The INSPIA Project:

European Index for Sustainable Productive Agriculture

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1. Introduction

The perception of sustainable development has undergone a great evolution over recent decades, from a simple concept of environmental protection to a more ambitious approach, which endeavours to preserve the environment and also to achieve economic sustainability and social welfare. In this respect, according to population projections from the Food and Agriculture Organization (FAO) of the United Nations (UN) and from the European Union (EU), society today would face the coming years as a great challenge, with respect to food production. According to the FAO and EU, in year 2050 we would need to produce 70% more food for the projected 9.1 billion people, who would constitute a 34% increase in the current population. Therefore, the current challenge of agriculture is to produce more, but in a sustainable way which optimizes available resources. In this respect, the European Index for Sustainable Productive Agriculture (INSPIA project) responds to the challenge posed by the EU in the Commission Communication, entitled, The CAP towards 2020 (COM, 2010: 672-5). Hence, in recent years, the European Conservation Agriculture Federation (ECAF), the European Crop Protection Association (ECPA) and the French Institute for Sustainable Agriculture (IAD), in their aim to provide answers and solutions for achieving agricultural sustainability, generated the first draft of what is, currently, known as the INSPIA project at the European level.

INSPIA provided verifiable data obtained from a European network of farms, created in a first phase of 56 farms located in Belgium, Denmark, France and Spain. However, it will be possible to extend the project in the medium term, with a second phase, to other European countries, such as Germany and the UK.

2. Project objectives

The aim of INSPIA is to achieve agricultural sustainability through the implementation of Best Management Practices (BMPs) that would intensify agricultural production, based on production systems that provide producers and society, in general, with a variety of environmental, social and economic benefits. Therefore, the aim of Agrarian Sustainability through INSPIA, serves to sensitise society as a whole and, particularly, policy makers in the EU, in order to promote farming practices that not only generate ecosystem services, but offer even greater economic viability to the same farmer.

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3. Project activity

The INSPIA project consists of several preparatory actions for implementation, control, communications, event management and project coordination (see Table 1).Including among the entities involved in the project, the French Association for Conservation Agriculture - APAD (Association pour la promotion d'une Agriculture Durable) and the Spanish Association for Conservation Agriculture –Living Soils AEAC.SV (Asociación Española de agricultura de conservación – Suelos Vivos) both belonging to the ECAF, which will deal with the implementation and development of activity identified on each farm, at the local level.

Action level	Code	Action name
Preparatory	A1	Description of selected BMPs in Agriculture
	A2	Project farms selection and agreements with farmers
	A3	Selection of the Sustainability Indicators
	A4	Methodology for collecting data in project farms
Implementation	B1	Establishment and management of the project farms network
Monitoring	C1	Monitoring of sustainability indicators
	C2	Characterization of BMPs and farmers' level of satisfaction through surveys
	C3	Online data register application
Comunication	D1	Communication plan
	D2	Capacity building actions at national level
Management	E1	Management and coordination

Table 1.- Actions of the INSPIA Project.

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4. Technical development of the project

3.2. INSPIA works in a cyclic way

Firstly, an initial diagnosis will be made with respect to each of the farms belonging to the European INSPIA Network. Each farmer will receive a Sustainability Index (SI), based on the measurement of a series of indicators (environmental, social and economic), which must be

completed via the Online project platform. Once the Agricultural Index is known and the implemented BMPs which have provide it, then an annual report for each farm will be delivered to the respective farmer.

Likewise, INSPIA has developed a list of Best Management Practices (BMPs), aimed at improving the SI and that will be referenced in the aforementioned report as a recommendation, so that the farmers can progress in the sustainability of their exploitation in upcoming campaigns. Thus, INSPIA will begin a new cycle of operations (see Figure 1).

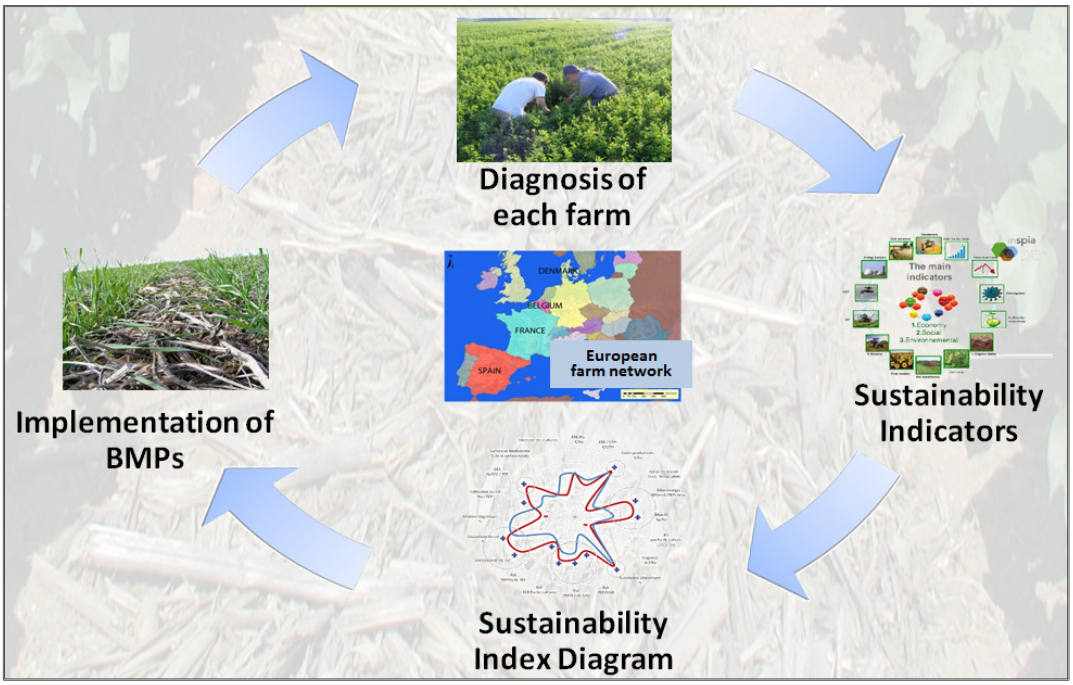

Figure 1. Work scheme within the INSPIA Project.

4.2. Best Management Practices and Sustainability Indicators

Following several meetings with international experts, the technical team at INSPIA have agreed upon the BMPs, listed in Figure 2, which can be grouped into the following themes:

- Soil management
- Protection of water quality
- Waste management

Within these three groups are techniques that improve the Agro-biodiversity, protect water quality, prevent degradation of agricultural soils, reduce erosion and, obviously, improve soil productivity.

1.- Use permanent soil cover (green cover or residue cover)
2.- Use of minimum soil disturbance practices
3.- Use of cover crops (in perennials)
4.- Perform suitable crop rotation/diversification
5.-Perform farming tasks in favour of contour lines
6.- Fertilize according to soil deficiencies and crop needs
7.- PPP use according to Integrate Pest Management Strategy (IPM)
8.- Use modern technologies for applications (Precision Agriculture)
9.- Optimise irrigation timing and rate (considering soil water content, water holding capacity in the soil, and crop requirements in relation to evapo-transpiration)
10.- Optimized use of PPPs (dose and appropriated products)
11.- Implementation of field margins and buffer strips with diversity of plant species
12.- Establish and maintain riparian buffer
13.- Build retention structures across the slope to reduce length of plots (fascines, vegetative buffers)
14.- Point source prevention of PPP pollution in the farm (cleaning areas where filling the sprayers and the management of contaminated diluted liquids resulting from cleaning sprayers on the farm)
15.- Perform an optimized waste management in the farm (specific areas) (packaging, crop residues, effluents, emptied PPPs containers, etc.)

Figure 2. List of Best Management Practices (BMPs)

Furthermore, it is noteworthy that all these practices are moving towards the idea of sustainable growth, developed in the European Commission (EC) Communication termed, 'Europe 2020: A strategy for smart, sustainable and inclusive growth' (COM, 2010). Now that the document is committed to a more effective use of resources, optimizing the use of energy, being techniques that mitigate the effects of climate change, in the case of adapting both to present conditions as those that may occur in possible future scenarios. As a consequence, INSPIA has agreed a list of 25 SIs (including economic, social and environmental aspects) in order to evaluate and provide a SI for each of the collaborating project farms within a given period (see Figure 3).

1.- EBITDA	14.- Energy independence rate
2.- EBITDA/labour unit	15.- Water consumption
3.- Production costs (per kg.)	16.- Soil utilization
4.- Yield/ha UAA	17.- Food autonomy rate
5.- Yield/ ha main fodder area	18.- Biodiversity surface area
6.- Full-time equivalent working hours	19.- Ratio between natural vegetation surface and total surface of the farm
7.- SI – Satisfaction Index	20.- Farm's connection with the environmental network
8.- Soil Tillage index	21.- Biodiversity structures (nests, hives, spider-nets, etc.)- habitats
9.- Annual soil cover rate	22.- NO_3 level – boreholes and wells
10.- Organic matter level	23.- NO_3 level – rivers
11.- Crop biodiversity/rotation	24.- Use of PPPs in some farms close to the water streams
12.- NPK balance	25.- GHG level
13.- Energy balance	

Figure 3. Sustainability Indicators

4.3. Other activities

For data collection and entry, The French Institute for Sustainable agriculture (IAD), responsible for this activity, has developed an Online platform (www.inspia-index.eu), within which, each farmer can record his data and also compare at any time since the beginning of the project to date, either with his own previous data or with data of other farmers from other farms. Hence, this platform is a clear opportunity to provide a basis of real and validated data, in order to encourage the transition from conventional to sustainable agriculture.

Finally, the launch of the aforementioned website is noted in the activities planned for the communication and dissemination of this project, where the published results that will have been collected over the life of the project will be available. During the project performance, INSPIA will provide data with a relevant value in various areas of the network, where agriculture sustainability has been studied, not only from an environmental point of view but also from a social and economic point of view.

Clearly, this study will serve as an essential optic on the reality of rural agricultural areas under study within the European Union. It will create the necessary awareness for sustainable agriculture and promote the adoption of sustainable practices throughout Europe.

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5. Summary

This project offers the real possibility of sharing understanding and learning for farmers, technicians and other stakeholders, with respect to BMPs, adapted to the agricultural landscape and enhancing the biodiversity of the farmland, without neglecting its main purpose, that of food production. The establishment and management of the farm network, its control via indicator measurement and validation of the obtained results, will engender the best recommendations for BMPs to be implemented in each of the farms, on their way to sustainability. The demonstration and implementation of the most suitable BMPs will promote the adoption of sustainable farming techniques throughout Europe. This will raise awareness, not only for technicians and farmers, but also for those responsible for the policies of the EU in aiming at sustainable agriculture.
