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The Western Conifer Seed Bug, *Leptoglossus occidentalis*: important methodologies and techniques

Background



Leptoglossus occidentalis (LO), is a cone and seed insect pest native from North America. In Portugal it was recorded for the first time in 2010. Its impact on Stone Pine (*Pinus pinea*) is a major concern mainly because of the economic and social importance of this pine seeds. Yet, there is still a substantial lack of knowledge on LO impact on *Pinus pinea*.

Aims

- Learn all about rearing *L. occidentalis* in laboratory conditions;
- Characterize and estimate *L. occidentalis* damage in coated seeds of *P. pinea* and *P. pinaster* using the X-ray technique;
- Characterize *L. occidentalis* damage in 1st and 2nd year cones of *P. pinea* using the X-ray technique;
- Establish a strong collaboration with the Forest Zoology research group of INRA

Methods

➤ *Rearing L. occidentalis*

During my STSM, INRA researchers taught me how to maintain all year LO colonies (temperature, humidity, type of cage, type of food, types of hosts) (Figure 1). For the 15 days of my STSM I was the responsible for maintaining the colonies.



Figure 1. Rearing cage

➤ *Characterization and estimation of the damage caused by L. occidentalis in coated seeds of P. pinea and P. pinaster using the X-ray technique*

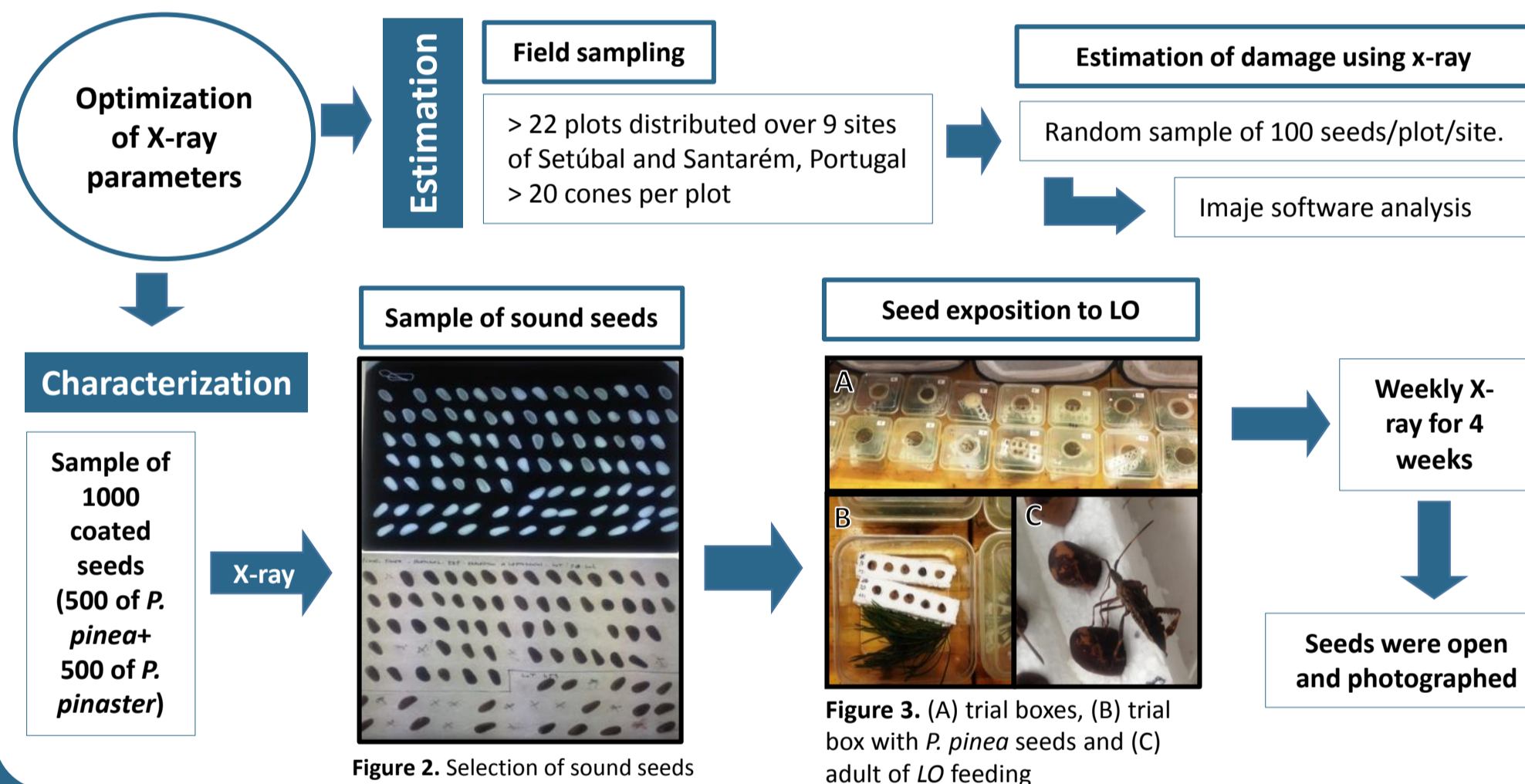


Figure 2. Selection of sound seeds

Figure 3. (A) trial boxes, (B) trial box with *P. pinea* seeds and (C) adult of LO feeding

Results

This STSM allow us to understand better the damage made by LO, primary on coated stone pine seeds. Weekly X-rays on the seeds exposed to LO enable us to follow the damage that can be assigned to this bug. Control seeds (not exposed to the insect) remained intact throughout the experiment not showing any damage related to the weekly exposition to x-rays. In contrast, seeds exposed to LO, both *P. pinea* and *P. pinaster*, presented damage throughout the experiment. Damaged seeds are being analyzed using different methods and results are expected soon.

Damage assess in 1st and 2nd year cones revealed to be a challenging goal. X-Ray technique proved not to be suitable to assess damage in these cones due to its large dimensions and opacity. New ways to assess damage must be thought out.

Final Remarks

This STSM was of great importance because it helped provide a assured characterization of the damage caused by *L. occidentalis* in coated seeds of *P. pinea* and *P. pinaster*. These result will contribute to better discriminate and quantify damage on coated seeds related to this insect and therefore estimate with more accuracy its economic impact in Portugal.