

## ANALYSIS OF THE RESERVE PROTEOME OF WHEAT FLOURS (*T. DURUM* AND *T. AESTIVUM*) GROWN IN THE PRESENCE OF BIOSTIMULANTS AND AMENDMENTS

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*wheat, reserve proteome, biofertilizers, biochar, sustainable agriculture*

The use of plant growth-promoting microorganisms (PGPM) is considered an important strategy to increase the sustainability of agriculture; under controlled conditions, PGPMs are able to improve the germination efficiency and vigour of plants, while in field conditions an effect on crop yield can also be observed through mechanisms that determine greater resistance to both biotic and abiotic stresses. An aspect to be taken into account concerns the nutritional quality of the products when crops are grown in the presence of PGPM, and it is important to verify which is their influence on the quality characteristics.

In this context, field trials were carried out in Emilia-Romagna at the Stuard farm (Azienda Stuard, <http://www.stuard.it/>), close to the city of Parma (North Italy), (44°48'N; 10°16'03"E; 58 m above sea level). In particular, for two years (2019 and 2020), plants of *T. durum* cv Svevo and of *T. aestivum* cv. Bramante were grown with different treatments that required the presence of a commercial biostimulant and biochar, also in combination, for a total of 4 growing conditions. The aim of this study was to elucidate how the presence of biostimulants could modify both plant production and the seed storage protein composition. In both years, the agronomic productivity parameters were collected and seed storage proteins were analysed. In particular, the three gluten fractions, gliadins and low molecular weight (LMW-GS) and high molecular weight (HMW-GS) glutenins were extracted and quantified. All the fractions were analyzed using one-

dimensional SDS-PAGE and densitometric analysis of the individual electrophoretic bands was performed to evaluate their relative abundance.

From the analysis carried out on all the samples of Svevo and Bramante grains, it was possible to evaluate how the treatments with the commercial biostimulant and biochar could determine a limited effect on the final yield and a greater effect on the quality of the reserve proteome, in particular as regards the fractions of gliadins and LMW glutenins.

Activity funded by the European research and innovation program Horizon 2020 (grant agreement No. 818431 (SIMBA)).