Production of *Metarhizium anisopliae* microsclerotia for insect control

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The entomopathogenic fungus *Metarhizium anisopliae* (Ascomycota: Hypocreales) has recently been found capable of producing compact hyphal aggregates (microsclerotia) under specific culture conditions that become pigmented during growth. The microsclerotia can be formulated and are stable when dried for storage. Upon rehydration, hyphae grow from the microsclerotes, develop into a fungal pellet and produce large quantities of conidia. In this study, microsclerotia were produced using New Zealand, USA and Mexican strains of *M. anisopliae* and characterised for production requirements, stability and conidial production. Microsclerotia were produced in shake flasks and fermenter vessels, and differences were observed in growth and production according to strain and C:N ratio. The potential of microsclerotia formulations for biocontrol of red-headed cockchafer (*Adoryphorus couloni*, Coleoptera: Scarabaeidae) is currently under evaluation.

Dissolution analysis to study release of *Lactobacillus plantarum* from silage inoculant prills

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The quality of silage can be improved by addition of lactic acid bacteria (LAB) at the time of ensiling. Rapid fermentation by fermentative LAB reduces water soluble carbohydrates to lactic acid. The consequent rapid decrease in pH improves silage preservation and inhibits the growth of aerobic spoilage microorganisms. For successful silage making, it is essential that inoculants are delivered in a viable state and are released during silage making. LAB can be formulated as prills for extended bacterial survival but the release characteristics from the prill will determine product utility. In these experiments, release characteristics of the LAB, *Lactobacillus plantarum*, contained in three types of prills (immediate release formulation (IRF) or sustained release formulations (SRF1 and SRF2)) were examined using a DIS 8000 Dissolution Apparatus to study *in vitro* release in two pH conditions. At neutral pH IRF released >80% of live bacterial within 30 min while SRF1 and SRF2 released approximately 55% and 25% respectively. Under acidic conditions (pH 4), release profiles were similar to those produced under neutral conditions from all formulations. This study demonstrates the utility of dissolution analysis in selection of bacterial formulations.