

# Finding my way : Characterisation of maize roots volatiles that guide wireworms

Fanny Ruhland, Clément Martin & François J. Verheggen

Chemical and Behavioural Ecology, Gembloux Agro-Bio Tech, TERRA, University of Liège, Gembloux, Belgium

Maize roots (*Zea mays* L.) can be damaged by soil-dwelling pests like wireworms (*Agriotes* sp.). These pests rely on chemicals, including volatile organic compounds (VOCs), released by plant roots to find and feed on them. French field surveys have identified contrasted levels of attacks regarding maize varieties.

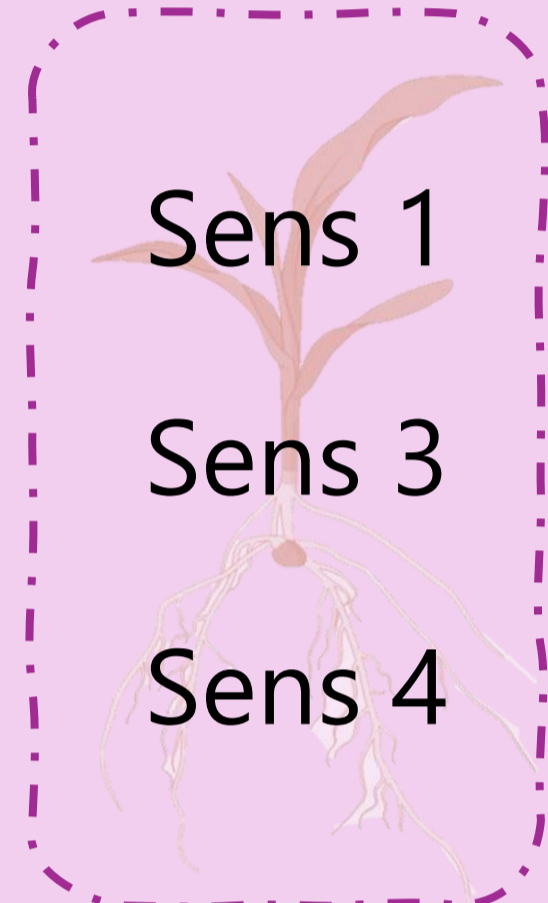
**In this study, we aimed at deciphering the volatile cues released by maize roots and potentially involved in the varietal sensitivity observed on the field.**

## Methods

6 maize varieties

Tolerant

Sensitive



## HiSorb sorbtive extraction

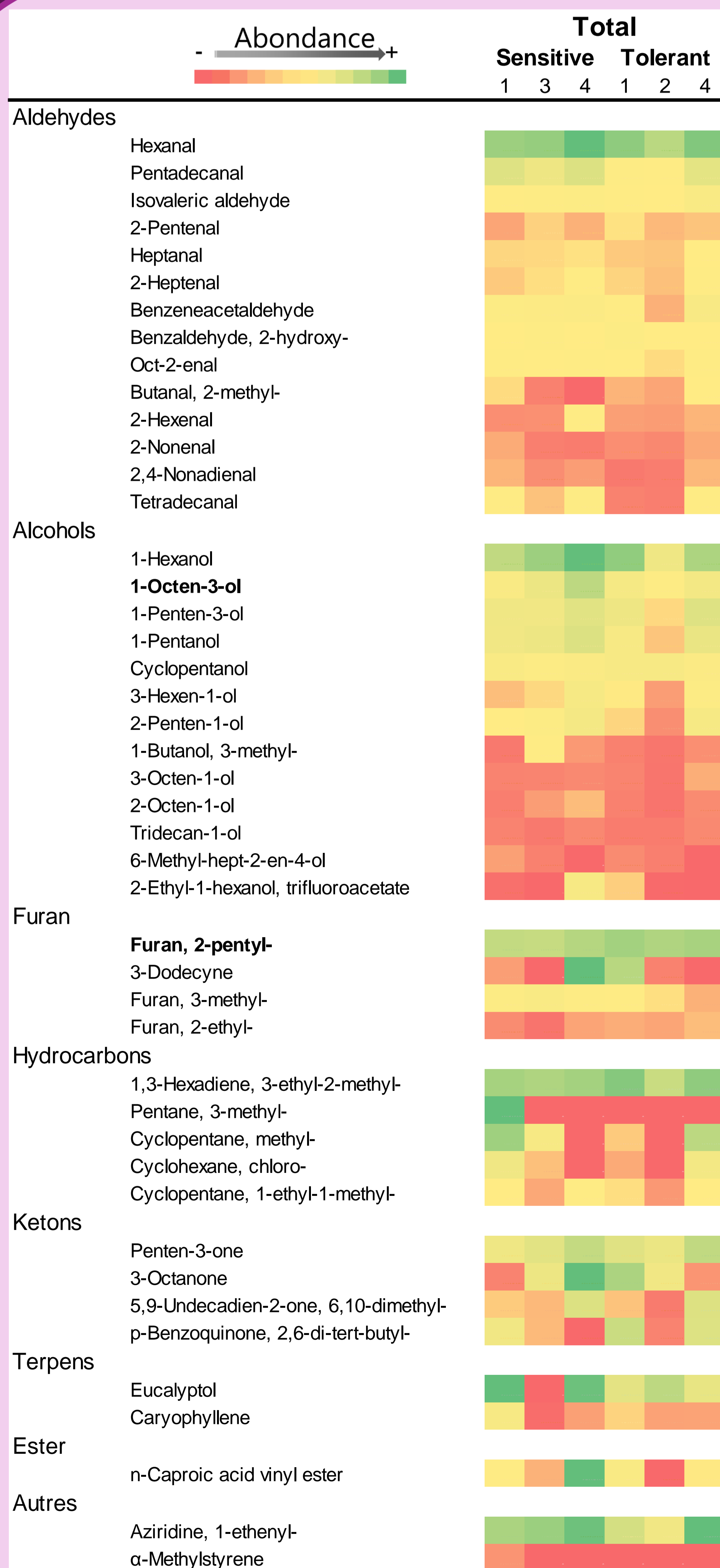
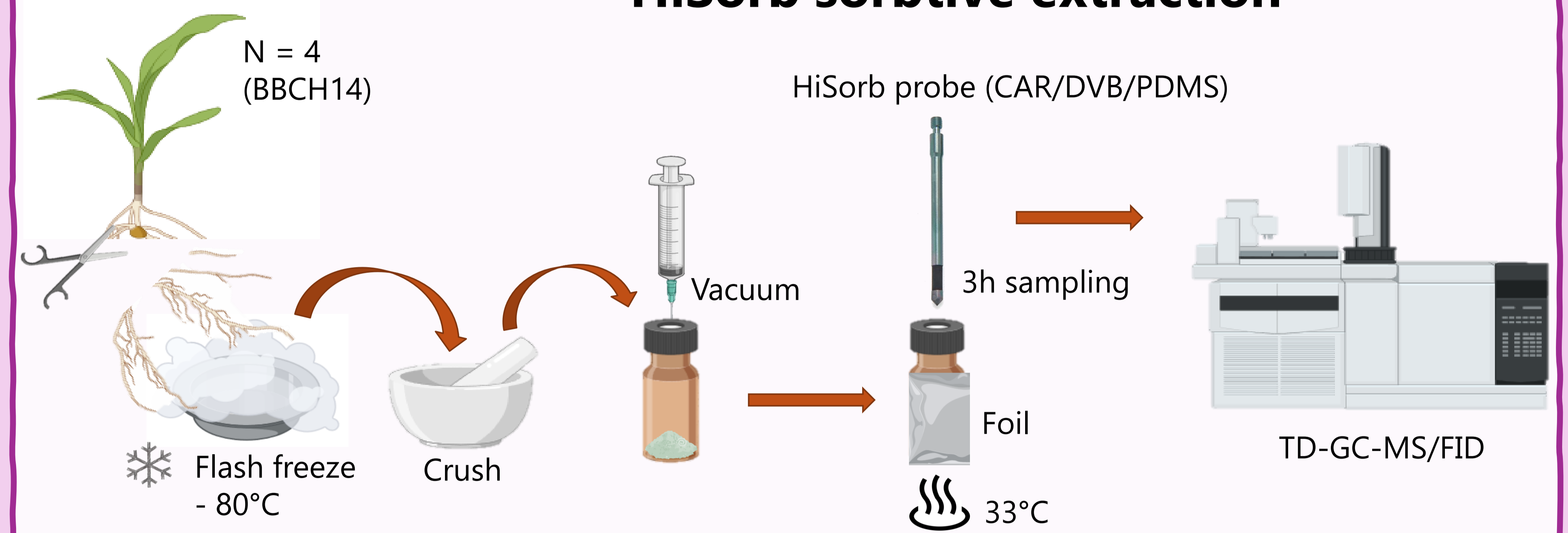


Table 1. VOCs abundance in the odor profiles of the different maize varieties.

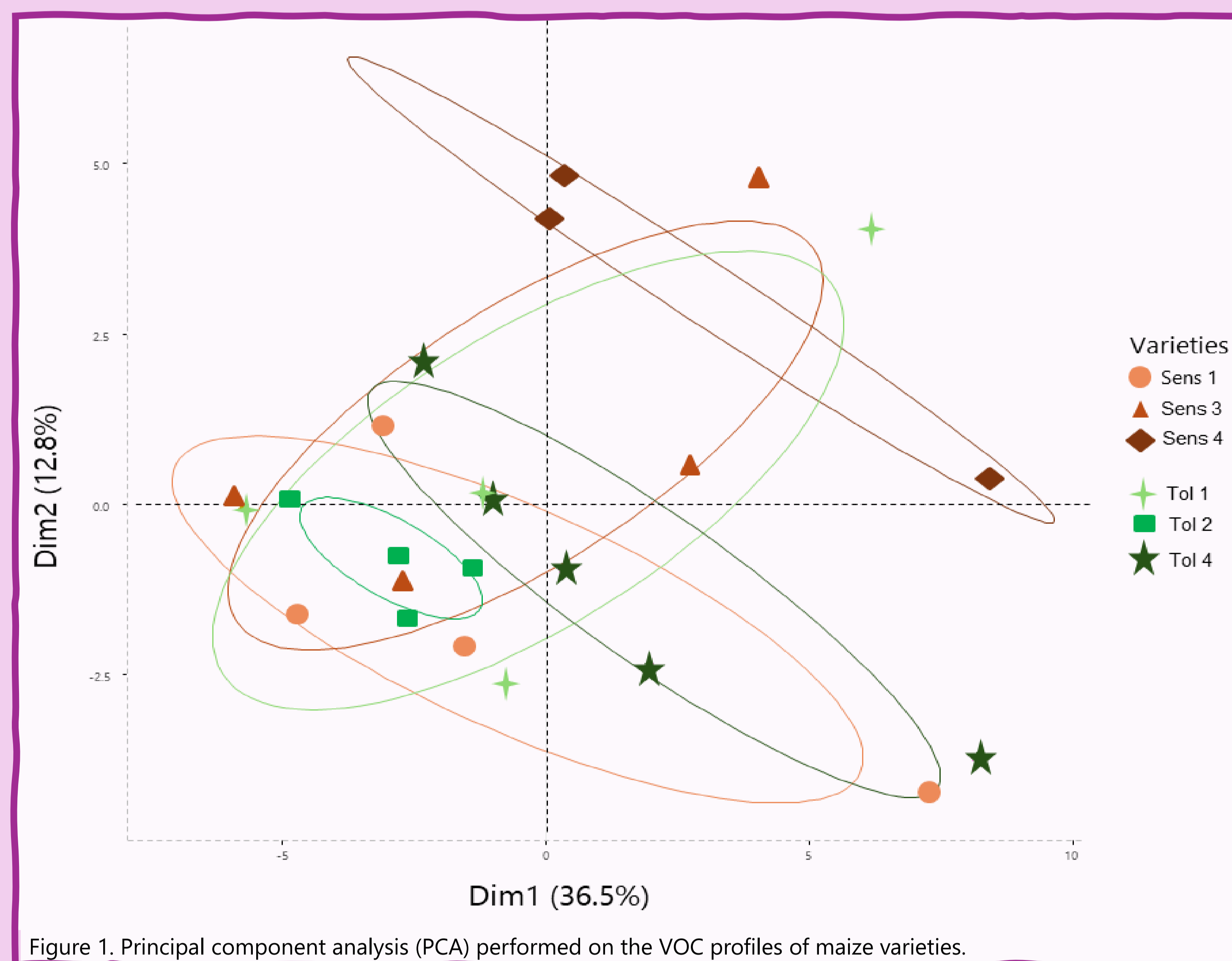


Figure 1. Principal component analysis (PCA) performed on the VOC profiles of maize varieties.

**Profile comparisons**  
(PerMANOVA)

Tolerant VS Sensitive  
( $F_{1,21} = 1.025$   $p = 0.36$ )

between varieties  
( $F_{5,17} = 1.443$   $p = 0.15$ )

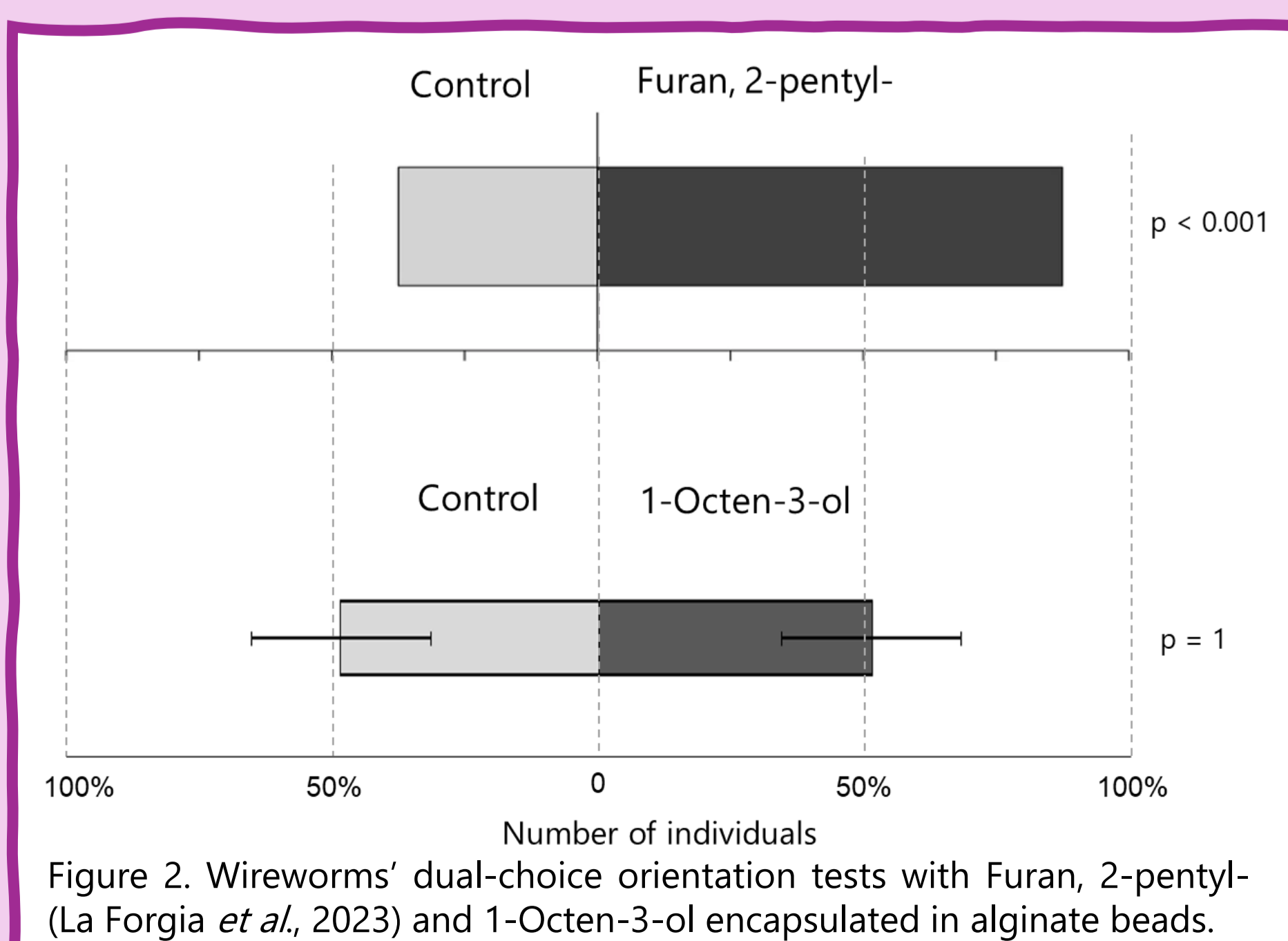


Figure 2. Wireworms' dual-choice orientation tests with Furan, 2-pentyl- (La Forgia *et al.*, 2023) and 1-Octen-3-ol encapsulated in alginate beads.

**No varietal differences** in roots VOCs profiles.

**Furan, 2-pentyl-** is a good candidate as attractant.

What about seedlings ?

fanny.ruhland@uliege.be