This research study's significance extends to its potential to strengthen food security by enhancing cowpea production. The goal is to provide farmers and breeders with valuable resources to effectively address bacterial blight, ensuring greater food security, by identifying resilient genotypes and specific genomic regions associated with resistance.

Biofortification of Tropical Maize Synthetics using Markers

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Abstract
Micronutrient deficiency including Vitamin A is the common feature of most maize (Zea mays L.) varieties in Sub-Sahara African countries. Consequently, people dependent on maize-based diets suffer from micronutrient deficiencies. Provitamin A (PVA) content of maize can be enhanced through Marker Assisted Recurrent Selection (MARS), which enhances the frequency of favorable alleles from cycle to cycle. The current study was carried out to determine changes in levels of PVA carotenoids and genetic diversity in two maize synthetics that were subjected to two cycles of MARS. The two populations, known as HGA and HGB, and their advanced selection cycles (C1 and C2) were evaluated at Ibadan in Nigeria. Selection increased the concentrations of β-carotene, PVA and total carotenoids across cycles in HGA, while in HGB only α-carotene increased with advances in selection cycle. β-cryptoxanthine increased at C1 but decreased at C2 in HGB. The levels of β-carotene, PVA, and total carotenoids increased by 40%, 30% and 36% respectively, in HGA after two cycles of selection. α-carotene and β-cryptoxanthine content improved by 20% and 5%, respectively after two cycles of selection in HGB. MARS caused changes in genetic diversity over selection cycles. Number of effective alleles and observed heterozygosity decreased with selection cycles, while expected heterozygosity increased at C1 and decreased at C2 in HGA. In HGB, number of effective alleles, observed and expected heterozygosity increased at C1 and decreased at C2. In general, MARS effectively improved PVA carotenoid content. However, genetic diversity in the two synthetics declined after two cycles of selection.

Identification of Bruchid (*Callosobruchus maculatus*) Resistant Varieties among Cowpea Genotypes in Uganda

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Abstract
Cowpea provides strong support to the livelihood of farmers through its contributions to their nutritional security, income generation and soil fertility enhancement. Despite the importance of cowpea, the yield of cowpea and challenges posed by bruchid infestation is heavily threatened. Bruchid is a major storage pest that causes grain quantity and quality losses. The Damaged legume grains by the insect pest have reduced weight, poor germination ability, are unfit for commercial and agricultural usage and are also unfit for human or animal consumption. If bruchids are left untreated, it can even cause up to 100% loss. Genetic resistance and improvement of cowpea for bruchid resistance is by far the most cost effective and long-term measure to limit the damage of this pest. However, the genetic development of cowpea varieties for bruchid resistance is hampered by linkage drag, biotype variation, lack of interspecific compatibility and narrow genetic base in the gene pools. Understanding resistance encompasses morphological, physiological, and