

MINERAL RETENTION STUDIES AT HarvestPlus

James Stangoulis⁽¹⁾

⁽¹⁾Associate Professor of Flinders University, Adelaide, Australia

In recent years, the biofortification of staple food crops has grown to become a major strategy that links agriculture with human nutrition, with the potential to improve the nutrition of deficient individuals. HarvestPlus is supporting plant breeders with the aim of conventionally breeding higher levels of Fe and Zn in the food portion of the plant. Of major interest is what happens to the Fe and Zn after processing. To date, most of the mineral retention studies have been done in rice with new studies soon to be initiated for pearl millet. For rice, a large amount of Fe is lost in the polishing process whereas for Zn, the loss is around 20% at optimal milling time. Also, in milled rice the anti-nutrient, phytate is mostly lost which causes an increase in the Zn:phytate ratio. Genotypic variation exists for micronutrient retention at set milling times which can be exploited in the plant breeding process. For wheat, the target regions (i.e. South Asia) for biofortified wheat are mostly preparing whole grain chapatti so there is no loss of Fe and Zn in this process. On the contrary, Fe levels may increase due to soil particle contamination in the harvesting and post-harvest processing. In all retention studies, quality control in the analysis is critical to gain valid analyses and HarvestPlus uses various strategies to ensure high quality analysis.