

common disorder among women. Similar supplementation is highly recommended to complement the diet of the entire population. But it is unsustainable, because when pills of high concentration are consumed, there will be antagonistic effects of one element over the other. For example, zinc pills can affect absorption of calcium in the human gut. Besides, supplementation being an expensive intervention, this approach heavily relies on adequate and sustained funding and efficient distribution mechanisms<sup>3</sup>.

Biofortification is a process of enhancing essential nutrient content and its bioavailability in crop plants. Biofortification of food grains can be achieved by either enhancing the nutrient content or by reducing the antinutritional factors like phytate in food grains<sup>4</sup>. To biofortify grains, agricultural scientists employ different approaches like conventional breeding, molecular breeding and trans-

genic approach. A well-framed breeding approach is essential for biofortification, and often it takes 6–8 years to develop a cultivar with improved nutritional status. By adopting conventional breeding approach in 2013, the International Centre for Research in Semi-Arid Tropics has released pearl millet variety with increased iron. In a multi-institutional harvest-plus programme, rice and wheat varieties rich in zinc and iron have been developed. Though, biofortification is a time-consuming process, it is considered as the most cost-effective and sustainable approach. Realizing its importance and need, several transgenic<sup>5</sup> and molecular breeding programmes were initiated at national and international centres to hasten the process to develop biofortified crop cultivars. The bigger task ahead of us now is popularization and bringing awareness among farm communities to accept these biofortified crops over the

elite crop varieties under cultivation. 'Health comes from the farm, not the pharmacy.'

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## Better health: an approach

Being astonished by the fact, known to me through personal sources, that the health care bills just for buying medicine might be as high as 70–90% of the income of some retired and middle-class families, I was convinced that we need better health. Ill-health reduces income, opportunities and happiness, and wrings out every penny in our private and public finance. But no one can wish away the problem. This realization might have

**Table 1.** Some facts<sup>1</sup>

Overall GDP (in billion US\$) of Indians would be 436.4 and 2140.5 for the years 2000 and 2020 respectively.
Projected household demand of food grains (in million metric tonnes) is 208.6 in 2000 and 343.0 in 2020 respectively.
Projected mortality rates (per 100,000) of all causes in India are 846 for male and 745 for female for the year 2015, of which infectious diseases claim 152 (male) and 175 (female) lives.
Projected incidences of cancer are 851,904 (male) and 705,896 (female) in 2021.

prompted Kalam<sup>1</sup> to formulate his mission to 'go to all parts of the country, particularly beyond cities, remove the pain of mind and body' (see Table 1 for more facts).

Emerging technology for growth generates hopes for individual income, concern for overconsumption of natural resources, changes in lifestyle, and may lead to increased life-expectancy. Complexities of life lead to degenerative diseases, mental illnesses and stress-related physical symptoms in addition to all other diseases our ancestors lived with in the villages.

In addition to Allopathy, Homeopathy and traditional Ayurvedic medicines are followed by some. Homeopaths have now raised the controversy as to whether their products are 'nanocrystalloids'. Ayurvedic bhasmas of metals, after shodhana and marana procedures, were believed to have rendered metals non-toxic. Indian nanoscience is well developed<sup>2</sup>, and nano-medicines might open another avenue for new medicine.

As every new technology enters our life, it confronts us every day with many

simple, mundane questions: Are we at the losers' end? Are we losing our careers, privileges, income, property, or culture and heritage? Nanotechnology and biotechnology are no exceptions. While the concerns are genuine, one cannot be paranoiac, xenophobic iconoclast. One has to test every new technology in improving one's lifestyle with regard to reducing cost, cure of disease, and use of local knowledge skills and material.

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