**INTRODUCTION & AIM**

**Beauveria bassiana**

- Kingdom: Fungi
- Phylum: Ascomycota
- Class: Sordariomycetes
- Order: Hypocreales
- Family: Cordycipitaceae

**Drosophila suzuki**

- Kingdom: Animalia
- Phylum: Arthropoda
- Class: Insecta
- Order: Diptera
- Family: Drosophilidae

**EMERGENT INVASIVE SPECIES**

**COLONIZATION**
- Originally described from Japan.
- Found in California in 2008 and later in France, Italy and Spain.
- First time in Catalonia (Tarragona) in 2010.
- Currently pest in several crops of berries in Catalonia.

**CAUSES**
- Alter the environments when settles (6).
- Affect on fresh berries (serrated ovipositor (?)) → Enormous costs on agriculture (3).

**AIM**

Determine the effectiveness of **B. bassiana** as a biological control method for **D. suzuki**.

**Hypothesis**

Inoculation of **B. bassiana** increases the mortality of **D. suzuki** adults.

**MATERIALS & METHODS**

- **Sample size**= 100 treated **D. suzuki** adults (females) + 100 control **D. suzuki** adults (females).
- **Environmental conditions**: 90% RH and 25°C±2°C of temperature.
- **Preparation of **B. bassiana** inoculum**: Solution of 1ml of Naturalis® per 500ml of water (2.7x10^8 viable conidia of **B. bassiana**/1ml Naturalis®).
- **D. suzuki** breeding**: Males and females of this specie were placed in a plastic pot, with a base of culture medium. Females oviposited the eggs on the culture medium. Then, the larvae emerged and pupated, and finally the adults emerged.
- **Infection process**: The flies were put to sleep with a CO2 tank.
  - The solution (treatment) or the raindrop (control) were applied → BJL (micropipette).
  - The flies were put into a plastic can with ventilation and with water and honey as a food source.
- **Monitor survival**: After the application of the treatment or the control, the survival of the flies of each repetition was looked every day.
- **Statistical analysis**: t-student using SPSS program.

**RESULTS & DISCUSSION**

**Mortality of **D. suzuki** adults**:

- Infected **D. suzuki** adults present a significant (p<0.05) higher mortality than the control adults on days 1 to 8 (included). From the 10th day, the average percentage of the control and treated individuals begins to approach the 100% (figure 1).
- The fact of approaching the 100% may be due to other death causes unrelated to the **B. bassiana** action, as could be the lack of food or natural causes (8).
- The difference between our study and Arno et al., 2013 could be due to the method of application of the fungal product. Arno et al., 2013 applied the product on leaves and fruits infested with **D. suzuki**, whereas we directly did on the adults of **D. suzuki**. The highest efficacy was achieved when applied directly to adults (1).

**B. bassiana proliferation on **D. suzuki** adults**:

- After placing the dead flies in the petri dishes, there are differences statistically significant (p<0.05) between the presence and absence of **B. bassiana** in the control and treated individuals (figure 2).

**LIMITATIONS**

- This study should be complemented with some complementary studies comparing:
  - Some relative humidity
  - Doses: know what dose is the best one to control the pest.
  - Stage: study **B. bassiana** effect in eggs, larvae, pupae and adults.
  - Kind of studies: study what product is the most effective in **D. suzuki**.

**CONCLUSIONS**

1. **B. bassiana** increases the mortality of **D. suzuki** adult.
2. **B. bassiana** could be one of the methods for biological control of **D. suzuki**, but would require additional studies and other methods to make a more effective control.
3. An integrated control could be the best option for the pests control.
4. Dissemination plan: additional studies would be necessary to obtain publishable results.

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**References**