, the project area, is a distinct geographic and agro-ecological region of the Eastern Ghats, populated by income-poor Scheduled Tribe households. There has been a rapid decline in minor millet cultivation, and a shift in land use toward more profitable crops such as cassava (tapioca), pineapple, coffee, and pepper. As the Indian Council of Agricultural Research (ICAR) has pointed out, the area under nutri-cereals has declined steeply in India since the mid-1980s — from 41 million hectares in the 1980s to 24 million hectares in 2017-18.

The reasons for a shift in land use include low yields. Further, processing of millets is a time-consuming and laborious task, undertaken by women. Additionally, very little was marketed, and a tiny share of grain was processed into value-added products.

The project intervened in three areas. First, yield enhancement was attempted, using a combination of participatory varietal trials for improved seeds, new agronomic practices, and new technology. Community seed banks were designed and constructed to conserve, restore, revive, strengthen, and improve local seed systems.

Second, customised post-harvest machinery (pulverisers and dehullers) was introduced. Hand-pounding millet by women for an hour yielded 2 kg-3 kg of grain (all millets other than finger millet have a hard seed coat that requires abrasive force to remove the starch from the seed coat). The introduction of small-scale localised mechanical milling, operated by self-help groups, was a game-changer.

The third major initiative was training. The Kolli Hills Agrobiodiversity Conservers' Federation (KHABCOFED) was formed to oversee all activities towards training and value-addition. Ready-to-cook products were branded under the Kolli Hills Natural Foods label and market links established. Net returns from value-added products were five to 10 times higher than from grain: a kilogram of little millet rice sold for 7, a kilogram of millet upma sells for 41.

The most significant outcome of the last 25 years has been that the decline in the area under cultivation of minor millets and finger millet at the block level has been stemmed, and, indeed, has increased gradually after 2014-15, although the acreage is still one-third of acreage in the early 2000s. Yields have risen as a result of improved seeds, agronomic practices and intercropping. There have been significant improvements in incomes from millet farming. The shift from hand pounding to milling has reduced the drudgery for women and encouraged millet consumption. The number of private mills with customised dehullers and pulverisers has risen (and the technology has been marketed to Krishi Vigyan Kendras across Tamil Nadu).

The most difficult outcomes to measure are changes in consumption and nutrition. A rapid sample study in 2021 showed that persons of all ages ate millet for nine days per month. Fifteen years earlier, a different study showed that 39% of households consumed millets regularly. Availability is one factor here, but so are changing food habits.

In conclusion, increasing the production of millets and reversing the decline in area cultivated are feasible steps but not easy, and require multiple interventions including scientific inputs, institutional mechanisms, financial incentives and in-kind support. The Government of India and State governments, notably Karnataka and Odisha, have initiated Millet Missions. These policies are welcome, but unless we pay attention to the economics of millet cultivation, we face a losing battle against more profitable alternatives. Small farmers in hilly regions and dryland plains who are among the poorest households in rural India, are going to cultivate millets only if it gives them good returns. Adequate public support can make millet cultivation profitable, ensure supply for the PDS, and, ultimately, provide nutritional benefits to a wide section of the population.

Madhura Swaminathan is Professor, Indian Statistical Institute, and Chairperson, M.S. Swaminathan Research Foundation (MSRRF)

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