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The EXCALIBUR project: novel microbial-based bioproducts improving soil biodiversity and the effectiveness of biocontrol and biofertilization practices in horticulture

Stefano Mocali¹, Loredana Canfora², Flavia Pinzari², and Eligio Malusà³

¹CREA, Centro di ricerca Agricoltura e Ambiente, Cascine del Riccio (Firenze), Italy

²CREA, Centro di ricerca Agricoltura e Ambiente, Roma, Italy

³INHORT, Research Institute of Horticulture, Skierniewice, Poland

The H2020 project Excalibur will be presented. It has the ambition of making the road to a biodiversity-driven change in the soil management of crops through the acknowledgement of the important role of soil biodiversity conservation and exploitation. The project applies integrated approach of research, development and field implementation to achieve its goals. Excalibur will deploy the knowledge gained by new molecular techniques, such as genomic sequences characteristics to specific groups of microorganisms and functions, in the creation of tools, indicators and evaluation systems. Co- innovation is fostered by collaboration of researchers with farmers and manufacturers, with a mutual exchange of information and feedback. Project's results will bring new insights and practical solutions to stakeholders, validated by process analysis. For this purpose Excalibur plans to: 1) focus on multiscale plant-soil-microbes interactions be to exploit the potential of multifunctional bio-inocula and bio-effectors; 2) optimize the formulation and the application methods of these products based on native soil biodiversity dynamics; 3) develop a strategy to improve the exploitation of soil biodiversity interactions with bio-effectors and bio-inocula by assessing their impacts on crops and biodiversity under contrasting agricultural management practices (conventional, organic) and biotic/abiotic stress conditions; 4) to build a multi-criteria model to assess soil biodiversity status of cropping systems for a more efficient use of bio-effectors and bio-inocula; 5) develop technical tools to monitor the persistence and dispersion of bio-inocula under field conditions for eco-toxicological and agronomical purposes; 6) evaluate the effects of the new strategy on economy, environment quality and ecosystem functions; 7) disseminate results to all stakeholders with a dynamic and comprehensive methodology and encourage the adoption of best practices derived from the new strategy at local, regional and global level.