Sorghum is an important food crop for over 500,000 people in Semi-Arid regions of sub-Saharan Africa and South Asia that harbor the largest number of malnourished people globally. In Asia, predominantly the low-income group populations in India depend on sorghum for their daily calorie intake and meet more than 50% of their micronutrient requirement from sorghum-based diets. However, the micronutrients (Fe and Zn) concentration in sorghum is low (30 ppm Fe and 20 ppm Zn) in most of the existing cultivars. Therefore, any efforts to increase the grain Fe and Zn contents in sorghum would significantly improve its nutritional value and complement well the ongoing efforts to address micronutrient malnutrition.

ICRISAT standardized phenotyping methods and assessed over 3,500 germplasm lines, improved breeding lines and hybrid parents of sorghum for their grain Fe and Zn contents and identified promising lines for use in breeding programs. One of the selected lines from this data-driven breeding effort was sorghum restorer line ICSR 14001.

Over years of testing in station trials, state multilocation trials and All India Coordinated Sorghum Improvement Project (AICSIP) it showed consistently higher grain yield (up to 3.5 t/ha), higher grain Fe concentration of 45 ppm and zinc 32 ppm compared to the baseline of 30 ppm Fe and 20 ppm Zn in current sorghum varieties.

The lines showing agronomic desirability, higher nutrient contest and better grain mold resistance were further clarified and resulting cultivar was released as ‘Parbhani Shakti’ in 2018 by Vasantrao Naik Marathwada Krishi Vidyapeeth, Parbhani, Maharashtra in India.

Considering large demand for its seed, 50 and 40 tons of seeds were produced in 2018 and 2019 respectively, and supplied to the farmers. Some progressive farmers were also trained in seed production and encouraged to share with other farmers.

This innovation contributes to SDG 1 “To end poverty in all its forms, everywhere”, SDG 2 “End hunger, achieve food security and improved nutrition and promote sustainable agriculture”.

This sorghum cultivar has been taken up by users as a Stage 4 and Maturity Level 3 innovation, i.e., policy and/or practice changes influenced by these new methods have led to adoption or impacts at scale or beyond the direct CGIAR sphere of influence. Among others, this is evidenced by the fact that bio-fortified sorghum ‘Parbhani Shakti’ developed in India is performing well in multi-location trials and National Variety Testing trials in Sudan and is headed towards its release.