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DIVERSITY OF TOCOPHEROL CONTENT IN COMMON BEAN: A STRATEGY TO IMPROVE FOOD NUTRITIONAL QUALITY

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Improved nutritional quality and health benefits of food are becoming increasingly important in current plant breeding programs. This is particularly true for pulses for which an increased consumer interest is focusing on healthy benefits of plant proteins. Vitamin E (α-tocopherol) is a lipid-soluble antioxidant synthesized only by photosynthetic organisms. It is an essential component of mammalian diets, and it has been shown by numerous studies that increased intakes of vitamin E are correlated with decreased incidence of several human diseases.

In this study we analysed 25 different lines of common bean selected among the set of materials (lines derived by Single Seed Descend from common bean landraces) developed in the BEAN_ADAPT project (2ndERA-CAPS call, ERA-NET for Coordinating Action in Plant Sciences). The 25 lines were selected to be representative of the diversity of both the two main gene pools. Genomic data (WGS and/ or GBS), developed by the BEAN_ADAPT project, are also available for these lines.

The 25 lines were grown in a replicated field trial carried out in Villa D'Agri (PZ) in 2017. The content of α-tocopherol and its biosynthetic precurson, γ-tocopherol was evaluated in all the lines (25 x 4 replicates, for a total of 100 samples). Differences in tocopherol profile were investigated and a significant diversity in tocopherol composition was found suggesting the potential use of such diversity to improve the nutritional quality of common bean.