Proceedings of the LXIV SIGA Annual Congress
Online, 14/16 September, 2021
ISBN: **978-88-944843-2-8**

Poster Communication Abstract – 3.06

NUTRITIONAL EVALUATION OF A SSD CORE COLLECTION OF COMMON BEAN

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seed, antinutritional compounds, biodiversity, nutritional compounds

Food legumes are crucial for all agriculture-related societal challenges including climate change, agrobiodiversity conservation, sustainable agriculture, food security and human health. Indeed, the transition to novel plant-based diets largely based on food legumes could present major opportunities for climate change mitigation strategies while generating significant co-benefits in terms of human health. Common bean (*Phaseolus vulgaris* L.) is the world's most important food legume and is considered a valuable source of proteins and of many macro and micronutrients. Several studies have suggested that consumption of beans is associated with a number of beneficial effects on human health including the reduction of cardiovascular diseases and diabetes, the prevention of different types of cancer and the control of some metabolic functions. Despite all their positive characteristics, beans also contain many antinutritional compounds, such as phytic acid, lectins, enzyme inhibitors, oligosaccharides, that could affect their nutritional value. Analysis of the content of these compounds may bring out traits of interest in order to promote nutrition and preserve health, and furthermore, allow to use them in breeding programs to eliminate adverse components in new common bean varieties. In this context, in order to identify promising parental lines, the content of certain antinutritional compounds (including phytic acid and oligosaccharides) was evaluated in flours obtained from a hyper-core collection of 50 domesticated genotypes (single seed descent, SSD) of common bean from America and Europe including both Andean and Mesoamerican gene pools (BEAN_ADAPT and INCREASE projects). Moreover, since cooking time of the common bean represents an important issue for consumer preference, with consequences for nutrition, health, and environment, this trait has also been assessed. The seeds of the genotype "INCBN_00201" (from Greece) was found to accumulate significantly low levels of phytic acid (0.81 g/100 g), while seeds of the genotype "INCBN_00091" (from Costa Rica) accumulate lower level of oligosaccharides (3.89 g/100 g) if compared to the average content (respectively 1.36 and 5.13 g/100 g). As expected from the different shape and size of seeds, variability was also found for cooking time. Further analyses are ongoing in order to investigate the level of other nutritional and antinutritional compounds of seeds, however these first results revealed levels of variability high enough to be exploited in future breeding programs.

Acknowledgements

sPATIALS3 project is financed by the European Regional Development Fund under the ROP of the

Lombardy Region ERDF 2014-2020-Axis I "Strengthen technological research, development and innovation"-Action 1.b.1.3 "Support for co-operative R&D activities to develop new sustainable technologies, products and services"-Call Hub