TITLE: CURRENT STATE OF ART OF EMBRAPA MILHO E SORGO MICROBIAL CULTURE COLLECTION

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ABSTRACT:

Microbial culture collections are key components of life science research and biotechnology in emerging global biobased economies. The Embrapa Milho e Sorgo microbial culture collection (Coleção de Microrganismos Multifuncionais e Fitopatogênicos - CMMF) preserves more than 6.000 strains of microorganisms of agricultural importance. Associative diazotrophic bacteria (*Azospirillum* sp.) isolated from maize, sorghum and millet; maize and sorghum phytopathogenic fungi; endophytic yeasts isolated from saccharine sorghum; *Bacillus thuringiensis* bacterium and viruses (*Baculovirus spodoptera*) used for biological control of insect pests, and plant-growth-promoting microorganisms, such as arbuscular mycorrhiza fungi and potassium- and/or phosphate-solubilizing microorganisms are among the microorganism found in CMMF collection. In agreement with national and international quality standards, the CMMF implemented a quality management system based on ISO/IEC 17025 and OECD best practice guidelines for biological resource centers. The first steps were to establish a quality management organogram defining responsibilities and job description for collaborators considering their skills. New equipment were acquired and installed (e.g., ultra-low temperature freeze-dryer, air-conditioning system, and power supply units), and a collection room with controlled access to the stored material was implemented. The following step was the elaboration and implementation of the standard operating procedures (SOPs) for the long-term preservation of microorganisms. Currently, the standard procedure adopted by the CMMF is to store samples in 25% glycerol at -80 °C. Additionally, elite strains are also preserved by the freeze-drying method. The optimization of freeze drying techniques to lower the rate of cell death is currently in progress. The information available for each CMMF strain was transferred to the collection management software (AleloMicro). This frequently updated software is a reliable data-driven system that can be accessed by the public through an online catalog (http://alelomicro.cenargen.embrapa.br/). Quality management system is a continuous process, and CMMF is always facing challenges to achieve high accuracy and quality of its microbial resources.

Keywords: agricultural microbiology, AleloMicro, microbiological resources, microorganism germoplasm bank, quality management system.

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