

BENEFICIAL MICROBES: A ROLE IN FOOD SECURITY?

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The most pressing issues facing the human race today is that of global food security, ever more vulnerable in the wake of major disturbances e.g climate change. Agricultural practices, globally, have to become more sustainable. Legislative changes in relation to the control and use of agrichemicals (especially in Europe) are dictating a more integrated approach for disease management. Although advances in plant science help us to develop and manage crops better, and the use of agrichemicals can provide a short-term solution to some disease problems, a much better approach is to develop and incorporate alternative crop management practices throughout the world. Over the last few years, much research has focussed on the use of beneficial rhizobacteria in developing integrated disease management systems for improving crop quality, whilst reducing the use of agrichemicals. The beneficial microbes naturally colonized the nutrient-rich rhizosphere and benefit plants in a number of ways. Our research project "VALORAM" (<http://valoram.ucc.ie>), funded under FP7, examined the role of Andean microbial communities in sustainable development of potato cropping systems. The focus of the research is on how certain rhizobacterial inoculants can enhance plant growth and offer disease protection. During the course of our research in VALORAM laboratory and field studies were conducted in order to characterize the beneficial properties of rhizobacteria that had been isolated from the rhizosphere of potato. Also, the volatilome of the selected isolates was characterised using gas chromatography /mass spectrometry (GC/MS). Some of these isolates, trialled in the field in their respective countries of origin i.e Bolivia, Peru and Ecuador, showed significant increase in the yield of potato. This strategy and a number of these bacterial isolates show promise for future incorporation into an integrated (potato) disease management programme(s).