

BEANS IN HARVESTPLUS: GOALS AND PROGRESS

Steve Beebe¹, Wolfgang Pfeiffer² and Joe Tohme¹

¹ CIAT, Cali, Colombia. Email: s.beebe@cgiar.org; ² HarvestPlus, CIAT, Cali, Colombia.

Beans are the most important grain legume for direct human consumption in the world, and Latin America continues to be the region with the greatest output. Within Latin America Brazil represents more than 50% of regional production. Within HarvestPlus we have the goal of raising the iron level in beans by 90-100%, or close to 100 mg kg⁻¹ final concentration in dry grain. We hope to raise zinc levels from about 28 mg kg⁻¹ to close to 50 mg kg⁻¹. We have used naturally occurring genetic variability obtained from the gene bank in CIAT, and after having derived improved parental lines, we have completed two full cycles of recurrent selection. With this method we have recovered F₇ lines with nearly 60% higher iron as well as resistance to anthracnose and angular leaf spot, and a moderate level of drought resistance. In a parallel strategy, we have employed interspecific crosses between FEB 226, an improved carioca type with intermediate levels of iron, and G35375, an accession of *Phaseolus polyanthus* with high iron. After one backcross to FEB 226, we were able to recover lines with excellent highland adaptation, some disease resistance (to *Ascochyta*), and up to 40 mg kg⁻¹ more iron. Some present as high as 50 mg kg⁻¹ zinc in preliminary evaluations. A few interspecific lines have been selected with adaptation to CIAT-Palmira (1000 masl). Double (four-parent) crosses have been initiated between the best F₇ lines and the interspecific selections as sources of high minerals, together with elite lines for drought, disease resistance, grain type, and resistance to aluminum. We continue to employ NIRS for negative selection, to discard families with low iron.

Keywords: *Phaseolus vulgaris*, iron, zinc, NIRS, recurrent selection.

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