FA1203: Sustainable management of *Ambrosia artemisiifolia* in Europe (SMARTER)

STSM Report – Delémont, Switzerland 2016

# Oviposition preference and larval performance of *Ophraella communa* on different *Ambrosia artemisiifolia* mother plants: does *Ophraella* discriminate?

4[20h] Oct – 15[th] Nov 2016, by Yan SUN

## STSM details

COST STSM Reference Number: COST-STSM-FA1203-35422

## Applicant details

Dr. Yan Sun
University of Tübingen, Tübingen, Germany
Email: yansun.ecology@gmail.com

## Host details

Dr. Urs Schaffner
CABI Delémont, Switzerland
Email: U.SCHAFFNER@CABI.ORG

## Purpose of the STSM

Plant defence is a primary reason why plants escape the vast majority of herbivores occurring in their environment. However plant defence is normally assumed to be costly, with trade-offs among growth, maintenance, storage, reproduction and defence. The purpose of this STSM is to set up an experiment in the quarantine facility at the CABI to explore the effects of multiple mother plants from different common ragweed, *Ambrosia artemisiifolia*, populations on oviposition preference and larval performance by using its potential insect biological control agents, *Ophraella communa*. For this, I used 10 seedlings from one mother plant from four populations from native North American range, four populations from introduced Chinese range and six populations from introduced Italian range (Table 1) to results a wide genetic diverse *A. artemisiifolia* plants. We ask if the potential biological control agent *O. communa* perform differently on different *A. artemisiifolia* mother plants.

Table 1. The description of the *Ambrosia artemisiifolia* populations we used in the experiment.

| Origin populations | Latitude | Longitude |
|---|---|---|
| **North American (native range)** | | |
| 1 | 28.6668 | -81.7692 |
| 2 | 32.0831 | -81.1681 |
| 3 | 36.2382 | -80.8137 |
| 4 | 41.4555 | -73.2411 |
| **China (invasive range)** | | |
| 1 | 31.1147 | 114.7255 |
| 2 | 30.2986 | 114.1295 |
| 3 | 31.1620 | 114.6840 |
| 4 | 31.2551 | 114.6376 |
| **Italy (invasive range)** | | |
| 1 | 45.3811 | 8.9225 |
| 2 | 45.5707 | 8.7855 |
| 3 | 45.4394 | 8.9288 |
| 4 | 45.5828 | 8.7712 |
| 5 | 45.3392 | 8.8818 |
| 6 | 45.4708 | 8.9449 |

**Description of the work carried out during the STSM and of the future collaboration**

The STSM was hosted at CABI Delémont, Switzerland:
Week 1:

- ✓ Setting up the experiment in quarantine
- ✓ Germinate *A. artemisiifolia* seeds in petri dishes
- ✓ Preparing 60 males and 60 females adults beetles of *O. communa* for experiment, thus six males and six females will be used for each replicate, in total 10 replicates

Week 3:

- ✓ Transfer the seedlings from 14 populations to a plastic pot (30 cm × 20 cm) × 10 replicates
- ✓ Record the initial data of plant fitness: number of leaves, height and diameter

Week 4-6:

- ✓ Record the egg batches, number of larvae on each plant every four days
- ✓ Measure the survival, number of leaves, leave damage level, height, diameter, total biomass at the end of the experiment
- ✓ Record beetle present on plant and number of beetles at the end of the experiment
- ✓ Data analysis

**Foreseen publications/articles resulting from the STSM**

The experiment is still on going and the rest of the experiment will be financed by other resources. The coming results will be combined with another on going experiment with regard to biological control herbivores as drivers of evolutionary change of *A. artemisiifolia* populations in the introduced range. During my stay, I also worked on a joint publication, "A beetle on its way in Europe to relief millions of people from allergies".

**Confirmation by the host institution of the successful execution of the STSM**

Cf. attached letter from Dr. Urs Schaffner, CABI Delémont, Switzerland.
I greatly acknowledge the warm-hearted, most helpful and efficient support by my host researcher Dr. Urs Schaffner.