



## 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 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 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 designed to use them 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***

INMA, by the collective of Cluj-Napoca Branch, specialized in the development of environmental- friendly products from renewable materials, has conducted researches leading to the development of working technologies and achieving packaging products and biodegradable protective

elements made from renewable raw materials based on starch.

At the same time, researches were conducted in order to develop, from renewable resources *based on local starch*, of biodegradable granules (pellets), which can be used as raw semi-finished material for the production of environmental- friendly finished products, used in agriculture and food industry, obtained by extrusion-lamination, injection molded or thermoformed.

In the future, we plan to do researches aiming to perform films for agriculture and food industry from renewable raw materials based on starch.

Being biodegradable, the bio-plastics re-enter soon, the circuit of nature, in certain conditions of moisture, heat and light, decomposing into simple elements.

The bio-plastics represent also, a solution for solving the problems created by the use of synthetic plastics, which leads to reduced hydrocarbons consumption and reduces environmental pollution.

At present, given the need to improve the structure and physical and mechanical properties of packaging in case of starches produced in Romania, too, which have an amylose content of max. 25%, researches are being undertaken in order to analyze the dependence of the starch structure, formula used, the technological process applied and the structure and physical and mechanical properties of packaging obtained.

### ***1.3. INMA infrastructure***

In terms of recognition of technical and scientific capabilities by accreditation, the research infrastructure of INMA consists in researching, 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 modern technical endowment and highly qualified personnel.

The Institute has a research laboratory in the field of biopolymers equipped with laboratory extruder with two co-rotating screws, provided with volumetric feeder and microprocessor, granulating machine and rolling mill and laboratory equipment for different determinations on physico-chemical parameters of biopolymers (determinations rheometry, calorimetry, spectrophotometry, refractometry, etc.).

## **2. DIRECTION AND OBJECTIVES OF RESEARCH:**

We are open to any collaboration in order to continue and develop our research regarding the further **valorification of biomass crop** (obtaining various bio based products such as bioplastics).

## **3. COLLABORATION PROPOSAL:**

Programme: Horizon 2020

Pillar no. 3: Societal Challenges

Objective no. 2: Food security, sustainable agriculture and forestry, marine and maritime and inland water research and the bio-economy

Call: INNOVATIVE, SUSTAINABLE AND INCLUSIVE BIOECONOMY

Topic: ISIB-5-2014: Renewable oil crops as a source of bio-based products

## **4. Contact person:**

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