

**Encadrement :**

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**Titre du stage :**

**The role of cyanogenic glucosides on the population differentiation of the bean beetle, *Zabrotes subfasciatus*, and its parasitoid, *Stenocorse bruchivora*.**

**Mots clés :**

Tritrophic interactions, population structure, beans, parasitoids, cyanogenic compounds

**Résumé (150 mots maximum) :**

The lima bean plant, *Phaseolus lunatus*, contains cyanogenic compounds in both the leaves and the seeds, and these compounds are known to be toxic to herbivores (Balhorn et al. 2005). Little is known about the role of these plant defensive compounds on the genetic structure of populations of the beetles and their parasitoids. Previous studies demonstrated that populations of the bean bruchid beetle, *Zabrotes subfasciatus*, that feed on lima beans were genetically different from each other (Aebi et al. 2004) but the source of the genetic variation and population differentiation is unknown.

Lima beans from different populations that have been collected in Mexico will be used for the analyses and experiments. **All experiments will be conducted in the laboratory in Neuchatel.**

**Objectifs :**

1. Analyze the variation of cyanogenic glucosides in lima beans from different populations in Mexico.
2. Examine genetic differentiation of bean beetles from different populations in Mexico.

**Deux références bibliographiques:**

Aebi, A., T. Shani, R.D.J. Butcher, N. Alvarez, A.M. Risterucci and **B. Benrey**. Isolation and characterization of polymorphic microsatellite markers in *Zabrotes subfasciatus* Boheman (Coleoptera: Bruchidae). *Molecular Ecology Notes* 4: 752-754.

Balhorn, D.J., R. Lieberei and J.U. Ganzhorn (2005). Plant cyanogenesis of *Phaseolus lunatus* and its relevance for herbivore plant interaction: the importance of quantitative data. *Journal of Ecology* 31:1445-

**Techniques mises en Œuvre:**

- General ecology : performance experiments
- Chemical compound analysis : liquid chromatography, mass spectroscopy
- Molecular analysis : PCR, microsatellites

**Compétences particulières exigées:**

An interest in research involving plant-insect and tri-trophic interactions.  
Strong organization skills and ability to follow detailed directions.

Neuchâtel is located in French-speaking Switzerland, however the lab includes a diverse array of researchers from different countries. The common language for communication is English, therefore we expect the applicant to have strong English skills.