PP-PU-14 The effect of bioinoculants on grapevine development

Sofia Pereira, Helena Moreira, Alberto Vega, Paula Castro

CBQF, Universidade Católica Portuguesa, Portugal

The impact of abiotic stresses on crops is of great concern worldwide. In recent years several strategies have been designed to mitigate the negative effects caused by high temperatures, excessive salinity and extreme drought. Among these strategies is the application of organic and inorganic chemicals, such as osmoprotectants and plant hormones. However, the application of chemicals raises environmental concerns due to their persistence, fate and harmful effects on the environment and public health. The use of beneficial microorganisms, in particular plant growth promoting bacteria (PGPB) and mycorrhizal arbuscular fungi (AMF) appears as an environmentally friendly biotechnological tool, contributing to sustainable agricultural practices and to reverse the trend of applying large amounts of fertilizers and pesticides.

In the last years, we have used bioinoculation to increase the resilience of different plants to abiotic stresses, especially species of agronomic interest, such as maize. In particular, the strain *Pseudomonas reactans* EDP28 and the AMF *Rhizophagus irregularis* acted as plant growth-promoting inoculants, increasing root and shoot biomass of maize plants grown in degraded soil. Similar outputs were obtained with sunflower exposed to different levels of salinity where the application of bioinoculants enhanced biomass production and accumulation of K+, Mg2+, Ca2+, and reduced Na+ levels in maize tissues. However, the effectiveness of bioinoculants in enhancing grapevine performance is still poorly studied. Under this context, the present work aims to evaluate the effect of the bioinoculants already used in previous experiences on growth and development of grapevines in greenhouse and field experiments. Testing the same bioinoculants as growth promoting agents in different plants and across several climatic conditions may be of utmost importance to increase the success of their application, as the specificity of bioinoculants is seen as a factor to hamper their further use in different agricultural scenarios.