AGRICULTURE AND FOOD DEVELOPMENT AUTHORITY

The Irish Agriculture and Food Development Authority

New projects related to milk quality

Kieran Jordan

Targeting key microbiological and residue issues for an expanding dairy industry

Task 1

Title: The effect pre-cooling, rate of cooling and storage temperature on the bacterial count and energy use required for cooling bulk tank milk.

Objectives.

To test the benefits of pre-cooling and use of energy saving cooling protocols on bacterial numbers in milk after a period of storage.

To measure the energy requirements for cooling milk under a range of conditions

Task 2

Title: Effect of storage of good and poor quality late lactation milk under different conditions on the suitability of this milk for processing

Objectives.

To establish if a particular cooling and storage protocol is more relevant for late lactation milk.

To separate high SCC milk and high TBC milk in late lactation and store these at a range of temperatures for an extended period (4/5 days) and conduct a range of manufacturing tests to establish the suitability of these milks for processing.

To provide guidelines for industry on best practice to achieve optimum milk quality, as defined by bacterial numbers in milk and its suitability for processing

Task 3

Title: Monitoring of milk TCM residue at national level using an accredited method of analysis and researching contributing factors to TCM in milk and methods for its reduction

Task 4

Title: Potential sources and factors influencing Phthalate residue levels in bulk tank milk in Ireland

Objectives.

To establish if Phthalates are present in the rubber materials used as part of the milk production process

To establish if Phthalates are present in milk on farms and at the processing plant

To establish the sources of Phthalate residues in Irish bulk tank milk and to give guidelines to industry on minimizing potential routes of entry

Task 5

Title: Testing and regulation of teat disinfectant and detergent cleaning products and selected milking machine cleaning procedures used on dairy farms

PROPOSAL: Development of SPORE ANALYSIS CRITICAL CONTROL POINT (SACCP) charts for application in dairy manufacturing processes

Survey the species of spore-forming bacteria present in dried dairy ingredients manufactured by Irish Dairy Companies

Assess the relative merits of existing spore detection systems

Characterise the spore risk in dilute, semi-concentrate and concentrated dairy streams and nutritional formulations

Determination of the thermal stability of spores in complex dairy systems having regard to the protective effect of high dry matter content and composition

Evaluate cold process philosophy e.g. bactofugation, to mitigate sporulation risk and proliferation by vegetative mesophiles/thermophiles

Evaluate steam infusion for ultra-high temperature inactivation of high heat resistant thermal spores with holding times <0.5 sec.

Identification of background spore forming bacteria that survive pilot plant process simulations.

Develop a biosensor-based rapid analytical test for spore detection to support in-process monitoring during ingredient and dairy product manufacture.