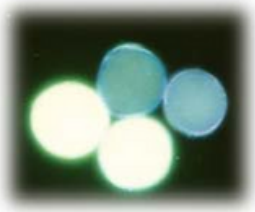


## Session 1. Methods and Techniques for Measuring Male Fertility

**Monday, February 3**

**Morning session**

9:00-10:00 h. **Theoretical activity 1.** Degree Hall of the Scientific Technical Building II B (CITE II B) of the UAL

- Course presentation.
- Pollen, types and characteristics. Male fertility: pollen production, viability, vigor and pollen longevity.

10:00-11:00 h. **Practical session 1.** Laboratory 103 of CITE II B

- Pollen production: Determination of the number of pollen grains per flower.

11:00-11:30 h. Coffee Break

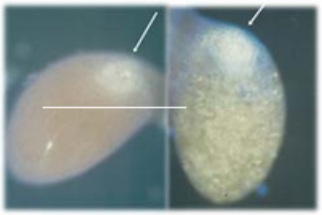
11:30-12:30 h. **Practical session 2.** Laboratory 103 of CITE II B

- Pollen viability estimation using histochemical tests (staining test, enzymatic test and FCR test).

12:30-14:30 h. **Practical session 3.** Laboratory 103 of CITE II B

- Determination of the in vitro and in vivo germination capacity of pollen.
- Pollen vigor estimation: determining growth rate of the pollen tube in vitro.
- Pollen longevity: determination of the viability of pollen of different age and preserved in different conditions.

14:30-16:00 h. Lunch at UAL and free time after



**Session 2. Methods and Techniques for Measuring Gynoecium Fertility**

**Tuesday, February 4**

**Morning session**

9:00-10:00 h. **Theoretical activity 2.** Degree Room of the Scientific and Technical Building II B (CITE IIB) of the UAL

- Presentation. Pistil fertility.

10:00-11:00 h. **Practical session 4.** Laboratory 103 of CITE II B. UAL

- Estimation of stigma functionality. Pollen adhesion and germination on a receptive stigma.

11:00-11:30 h. Coffee Break

11:30-12:30 h. **Practical session 5.** Laboratory 103 of CITE II B. UAL

- Estimation of stigma receptivity by enzymatic tests.

12:30-14:30 h. **Practical session 6.** Laboratory 103 of CITE II B. UAL

- Estimation of ovule longevity.

14:30-16:00 h. Lunch at UAL and free time after

**Session 3. Methods and Techniques for Measuring Pollen-Pistil Interaction and Reproductive Success**

**Wednesday, February 5**

**Morning session**

9:00-10:00 h. **Theoretical activity 3.** Degree Hall of the Scientific and Technical Building II B (CITE II B) of the UAL

- Pollen-pistil interaction.

10:00-11:00 h. **Practical session 7.** Fluorescence microscopy laboratory of CITE II B. UAL

- Quantification of pollen adhesion and germination levels. Pollen tube growth in vivo.

11:00-11:30 h. Coffee Break

11:30-12:30 h. **Practical session 8.** Fluorescence microscopy laboratory of CITE II B. UAL

- Determination of fertilization levels.

12:30-13:30 h. **Practical session 9.** Laboratory 103 of CITE II B. UAL

- Reproductive success. Fruit set: methodology for estimating initial and final fruit setting.

13:30-14:30 h. **Practical session 10.** Laboratory 103 of CITE II B. UAL

- Reproductive success. Seed set index:
    - Implications of seed abortion in single-seeded and multi-seeded fruits.
    - Estimation of seed abortion.
    - Seeding index. Effect on quality in multi-seeded fruits.

14:30-16:00 h. Lunch at UAL and free time after

**Session 4. Methods and techniques for measuring floral attractions and rewards: effects on pollinators and evaluation procedures**

**Thursday, February 6**

**Morning session**

9:00-10:00 h. **Theoretical activity 4.** Degree Room of the Scientific Technical Building II B (CITE IIB) of the UAL

- Pollination. Pollination vectors. Pollination syndromes. Zoophilous pollination: floral attractions and rewards. Vector management.

10:00-11:00 h. **Practical session 11.** Laboratory 103 of CITE II B. UAL

- Floral rewards: locating nectaries on the flower. collecting nectar.

11:00-11:30 h. Coffee Break

11:30-12:30 h. **Practical session 12.** Laboratory 103 of CITE II B. UAL

- Determination of sugars in nectar, using different methods (laboratory kit and refractometer).
- Composition of pollen.
- Marking of insect vectors for activity assays.

12:30-13:30 h. **Practical session 13.** Laboratory 103 of CITE II B. UAL

- Floral attractiveness: study of the shape and size of different parts of the flower and their arrangement on the plant. Determination of the color of petals in flowers of different species (visual and spectrophotometer).
- Floral attractants: extraction of floral aromas and methods of aroma determination.

13:30-14:30 h. **Theoretical activity 5.** Degree Room of the Scientific Technical Building II B (CITE IIB) of the UAL

- Pollination. Pollination vectors. Social insects.

14:30-16:00 h. Lunch at UAL and free time after

**Session 5. Methods and Techniques for Evaluating the Activity of Pollination Vectors**

**Friday, February 7**

**Morning session**

9:00 h. DEPARTURE FROM THE UAL CAMPUS

10:00-11:30 h. Visit to companies producing hoverflies

- Visit to Polyfly

12:30-14:30 h. Visit to companies producing bumblebees

- Visit to Agrobio

14:30-16:00 h. Farewell lunch at CORTIJO BLANCO (La Mojonera, Almeria)

17:00 h. ARRIVAL TO THE UAL CAMPUS

17:00-17:15 h. Closing session of the course. Degree Room of the Scientific Technical Building II B (CITE IIB) of the UAL