

## EFFECT OF SOIL MOBILIZATION AND DRAINAGE ON PROCESSIONARY DEVELOPMENT IN THE LIS VALLEY, PORTUGAL

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### ABSTRACT

The pine processionary, *Thaumetopoea pityocampa* Schiff is an important pine defoliator in the Mediterranean region. It has recently becoming a public health problem due to severe urticaria that causes in humans and pets. The biological cycle of this insect comprises an aerial phase, in which the caterpillar feeds on the needles and develops the urticant hairs and an underground phase, in the soil, where the pupa remains from 3 to 6 months. Recently, in the forest of Leiria, a population with an abnormal life cycle, known as the Summer Population (SP), has been reported. The main differences between the two populations are: (i) anticipation of the biological cycle of SP and (ii) greater tolerance of SP caterpillars. SP caterpillars can withstand more than 40°C. The processionary moth presents a public health hazard from October to February (WP) or from June to October (SP). The pupae, where the insect is in the soil, emerge from February to June (WP) or from October to May (SP).

In response to climate change, this insect has spread, colonizing new habitats and taking advantage of fragments of new territory to settle. The summer forest fires of 2017 have altered the vegetation mosaic that exists in the area of influence of the Lis Valley, reason why it is expected that new habitats have been colonized by the two populations of this species.

This project aims to study the effect of soil mobilization and alteration of water use on the development of pupae of both populations (WP and SP) and the pattern of adult insect colonization. In plots with different infestation pressures, existing pupae are recorded to evaluate the effect of mobilization and soil moisture on the survival of each of the populations.

The knowledge produced will allow finding solutions to an emerging problem in the catchment area of the Lis River, a region with great summer tourist pressure. This study is part of the Operational Group for Water Management in the Lis Valley.

**Keywords:** Operational Groups, Lis Valley, Climate change; Mediterranean ecosystems, Insect dynamics, *Thaumetopoea pityocampa*, pupae control

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