

GREAT LIFE REPLICABILITY PLAN

1. The context: GREAT LIFE project

GREAT LIFE is a LIFE 2017-2020 European project led by the Department of Agricultural and Food Sciences (DISTAL) of the University of Bologna with Kilowatt Soc. Coop., Alce Nero S.p.a., Municipality of Cento and LCE srl as Associated Beneficiaries.

GREAT LIFE general objective is to implement an **innovative and integrated approach**, from crops to market test, in order to face the effect of climate change on the agricultural activities of the Po Valley (Emilia Romagna region) and of Italy as a whole. Both at a national and European level, GREAT LIFE intends to **raise awareness** on the contribution of food consumption to adaptation and resilience. In fact, the aim of the project is to show how - through crops substitution and through the promotion of resilient food among consumers, GPP and public canteen - it is possible to effectively address EU adaptation priorities in the field of agriculture and rural development. GREAT LIFE approach looks at the **whole value chain**, certain that, for a successful achievement of the above stated impacts, it is necessary to simultaneously stimulate demand and supply, boosting the still niche market of resilient food.

In particular GREAT LIFE focuses on a selection of strategic objectives, specified as follows:

- the introduction of conservative agricultural practices among farmers; the improvement of the overall sustainability of the agro-ecosystem, especially reducing water consumption, through the cultivation of resilient crops, the adoption of rational rotation schemes and sustainable agronomic practices;
- the exploitation of market dynamics to show how consumers behavior has a positive impact in promoting a resilient agriculture;
- the market test of resilient products, by starting from community based processes;
- the replication of the proposed methodology outside of Italy.

1.1 GREAT LIFE activities

GREAT LIFE, started in October 2018, is composed by three important section, connected each other, with the aim to reach the Project objectives.

- a. GREAT LIFE Agriculture
- b. GREAT LIFE Community
- c. GREAT LIFE Food

a. GREAT LIFE Agriculture

Objective: develop sustainable agricultural practices and design mitigation and adaptation actions towards climate change impacts, throughout the adoption of low-input agricultural models and rational schemes, according to the principles of conservative agriculture.

In particular, GREAT LIFE proposes **field activities** based on **millet and sorghum crops** as potential substitutions of maize in crop rotation. **Particular morpho-physiological features adapted to the environmental conditions**

imposed by the climate change characterize these two plant species. Instead, in a warmer and drier climate, maize has difficulty to adapt to the new climatic conditions, even increasing water inputs, which in any case decreases environmental sustainability as well as economic return, and may be not possible, due to lack of sufficient irrigation water. Another relevant aspect is the genetic homogeneity of modern maize cultivars that reduces their potential adaptability to the climate change.

Realization: field trials composed by "rotation demo plots" and "seed production fields in large scale", placed in three Emilia-Romagna farms. In the "rotation demo plots", evolutionary populations of millet and sorghum, hybrids of maize, millet and sorghum, green manure, peas and common wheat are cultivated in different plots according to the rotation scheme represented in **Figure 1**. The crop rotation scheme consists in the precession of summer crops (maize/millet/sorghum) with wheat, followed by green manure/peas. Summer crops (millet, sorghum and maize) crops are sowed during spring and harvested at the end of the growing season. Wheat population and green manure/peas are sown in autumn. This rotation assures a permanent soil coverage, which has enormous benefits on soil fertility and soil water retention capacity, key factors for adaptation to climate change impacts. Cover cropping allows to preserve and increase the organic matter (OM) of the soil, reducing the CO2 emissions induced by the OM mineralization.

A larger surface of land is reserved for the cultivation, on a larger scale, of millet and sorghum, in order to harvest a higher grains quantity, useful for the project implementation.

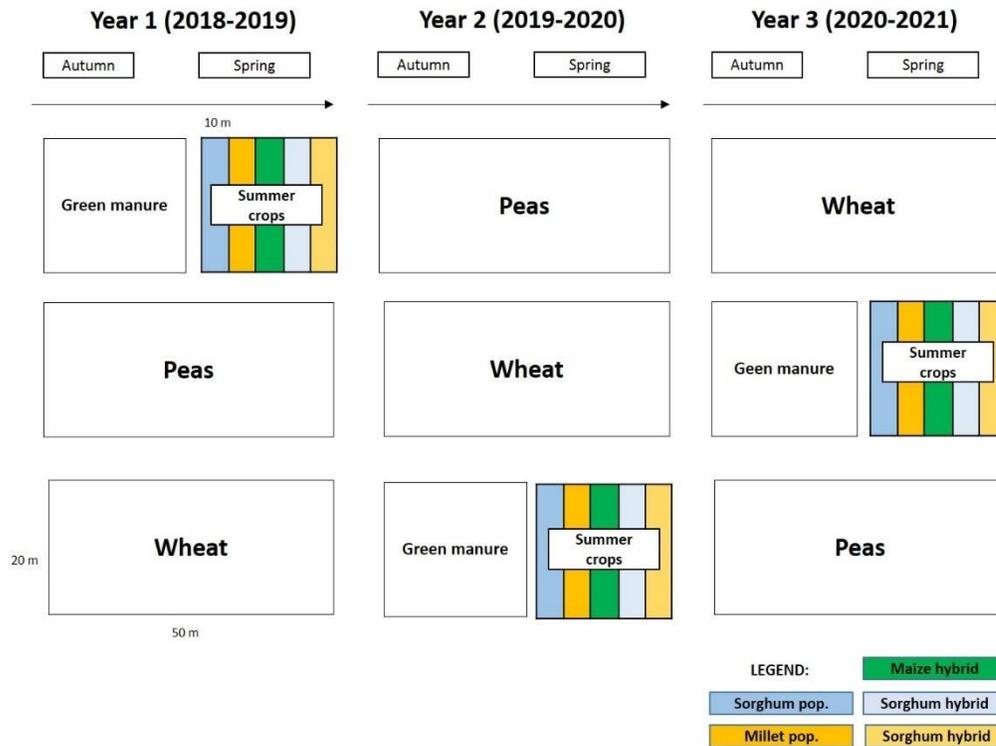
The total investment, in each farm, is approximately two hectares.

Monitoring: during the growing season, the principal morphological, physiological and agronomic traits of plants are monitored: soil coverage percentage, time of panicle emission, pathogens contamination, plants' height, lodging percentage at ripening phase, panicle height and type, 1000 seeds weigh, yield and a total agronomic evaluation. In addition, soil characteristics are surveyed and soil moisture are measured, in order to monitor, during the growing season the crop water balance.

A Life Cycle Assessment (LCA) is carried out in order to evaluate and quantify the whole agro-ecosystem improved resilience and adaptation towards climate change impacts.

Figure 1. GREAT LIFE rotational scheme





b. GREAT LIFE Community

Objective: build a community around the Project’s target audiences to better focus their needs and consumer habits, to design the most effective communication and selling strategy, to strengthening the market penetration strategy and finally to have real ambassadors of the products. Finally, the community will become the cornerstone on which to build a wider community of users that will be involved in the dissemination of project results.

Realization: mapping the relevant stakeholders and their engagement (throughout focus groups), using the techniques and tools of community engagement; while consumers are engaged through public calls and events. The engagement of the community is facilitated by a Facebook group of the community and by a Project website.

Monitoring: the success of the community activities, is linked with the number of participants to public events and in the interest aroused in stakeholders that accept to collaborate to the Project.

c. GREAT LIFE Food

Objective: test the customers’ appreciation and the market potential penetration of resilient food products, produced for 2 specific contexts: the food retail market and school canteens.

Realization: production of prototype products based on millet and sorghum grain (such as multigrain cakes, crackers or breadsticks; cereal bars or biscuits; grains or flours of millet and sorghum) to introduce the resilient foods as ingredients in 4 schools' canteens menu.

Once passed the quality control the products are ready for being presented to buyers, retailers, experts and final market.

Monitoring: the monitoring consists in the study of nutritional and organoleptic characteristics of the resilient food products and in the consumer's appreciation (such as pupils, pupils' families, public).

2. Create a GREAT LIFE Replicability Plan

The public and private entities invited to participate in the selection will have to develop a Replicability Plan of the Project in their own context (characterized by environmental and climate change related problems, preferably outside of Italy) and on the basis of the Project objectives (section 1.1) and on indications provided below (see section 3).

In particular, GREAT LIFE approach shall be replicated in its holistic vision, considering the *agriculture, community and food* aspects. To reach this objective, an International Replication Board (IRB) composed by experts on agriculture, community engagement and food was established in order to select the best Replicability Plan for the replication activity to be funded by GREAT LIFE, and to progressively monitor and finally evaluate the results of the Replicability Plan.

IRB will select the most suitable Replicability Plan and finance its implementation with a budget of € 20,000 (VAT included).

3. Replicability Plan details

The Replicability Plan must include:

- a) an introduction with the description of the replication context (i.e. environmental and climate change related problems)
- b) detailed description of the agricultural Replicability Plan (see below)
- c) detailed description of the community engagement Replicability Plan (see below)
- d) detailed description of the resilient food supply chain Replicability Plan (see below)
- e) business plan related to context and activity proposed

Concerning the **agricultural** aspect, the Replicability Plan must have the following characteristics:

- comparison between **3 spring crops**: resilient millet and sorghum crops and a third spring crop (e.g. maize), that for its agronomic and genetic features, represents a strong weakness for the sustainability of the agriculture activities and the adaptation to climate change impacts.
- total investment of land of at least **3 hectares**: 1 ha for each spring crop;
- monitoring scheme of the principal morphological, physiological, and agronomic traits of the growing plants, in addition to monitoring scheme of the crops water balance, considering GREAT LIFE monitoring protocol (see section 1.1);

Concerning the **community** aspect, the Replicability Plan must have the following characteristics:

- active involvement of the entire supply chain, from farmers to processors to final consumers, to generate positive and sustainable change;
- activities of listening, involvement and engagement of the population in order to: a) generate a community around the initiative that believes in the value of food as protection of natural resources, the environment and health; b) support GREAT LIFE Consortium in the testing and dissemination of GREAT LIFE products;
- description of the mapping and involvement actions of the community, the communication and dialogue tools, the specific objectives and results to be obtained.

Concerning the **food** aspect, the Replicability Plan must have the following characteristics:

- planning of a small or medium-sized millet and sorghum grain processing chain involving the prototyping and production of snacks or hulled grains for the preparation of recipes;
- nutritional and organoleptic test plan of the elaborated prototypes;
- consumer appreciation tests of products

DATES AND DEADLINES

- 1.** Replicability Plans must be sent to the email of the Project coordinator Prof. Giovanni Dinelli (giovanni.dinelli@unibo.it) by **1 December 2020**
- 2.** The best Replicability Plan will be selected by the IRB by **31 December 2020**
- 3.** The experimentation must cover the period **1 March 2021 - 30 November 2021** with the elaboration of a **progress report** by **30 June 2021** and a **final report** of the activities carried out by **30 November 2021**.

FUNDING

The funding foreseen by GREAT LIFE project for the Replicability Plan activity, correspond to **20,000 €** (VAT included). The budget will be made available to the selected entity for carrying out the activity, at the beginning of the year 2021.