Internship in ecology and IPM
Six months for Master 2, engineer
From March to August 2026

At Entomological lab of ANPN, France, Cancon (47)
Accommodation and scholarship provided
Driving licence required

Do service plants drive orchard colonization in the hazelnut weevil *Curculio nucum*?

Scientific background

The hazelnut weevil appears to be a synovigenic species, tightly synchronized with the reproductive phenology of its host [1,2]. Adults emerge from the soil under hazelnut trees in spring, sexually immature, and disperse to surrounding plants. Later, when hazelnuts become fertilized and suitable for larval development, mature females move into orchards to lay their eggs. This pattern points to a finely tuned coevolutionary match between insect reproductive physiology, host phenology and landscape structure. Yet, synovigeny in *C. nucum* has never been experimentally demonstrated, and the ecological role of service plants in sustaining adult maturation remains unknown. These plants may act as critical reproductive bottlenecks: without access to appropriate nutritional, adults may fail to mature, delay oviposition, or produce fewer viable eggs. Understanding this dependency would reveal a previously unexplored Achilles' heel in the life history of this pest.

Goals

From an IPM perspective, this opens diverse and complementary strategies: service plants could be used as trap plants to pull weevils away from hazelnuts, or, if they facilitate reproduction, could be selectively suppressed to reduce population growth. Either way, manipulating the landscape could shift selection pressure against the weevil. The project will address three fundamental questions: Which plant species act as service plants? Is feeding on these plants required for *C. nucum* to reach sexual maturity? Which plant phenological stages trigger attraction and feeding? By combining field monitoring with laboratory behavioural and nutritional assays, this study aims to develop novel environmentally sustainable strategies to control this pest.

Profil required

We are looking for a candidate with a strong interest in plant-insect interactions and IPM. Experience in insect dissections, plant phenology, and basic statistical analyses using R is an advantage. A valid driving licence is required for fieldwork. **Contact:** To apply, send CV and cover letter to rhamidi@anpn.eu

1. Arias-Leclaire, H., Bonal, R., García-López, D., and Espelta, J.M. (2018). Role of seed size, phenology, oogenesis and host distribution in the specificity and genetic structure of seed weevils (Curculio spp.) in mixed forests. Integrative zoology *13*, 267-279. doi.org/10.1111/1749-4877.12293.
2. Bel-Venner, M.C., Mondy, N., Arthaud, F., Marandet, J., Giron, D., Venner, S., and Menu, F. (2009). Ecophysiological attributes of adult overwintering in insects: insights from a field study of the nut weevil, *Curculio nucum*. Physiological Entomology *34*, 61-70. 10.1111/j.1365-3032.2008.00652.x.