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ABSTRACTS

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Special Session: Innovative Crop Protection Systems
11:30

SYNBIOTICS FOR SUSTAINABLE AFRICAN FARMS

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Synbiotics, combining high selected probiotics and prebiotics, are being developed for implementing sustainable farms in Africa within the European URBANE project (https://urbane-project.eu). This Research and Innovation Action gathers 16 partners from Europe and 10 partners from Africa in order to propose nature-based solutions for an integrated (One Health) and innovative agroecological approach. The University of Liege is leader of the project WP4, which aims at developing and demonstrating potential synbiotics for use as sustainable bio-additives in feed, fertilizer and pesticide formulations.

The concept is to isolate a series of native and beneficial strains from African samples while studying their probiotic properties for developing synbiotic-based products. These combine the selected bacterial or fungal strains with oligosaccharide-based prebiotics produced in Europe. The efficiency of the formulated products is assessed for various pilot trials in the African countries. In this presentation, we will focus on the work performed for developing novel synbiotics as plant growth promoters and/or plant protectors. Samples from soil or fermented foods were collected in five African countries, including Benin, Morocco, Burkina-Faso, Ivory Coast, and Nigeria. More than 180 strains were isolated from these samples. The isolates were then identified through both genomic and mass spectrometry analyses. Among the tested probiotics, a *Bacillus subtilis* strain producing the highest amount of two lipopeptide families (surfactin and fengycin), which are well-known for their effect as plant growth promoters and defence mechanism stimulators, was selected and combined to oligofructose (FOS) for designing synbiotics under optimal conditions. Synbiotic activities of the selected formulation and those of the constituents (probiotic and prebiotic) were assessed on tomato culture in Benin and Burkina Faso.

Keywords : Synbiotic, Prebiotic, Probiotic, Tomato, *Bacillus subtilis*, lipopeptide, biostimulants