Abstract

Trap cropping has proven to be a promising, widely documented, and sustainable eco-friendly strategy within integrated pest management systems for managing insect pests. Numerous studies have successfully demonstrated its effectiveness across diverse agricultural systems, with new ones, continually being developed. The current study sought to evaluate the potential of Ethiopian mustard (*Brassica carinata*) as a trap crop for managing cabbage aphids (*Brevicoryne brassicae* L.) through laboratory choice tests and field experiments. Volatile organic compounds (VOCs) emission was also compared between kale (*Brassica oleracea* var. *acephala*) and Ethiopian mustard using gas chromatography mass spectrometry (GC-MS). Laboratory choice tests showed that *B. brassicae* significantly preferred Ethiopian mustard (56.5%) to kale leaf discs (24.5%). Headspace GC-MS analysis revealed that kale emitted VOCs in higher concentrations. Among the 19 compounds detected in the two plants, only *p*-xylene, limonene, and α-pinene showed significant differences. Further, non-metric multidimensional scaling (NMDS) analysis revealed a significant difference between the overall VOCs emitted by the two plants ($P < 0.05$). Subsequently, field trials were conducted for two cropping seasons by separately intercropping kale with rosemary (*Rosmarinus officinalis*) and coriander (*Coriandrum sativum*) while bordering the two plots with Ethiopian mustard. In both seasons, the highest population of *B. brassicae* was observed on Ethiopian mustard bordering the *C. sativum* intercrop ($P < 0.05$). Our results indicate that Ethiopian mustard has the potential to be used as a trap crop in integrated pest management (IPM) strategies to protect kale against *B. brassicae* attack.