

7.3 Staple crops diversification

Beyond the “Big 5”

What problem is your proposition addressing?

Food systems heavily rely on 5 key commodities (wheat, rice, maize, potatoes, and soy). The top three account for an estimated 42.5% of the world's calorie supply. The figure is much higher in developing countries, e.g., in many parts of Asia, rice can provide 80% of caloric intake. Dependence of food systems on very few crops is associated with a wide range of risks in relation to lack of nutrients and associated negative health outcomes, and to decreased climate and economic resilience. Today the biggest part of the staple crops entering global trade and consumed worldwide, comes from 65% of the cultivated land which is owned by 1% of farms.

Is this a new solution or an existing solution that needs scaling?

Diversifying staples, due to their dominance, and if achieved with the right foods, can have huge impact on nutrition/health, the environment and farmer resilience. The proposed initiative recognizes that to successfully bring on the market other major staples, we should focus on only one or two crops at a time. This is because to be a major staple, crops need to have well developed value chains and be established global commodities. It will require dedicated focused efforts to achieve this. Millets (which were broadly defined to include sorghum) are selected as the first crops to diversify staples because they were the traditional staples across much of Africa and Asia and fit the criteria of a smart food – good for you (highly nutritious and targeting some of the biggest nutrition and health needs), good for the planet (environmentally sustainable) and good for the farmer (climate resilience). It is also recognized that this needs efforts from fork to farm, starting at the consumer and food processor end to drive awareness and demand for the selected foods.

Which organisation/s, institution/s or groups of individuals are associated with the solution?

The proposed solution draws on the experience of the Smart Food global initiative, and of the convening power of the OP2B and WBCSD business groups.

It is jointly proposed by:

- [One Planet Business for Biodiversity \(OP2B\)](#)
- The [FReSH project \(Food Reform for Sustainability and Health\)](#) of the World Business Council for Sustainable Development (WBCSD)
- [Smart Food initiative](#), led by an Asian-African Executive Council: International Crops Research Institute for the Semi-Arid Tropics ([ICRISAT](#) – host organization); Forum for Agricultural Research in Africa ([FARA](#)), the West and Central African Council for Agricultural Research and Development ([CORAF](#)), the Food, Agriculture and Natural Resources Policy Analysis Network ([FANRPAN](#)), the Asia-Pacific Association of Agricultural Research Institutions ([APAARI](#))

What is the scientific evidence that supports your proposition?

There is a large body of scientific evidence showing that a food system relying on a few staple crops causes several nutritional, environmental, social and economic disruptions. There is indeed a strong association between dietary diversity, particularly micronutrient density of the diet, and nutritional status. Research has also demonstrated that crop diversity provide yield stability at country level which is equivalent to the benefits of irrigation.

- Food systems heavily rely on five key commodities (wheat, rice, maize, potatoes, and soy), with the global calorie production concentrated around a limited set of commodity crops grown using highly intensive methods (Foley et al., 2011).
- Intensive crop production of maize, rice and wheat has almost doubled over the past 50 years (Traoré et al., 2012). Today, these three commodities account for an estimated 42.5 percent of the world's calorie supply. It is much higher in developing countries, e.g. in many parts of Asia rice alone can provide up to 80% of caloric intake (Awika, 2011).
- Over the last decades, massive economic incentives have been deployed for the expansion of a few staple crops, resulting in lock-in effect that hinders the development of crops other than the traditional 'Big 5' ones dominating our food system (Gladek et al., 2017).
- There is a strong association between dietary diversity, particularly micronutrient density of the diet, and nutritional status (Hoddinott & Yohannes, 2002; Moursi et al., 2008).
- A large body of evidence shows that many plant species are better adapted to their local environments, and therefore more resilient to local environmental pressures than foreign ones (Becker et al., 2006; Bucharova et al., 2017; Padhee, n.d.; Raabová et al., 2011).
- Crop diversification enhances biodiversity, pollination, pest control, nutrient cycling, soil fertility, and water regulation without compromising crop yields (Tamburini et al., 2020)..

Is this idea applicable to a particular geography, demography, landscape or other type of setting?

- Global relevance: for creating new commodity and food markets that have a lower carbon footprint and highly nutritious.
- Developing country relevance: as diversifying staples, typically 70% of a meal in developing countries, will have major impact on diet-based nutrition and health.
- Drylands globally: which provide 60% of the world's food production, will have the biggest benefits for environmental sustainability and adaptation to climate change.

Who are the main actors that would put this action into place?

All players across the value chain have a pivotal role to contribute to staple crops diversification.

The objective of this initiative is to mobilize cross-sector alliances to deploy these strategies to shift production and consumption into the right direction.

- Business leadership - from farmers to input providers, traders, manufacturer and retailers - is needed to identify solutions for such diversification at production, trade, procurement and consumption levels, creating new markets and business opportunities that can align with and contribute to the UN Sustainable Development Goals (SDGs).
- Policy makers are indispensable to create a minimum a level playing field, and preferably an incentivization fostering diversification of the "Big 5" to alternative staple crops to ensure local market development. It will also be critical for

governments to develop policies to support the true value of food that would foster crops providing better health and resilience benefits.

Source and process

- Joanna Kane-Potaka, Smart Food, ICRISAT
- Florence Jeantet, Managing Director, OP2B
- Emeline Fellus, Director, FReSH, WBCSD – AT2 Leadership Group Member