Tropentag, September 10-12, 2025, hybrid conference

"Reconcile land system changes
with planetary health"

Biofortified food crops: An option to alleviate dual problem of hidden hunger and nutritional insecurity

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Abstract

Hidden Hunger is posturing threat to more than half of the world's population. Globally, nutritional security is the most vital concern that can only be resolved by improving grain quality. In reality, the diets of a large part of the world's population are deficient in Fe, Zn, Ca, Mg, Cu, Se or I, which affects human health and nutritional security. Since, biofortified plants have the greater potential to nourish nutrient-depleted soils; help increase crop quality, productivity; and provide nutritional benefits. Biofortification of food crops through breeding approaches and inventive agronomic interventions viz; seed treatment (seed priming and seed coating); foliar fertilisation and soil application could be a faster, easy and attractive measure to add micronutrient concentration in the human diet. Research efforts made at in India at varying locations viz; Kanpur, Jodhpur, Jaipur also confirmed the genotypic variation in food crops. In mungbean, genotype 'GM 4' substantially fetched higher Zn concentration in grain (46.6 $^{mg}/_{kg}$) and stover (36.0 $^{mg}/_{kg}$). Application of Zn at 6 $^{kg}/_{ha}$ to mungbean added significantly higher Zn concentration in grain (39.6 $^{mg}/_{kg}$) and stover (29.2 $^{mg}/_{kg}$). Among breeding approaches of biofortification, use of high zinc and iron containing pulse genotypes under breeding programme for developing biofortified pulses is proved an effective measure. Some pulses genotypes rich in Zn and Fe viz; lentil 'IPL 220' (62–63 mg Zn and 87–112 mg Fe/kg seed), mungbean 'ML 803' (38 mg Zn/kg seed), mungbean 'HUM 1' (89 mg Fe/kg seed) and cowpea 'Pant Lobia 1' (40 mg Zn and 82 mg Fe/kg seed) will be marvellous in developing biofortified pulses. Likewise, RHB 233 (46 mg Zn and 83 mg Fe/kg seed); RHB 234 (41 mg Zn and 84 mg Fe/kg seed) varieties of pearl millet are good source of nutrients to mitigate hidden hunger. Therefore, breeding and agronomic approaches of biofortification are the solution to alleviate hidden hunger and ensuring nutritional security.

Keywords: Biofortification, food crops, hidden hunger, nutritional security

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