

# Newsletter December 2014

## Edits from the Coordinator

Dear readers,

*We are proud to present the first newsletter of the QuESSA project. You will find information about the start-up of the project and recent achievements about the quantification of ecological services provided by semi-natural habitats in a farming landscape.*

*Don't hesitate to browse our website [www.QUESSA.eu](http://www.QUESSA.eu), which offers in-depth information about project results, publications related to the project and detailed partner information.*

*Hopefully this newsletter will keep you informed on our forthcoming information related to Ecological Services (ES), Semi-Natural Habitat (SNH), farming activities and farmers perceptions about ES and SNH.*

*Enjoy your reading,*

**John Holland**

QuESSA Project Co-ordinator

## Welcome to the first QuESSA newsletter

This is the first newsletter of the QuESSA project.

The main target groups of the newsletter are administrations and NGOs in the policy and management field, as well as scientists working on the relationship between farming activities, semi-natural habitats (SNH) and ecological services (ES).

This newsletter aims to provide stakeholders and the general public with easy access to the results of the project 'Quantification of Ecological Services for Sustainable Agriculture' (QuESSA). It furthermore aims to facilitate the dialogue between administrators, managers and policy-makers from one side and the scientific community on the other side on issues related to the improvement of the management of SNH with a view to enhancing the provision of ES.

It will be used as a communications tool for dissemination of information to interested parties and will keep you informed of all planned activities and recent news.

## The Project

Our project started on the 1<sup>st</sup> of February 2013 and will continue until the 31<sup>st</sup> of January 2017.

14 partners from 8 countries will work to quantify the key ES (e.g. pollination and biocontrol) that SNH provide for the main European cropping and farming systems (Fig. 1). This will be achieved by identifying key SNH according to their potential to support selected ES based upon vegetation traits, quantifying their actual contribution



to ES and through modelling make predictions at farm to landscapes on ES delivery from SNH.



Figure 1. Map of case studies from QuESSA Project.

Through this newsletter we will keep you informed on the progress of our work and on the key findings.

## Background

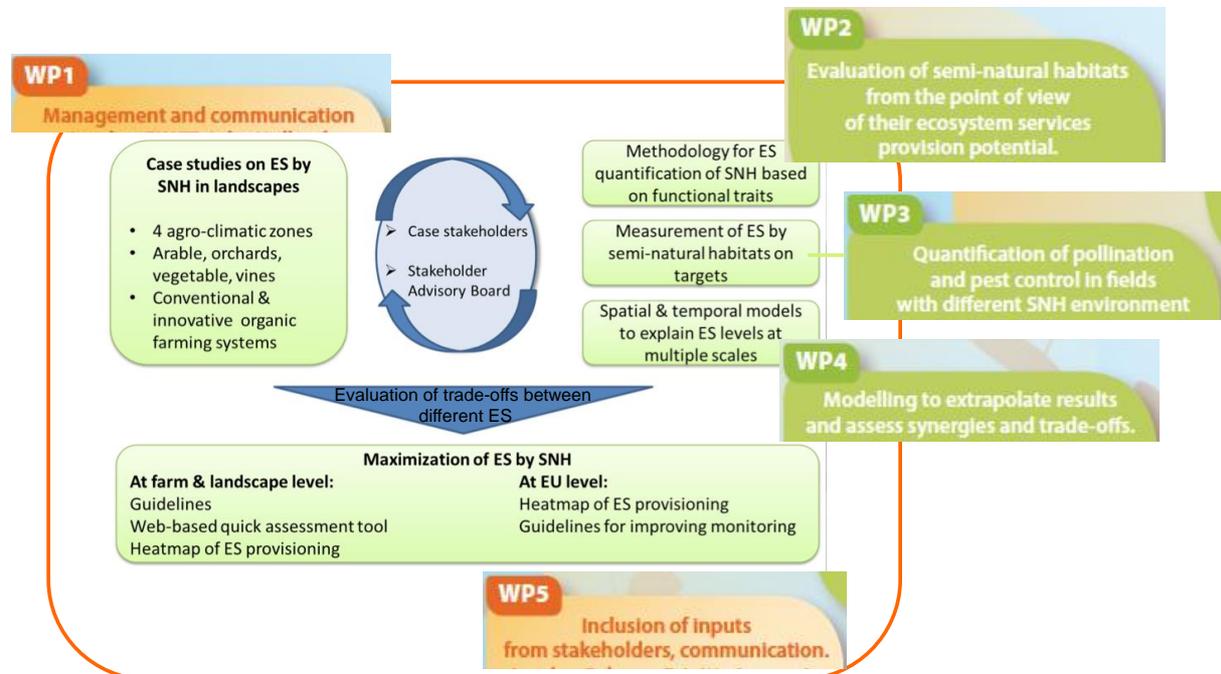
Current conventional farming systems are still heavily reliant on agrochemical inputs that cause pollution of SNH and are implicated in declining biodiversity causing disruption of ES. The vegetation of SNH supports ES essential for the development of sustainable farming systems such as overwintering sites, hiding places, pollen, nectar and alternative nutrition for pollinator species, pests and their natural enemies.

## Objectives

- Identifying the key SNH according to their potential to provide selected ES based upon vegetation traits.
- Verifying the potential of SNH to deliver the selected ES through field studies in 16 CS and demonstrating opportunities and trade-offs through mechanistic modelling.
- Evaluating the economic and non-monetary value of ES derived from SNH and stakeholders' need for these ES.
- Analysing and predicting with spatially explicit models the effects of spatial allocation and management of SNH on the level of selected ES provided by SNH in farming systems from farm to European scales.
- Producing guidelines and making recommendations to stakeholders and provide a web-based tool for farmers to enhance exploitation of SNH for their ES provision.

## Approach

The project is structured into five work packages.



## Key Ecological Services

General design of all protocols for measuring ES provision have been first established by the consortium during the first 2 months of the project just before testing in the field season. These were clarified at Landau, during the first general assembly (GA), with a big effort to build a general layout for the 2014 and 2015 surveys.

- **Landscape composition and configuration**

**Aim:** Describe the landscape configuration (*landscape mapping*), and the composition: vegetation, types of SNH (*herbaceous areal or linear and woody areal or linear*), structure and management (*intensity/frequency of disturbance*).



Figure 2. Aerial view of a Swiss landscape (Source: ART).

- **Biodiversity monitoring**

**Aim:** Monitoring the general biodiversity in crop and in SNH above-ground and at ground level.



Figure 3. Pan traps and attractiveness test based on colour for the study of flying insects. Pitfall traps are used for ground dwelling predators.

- **Sentinels** (see Focus)
- **Emergence Traps**

**Aim:** Estimating the overwintering potential of SNH.

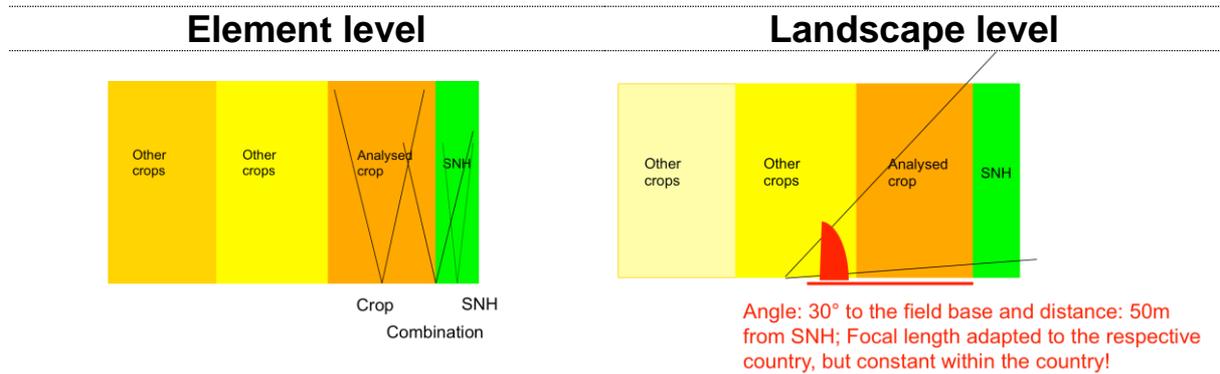


Figure 4. Example of emergence traps to estimate overwintering potential of SNH.

- Monitoring of farming practices (SNH management, frequency of grazing, fertilizer, pesticide use intensity & date, yields)
- **Other ES:**
  - **Aesthetics of landscapes (ART) :**

**Aim:** Measuring the effect of SNH on landscape aesthetics at two levels, element and landscape levels through an assessment/comparison of photographs, farmer interviews and stakeholder focus groups (Table 1).

Table 1. Method to measure the landscape aesthetics at two levels (Source: ART).



An online survey will be available on the Quessa website and on the facebook page.

- Soil organic matter in SNH and focal field (SZIE/WU)

**Aim:** Measuring **soil organic matter content** of the soils of focal fields (FF) and semi natural habitats (SNHs) to provide a comparative assessment of the water and nutrient holding as well as nutrient providing capacity.

- Erosion (WU)

**Aim:** Obtaining a comparative assessment of the capacity of different types of SNH to reduce soil erosion, according the design.

Measurements occur in autumn and spring only.

- 1) Inspects mats monthly or after major rainfall events
- 2) Sample mats that have clearly captured soil
- 3) Record mats that have not captured soil
- 4) Weigh soil.

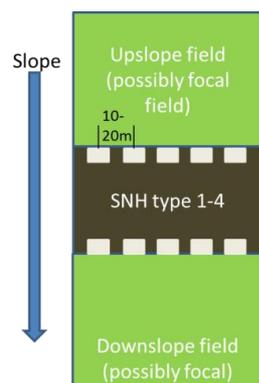


Figure 5. General design of the erosion protocol. (Source : WU)



Figure 6. An astroturf mat. (Source: WU)

- Disservices (crop seedling) predation, yield loss and weeds from SNH; SSSA)



## A focus on Sentinels

→ **Standard** sentinels for all CS (mandatory)

In all landscape sectors per CS two repetitions during key periods:

- *Calliphora* on ground
- *Ephestia* eggs on ground and plant
- Seed cards containing both *Chenopodium alba* and *Poa trivialis*

**Aim:** Quantifying the global predation and/or parasitism.



Figure 7. Seed cards (Game & Wildlife Conservation Trust).

→ **Specific** sentinels for each CS (optional)

Own pest specific sentinels.

**Aim:** Quantifying the specific predation (e.g. Cereal aphids on wheat) and/or parasitism (e.g. *E. uruzonus* and *E. martelli* on larvae of olive fly).



Figure 8. Aphids card. Figure 9. Olive fly (*Bactrocera oleae*) adult and larvae (Source: SSSA).



## Stakeholder Advisory Board

The stakeholder advisory board (SAB) accompanies the project from the start (conceptual phase) to the end (dissemination).

The SAB consists of **12 experts** from major interest groups:

- **NGO Nature protection and environment**

- Foundation Global Nature (ES)
- European Learning Network on Functional AgroBiodiversity - ECNC-European Centre for Nature Conservation
- IOBC (EU)

**- Farmer organisations**

- IFOAM (NL)
- GRAB (F)

**- Territorial and national administrations**

- Natural England (UK)
- Ministry of Agriculture (F)

**- Private companies**

- Unilever (EU)

**- European and international institutions**

- Food and Agriculture Organization (World)
- Directorate General Environment (EU)
- Directorate General Agriculture (EU)
- Consortium of International Agricultural Research Centres - Agrobiodiversity and Ecosystem Services Program Biodiversity International (World)



**Past and upcoming events/activities**

**QuESSA Kick-Off Meeting**

**Date:** 6 – 8 Feb. 2013

**Location:** DLO, Wageningen, The Netherlands

**Contact:** Bart Heijne



**QuESSA Meeting**

**Date:** 26 – 28 Nov. 2013

**Location:** SZIE, Gödöllo, Hungary

**Contact:** Jozsef Kiss



**QuESSA 1st General Assembly**

**Date:** 14 – 16 Jan. 2014

**Location:** UKL, Landau, Germany

**Contact:** Martin Entling



**QuESSA 2<sup>nd</sup> General Assembly**





**Date:** 27 – 29 Jan. 2015

**Location:** Baveno, Italy

**Contact:** Maria-Luisa Paracchini



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