

2022-06-01

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Elsevier Ltd.

<https://doi.org/10.1016/j.scienta.2022.111029>

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A review on the trends of maize biofortification in alleviating hidden hunger in sub-Saharan Africa

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Abstract

Micronutrient deficiency is a major problem affecting many people in developing countries who solely depend on maize as their single source of calories. Vitamin A deficiency is one of the health problems associated with micronutrient deficiency. It is caused by insufficient intake of food rich in vitamin A among vulnerable groups leading to impaired growth, reduced life span, and economic losses among resource-poor families. Strategies such as vitamin A supplementation, food fortification, and diet diversification have been adapted to combat vitamin A deficiency (VAD). However, these approaches have benefited urban dwellers leaving rural residents with deficiency sufferings, as they lack access to these alternatives. Biofortification of maize by breeding with higher provitamin A content holds immense promise as a cost-effective and sustainable approach in alleviating VAD in sub-Saharan African maize consumers. Biofortified maize has a greater potential to alleviate vitamin A deficiency in these countries. Despite the existence of biofortification programs in Africa, there is little documentation on what has been conducted, challenges, and future of maize biofortification programs in Africa; this limits any strategic planning required to produce maize varieties rich in micronutrients, including vitamin A. Therefore, the present study is a detailed systematic review to highlight the past, present, and future success of provitamin A maize biofortification and its adoption challenges in sub-Saharan Africa as a strategy for combating vitamin A deficiency.