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Abstract Book

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production, formulations such as granules, gels and clays are available for field applications today. The most recent research is the uses of microbial endophytes for pest and disease control, improving the options for biologicals in agriculture and forestry.

O19-3. Beneficial microbes for agriculture in Uruguay: strategies and successful case studies

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Biotechnologies based on microbial resources have enabled the development of biological products to improve plant protection and plant nutrition, while addressing environmental sustainability. These technologies also contribute to the achievement of high-end market requirements for low agrochemical use. The Platform of Microbial Products for Agriculture at INIA Las Brujas has emphasized the role of microorganisms in the biocontrol of plant pests and diseases, and in nitrogen and phosphorus plant nutrition. The long-term strategy is based on five pillars: strengthening of research facilities and collaborative team work; recruiting and training of human resources; supporting research and technology ventures with the public and private sectors; fostering legal framework for registration and intellectual property protection of products; and promoting education and extension for farmer adoption. Main research areas include: (1) biological control, (2) biological nitrogen fixation, (3) microbial mediated phosphorus availability for plants, and (4) microbial bioproduction and formulation. In addition, supporting research addresses metagenomic approach for assessment of microbiome composition and diversity. Two case studies of product development based on strains of entomopathogenic fungi and Plant Growth Promoting *Rhizobacteria* (PGPR) will be presented. First, the process of strain characterization, selection and massive production will be described for the development of a bioinsecticide based on *Beauveria bassiana* to manage the eucalypt bronze bug *Thaumastocoris peregrinus* (Heteroptera: Thaumastocoridae). Second, the development of a novel Phosphorous-biofertilizer based on selected strains of *Bacillus* spp. with PGPR characteristics will be outlined, as an example of a successful co-innovation business model.

O19-4. Impacts of soil borne disease on plant yield and farm profit in dairying soils of New Zealand

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Soil-borne organisms that cause diseases on pasture plants impose substantial constraints on production in New Zealand dairy systems. Regional measures of disease pressure were obtained by comparing white clover, perennial ryegrass and plantain growth in 30 farm soils with (non-pasteurised) or without (pasteurised) their normal complement of microbial and nematode pathogens. Pasteurising soils from the North Island of New Zealand led to significant average increases in clover and ryegrass (35% and 19%, respectively) shoot dry matter. For the South Island there was no increase in plant yield with pasteurisation on a regional basis, but increases in either clover or ryegrass were significant at three individual farm sites. Across all regions, high disease pressure and soil quality were identified as driving factors, accounting for 34% of the variation in both clover and ryegrass growth. A positive linear relationship was found between disease pressure and Heterodera cyst nematode abundance, accounting for 33% and 17% of the variation in clover and ryegrass growth change, respectively. By determining the extent and consistency of these