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## Preface

*ICAR-Indian Institute of Pulses Research* is a premier institute in the crop science division of the Indian Council of Agricultural Research (ICAR). The institute is mandated with the basic, strategic, and applied research on major pulse crops. With the key role in developing technologies and materials toward pulses improvement, production, and protection and giving its fruits to our clientele, *the farmers*, its activities also revolve round generating basic knowledge and information including human resource development by adequate training and education through tactical linkages and strategic coordination with the network on pulses research programs across the country and the globe.

*Biofortification* refers to producing staple foods whose edible portions are more dense in bioavailable minerals and vitamins. It is more relevant in the context of micronutrient malnutrition or *hidden hunger* which is an alarming public health issue in most parts of the world including India. More than half of the world's population is iron deficient, while around one-third is that of zinc. About 40 % of women and preschool children in Asia and Africa have low hemoglobin levels mainly due to Fe deficiency. These micronutrient deficiencies could cause stunting, respiratory tract infections, malaria, diarrhea, and others in human; and the solution to these is probably possible through crops that naturally reduce anemia, cognitive impairment, and other nutritionally related health problems. Here, biofortified plants could come to our rescue with the proven potential to nourish nutrient-depleted soils, help increase crop productivity, and provide nutritional benefits to plants, humans, and livestock.

Since pulses and cereals have the lion share in major dietary components of the food chain, their bioavailability through biofortification (with desired micronutrients) provides a truly feasible means of reaching the poor and undernourished. The pulses (chickpea, lentil, pigeon pea, mung bean, and urd bean), for example, are rich sources of protein, complex carbohydrates, dietary fiber, and micronutrients, viz., Fe and Zn. Biofortification of micronutrients in food crops is in fact dependant on seed type, growing environment, inherent varietal difference, agronomic constraints, and several key antinutritional factors. As an antidote, suitable strategies with increased mineral bioavailability promoter profiles with reduced antinutrient levels could appropriately enhance bioavailability of minerals. Thus,

biofortification strategies involve increasing the mineral and vitamin content in food plants through modern breeding approaches, improved agronomy, and physiological, microbiological, and biotechnological tools enabling reduction in antinutrients to safe levels in food staples and thereby promoting bioavailability of nutrients. In this context, the book entitled *Biofortification of Food Crops* is handy as it could provide a suitable platform in our collective efforts for an appropriate dialogue among the scientists, researchers, entrepreneurs, policy makers, and farmers in reducing the budding issues of malnutrition through different means.

We are thankful to the contributors of the book chapters for their efforts in bringing out this publication. We are confident that this edited publication prepared out of experts' opinions and suggestions will be quite useful to all those directly or indirectly concerned with the emerging issues related to malnutrition and a possible solution to it through biofortification.

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