



LETTER OF INTENT

1. BACKGROUND:

1.1. Short presentation of INMA

The National Institute of Research-Development for Machines and Installations designed to Agriculture and Food Industry-INMA, from Bucharest/Romania has an experience of about 80 years and it is the unique Romanian institute in the field. The main activities performed within the institute are *research-development* and *scientific services*.

The research-development activities comprise in elaboration of diagnoses, prognoses and strategies in the domain of technologies and technical equipment designed to agriculture and food industry, research and development of the processes, technologies and technical equipment for agriculture and food industry, performing of experimental models and prototypes, testing in laboratory and operating conditions of the machines and installations designed for agriculture and food industry in compliance with the UE procedures, norms and directives, standardization in the domain of technical equipment and activities of professional training, specialization and staff certification in the domain of mechanization technologies.

The scientific services comprise in testing of technical equipment, certificating the product conformity, performing technical inspections for tractors, lorries, trailers and cars, technological transfer and innovative business through the accredited incubator INMA-ITA.

The main Research Directions are:

- Fundamental research of interaction phenomena of biological, soil and technological factors on the technical equipment in the processes of mechanization and automation of works in agriculture;
- Scientific substantiation of the processes in agriculture, food industry and creating of new innovative technologies, instruments and technical equipment designed to soil works, establishing, maintaining and harvesting agricultural crops, horticultural cultures, as well as, agricultural and livestock and agro-forestry works; in compliance with environment preserving and fighting against draught phenomena and desertification;
- Renewable power sources: biomass, bio-fuels, biogas (from animal dejections and vegetal wastes), technologies and technical equipment for their use in conditions of efficiency, life, health and environment protection;
- Rural development and raising of life quality by technological transfer and demonstrations of the research results performed by the Institute;

- Strengthening the research basis (human resources, logistics, research equipment) and performing some partnerships for connecting to ERA, including the integration within the technological platforms at the European level;
- Substantiating and achieving new mechanizing and automating technologies designed to agricultural and food industry processes, such as: conditioning, processing, stocking and storing primary agricultural products, non-agricultural products and aquaculture in conditions of efficiency, security and safety.

1.2. INMA achievements

Production of biomass is a resource of renewable energy and a significant opportunity for the sustainable rural development, to achieve independence from fossil fuels on farms and to reduce the greenhouse effect.

INMA Bucharest has developed three research projects focused on promoting in Romania the energetic plants *Miscanthus* and *Salix Viminalis* as renewable sources. Within the research projects, we have designed and developed technologies for setting-up, maintaining and harvesting *Miscanthus* and *Salix* cultures in accordance with the pedoclimatic conditions in Romania. In order to mechanize all the works within these technologies we have developed and tested five new experimental models: a *Miscanthus* rhizomes planting machine, a harvesting equipment for dry stems, a technical equipment for harvesting *Miscanthus* rhizomes, a planting machine for *Salix* seedlings and a harvesting machine for *Salix* stems.

Within these technologies there were established the requirements of the plants towards the climate, soil, temperature and humidity, the farming calendar and agro-technical requirements imposed on agricultural machines used for mechanization. In order to specify the optimal period to perform specific agro technical works, INMA has established and completed the farming calendar which include the applying activities for organic fertilizers, applying herbicides for perennial weed control, applying chemical fertilizers, etc.

INMA has a good knowledge of production and processing technologies of agricultural and forestry solid biomass (drying, grinding, sorting) in order to obtain woodchips, pellets and agro-pellets. Also we have results in the field of other bio-products such as crude oil obtained from various oil crops. Its experience is proved by the research projects conducted in this area.

1.3. INMA infrastructure

In terms of recognition of technical and scientific capabilities by accreditation, the research infrastructure of INMA consists in research, testing and experimenting laboratories, accredited in accordance with the rules and directives of EU, which verifies the technical and scientific competence of certain ideas, solutions, equipment and new products having a state-of-the art technical endowment and high qualified personnel.

The institute has a Testing Department for Tractors and Technical machinery for agriculture and food industry which has in subordinate 2 equipped laboratories performing similar to EU laboratories level, accredited in accordance with standard SR EN ISO / IEC 17025: 2005:

- DITRMA - Testing Laboratory for Tractors and Technical Equipments for Agriculture and Food Industry;
- LIMS – Testing Laboratory for Spraying Machines;

2. COLLABORATION PROPOSAL:

12. Climate Action, Environment, Resource Efficiency and Raw Materials

Call – Waste: A Resource to Recycle, Reuse and Recover Raw Materials

WASTE-7-2015: Ensuring Sustainable Use of Agricultural Waste, Co-products and By-products

3. DIRECTION AND OBJECTIVES OF RESEARCH:

Project title: INTEGRATED MANAGEMENT OF GATHERING, STORAGE, TRANSFORMING VEGETAL AND ANIMAL WASTES IN BY-PRODUCTS ON AGRICULTURAL AND LIVESTOCK FARMS, FOR USING THEM AS FERTILIZERS

Main objective of project consists in achieving an integrated system of agricultural and livestock farms designed to transform vegetal wastes (straw, stalks etc.) and animal wastes (manure and effluents), into organic fertilizers (compost), for being used as such.

A. Current competences of INMA Bucharest partner

INMA has a rich expertise in scientific research (fundamental and applicative) and innovation in the field of technologies and technical equipment for:

- Distributing organic solid and liquid fertilizers on soil;
- Introducing liquid and semi-liquid fertilizers into the soil;
- Separating the organic fertilizer liquid ratio from the solid one;
- Handling, transport and storage of agricultural products;
- Chopping and assimilating in soil the vegetal wastes remained after cereals harvesting;
- Installations for obtaining biogas and analysis laboratories.

B. Partners required competences

- Expertise in running the process of aerobic/anaerobic digestion of agricultural and livestock wastes for transforming them in compost;
- Expertise in technologies and equipment designed to aerate the platform compost;
- Expertise in monitoring the process of wastes transformation into compost;
- Expertise in performing the bio-chemical analysis of compost;
- Expertise in performing the soil physical and chemical analysis;
- SMEs for achieving the system (equipment, automation and measuring installations)

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