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Poster Abstract – A.03

ISOLATION OF LOW PHYTIC ACID IN BEAN

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Phytic acid, *myo*-inositol-1,2,3,4,5,6-hexakisphosphate (InsP6) is the storage form of phosphorus in seeds and acts as an antinutrient for humans and nonruminant animals because it reduces the bioavailability of phosphate and of cations such as zinc and iron (Sandberg, 2002). Phytic acid was considered essential for seed germination or seedling growth until a few years ago. A number of *lpa* (low phytic acid) mutant lines with greatly reduced levels of phytic acid and concomitant high phosphate level in the seed (HIP phenotype) have been generated by random mutagenesis in various crops (Raboy,2000, Hitz et al. 2002, Pilu et al. 2003). Although some of these mutations appear to cause negative pleiotropic effects (Raboy 2001, Pilu et al 2003), the modulation of phytic acid content in the seed can be regarded as a major goal in seed crop genetic improvement by mutant selection. Due to the importance of bean (*Phaseolus vulgaris*) for human nutrition as a protein-rich source, the isolation of *lpa* mutants in this species is a very attractive goal because it may lead to decrease iron and zinc deficiencies, particularly widespread in some African and South / Central America populations feeding on seed-based food.

Therefore, we have treated with EMS (ethyl methane sulphonate) 6200 seeds and obtained 1774 M1 fertile plants, corresponding to 1774 pools of M2 seeds, which were screened for HIP phenotype. For each of the 8 HIP lines discovered, 16 single seeds were re-analyzed for phosphate content: among line 280 seeds, one revealed to contain about ten fold more free phosphate than wild type.

Among 280-M2 plants, three out of 80 produced seeds all showing HIP phenotype and yielding plants all producing HIP M4 seeds, thus confirming to be endowed with a *lpa* mutation.

Further analyses and verifications of phytic acid, raffinose and iron content of *lpa* M4 seeds, as well as of their germination rate and of growth- and yield-related features of M4 plants are under way.