

Starting from the seed: farmer producer companies raising yields of minor millets in Madhya Pradesh, India

Kodo millet (*Paspalum scrobiculatum*) and little millet (*kutki*, *Panicum sumatrense*) are central to traditional rainfed farming systems of Gond farmers in eastern Madhya Pradesh, India. These minor millets are generally suitable for dry and marginal lands and have high fibre, low glycemic index, and good protein and mineral content. They are grown on the most challenging, sloping, rocky soils where other crops simply cannot thrive. Low water requirements and early maturation help these cereals to escape drought. For this reason, they are recognized as key assets to support farmer adaptation to climate change that is bringing ever greater drought pressure to eastern Madhya Pradesh.

Despite their many values, the production area of minor millets has declined more than 50% in Madhya Pradesh in the last 20 years. Production remains important among isolated farmers in sloping lands. Low productivity, weak market channels, and difficult processing are the major bottlenecks that have made millets less attractive for cultivation and consumption, while new crops have been promoted and opportunities for wage labor and market access have developed. Low yields in particular hamper the economic value of minor millets. Furthermore, although minor millets have higher nutrient content than rice and wheat, their low yields mean they actually deliver a lower nutritional yield per cultivated area.

Closing the yield gap

As kodo and little millets have received relatively little research attention, raising their yields could only require a modest effort to help unleash their full benefits. The millet seed used by farmers in eastern Madhya Pradesh is by and large made of landraces, and typically farmers plant grain stored for several years, resulting in poor yields. Key issues in the local seed system for millets in Madhya Pradesh



Storefront of the Mandla Tribal Farmer's Producer Company.
Credit Bioversity International/G. Meldrum

are common to other underutilized species, including limited access to improved seeds from public sector, limited private sector intervention on seed production, disorganized value chains for both seed and grain, heavy erosion of traditional knowledge regarding seed management practices, and poor germplasm conservation, seed quality, storage, and viability.

A significant initiative is underway in Mandla and Dindori districts of Madhya Pradesh to increase the availability and use of high quality millet seed by production and commercialization through farmer producer companies. The initiative "Linking agrobiodiversity value chains, climate adaptation and nutrition: Empowering the poor to manage risk" is led by Bioversity International and Action for Social Advancement (ASA) and is supported by the International Fund for Agricultural Development (IFAD), the European Commission and the CGIAR Research Programme on Climate Change Agriculture and Food Security (CCAFS) from 2015–2018. Three farmer producer companies engaging more than 2000 shareholding households in the focal region have been involved.

Farmer seed enterprises for locally suited varieties

Participatory selection trials were carried out to identify highest yielding and preferred varieties of kodo and little millets, which the farmer producer companies are producing and commercializing. Six varieties of kodo millet (JK13,JK-48,INDRA-1,DPS-9-1,JK-41, JK-439) and three varieties of little millet (JK-8,DHL M 36-3) are produced by local smallholders, who are contracted by the farmer producer company. The seeds for all but two of the preferred varieties (JK-439 and INDRA-1) are certified by the Madhya Pradesh Seed Certification Agency. Samples of the harvest are provided for technical evaluation and on qualifying they issue batch- and variety- specific tags. The farmer producer companies carry out primary grading and cleaning and they package the seeds using their brand labels.

Reaping the benefits

The millet seed business is supporting income and food security outcomes for the shareholders and the wider community. Earnings for the seed producers coordinated by the farmer producer companies corresponded to 1.5Rs/kg (ca 2.33USD/kg) for kodo and 2Rs/kg (ca 3.10USD/kg) for little millet. The farmer producer companies procure seeds from local producers at their doorstep and pay within 3–4 days, whereas other buyers typically have longer delays in payment. The farmer producer companies sell the millet seeds to local producers through their local storefronts and they also sell to the Agriculture Department and other buyers. The final cost of packaged seed is 30Rs/kg (0.46USD) for kodo and 35Rs/kg (0.54USD) for little millet, providing a profit of 4–5Rs/kg (0.06-0.07 USD).

In the participatory evaluation trials, the preferred varieties had on average yields of 1500–1600 kg/ha as compared to local varieties, which yielded around 1000–1200 kg/ha. Yields under typical growing conditions in farmers' fields in the targeted districts are much lower (ca 600 kg/Ha according to our baseline estimates). The yield obtained from using quality seeds and good cultivation practices instructed through the project would increase the nutritional yield of millets to levels more similar to rice, noting that the additional nutritional and income benefits are derived from lands that are largely unsuitable for other cultivations.



Women with millet in Mandla district. Credit Bioversity/P. Mathur

Conclusions and ways forward

The three farmer producer companies have made very positive contributions in providing better seed of minor millets to local farmers. At the same time they are also promoting a wider use of crop diversity in local production systems, fostering greater use of knowledge held by custodian farmers in value chains enhancement and greater involvement of younger farmers in the value chain work. Opportunities for further improving the work of farmer producer companies in the area of millets include promoting more active participation of women in the value chain (women membership is high, but cultural values and local norms do not encourage their active engagement in FPC work), reinforcing seed exchange networks in target communities and better linkages with value chain actors and private companies for broadening the portfolio of activities beyond seed production.

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