

平成 28 年 6 月 23 日

## 学位 (博士) 論文内容の要旨

1. 論文申請者 環境園芸学専攻 \_\_\_\_\_ コース  
Thesis Applicant Division of Environmental Horticulture Course : Bioresource Science  
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### 2. 論文題名 (外国語の場合は, その和訳を併記)

Studies on the behavioral responses of a generalist predator, *Orius strigicollis*, to herbivore-induced plant volatiles in systems with multiple plant or multiple herbivore species

「捕食者タイリクヒメハナカメムシの、複数種植物由来植食者誘導揮発性物質、および複数植食者の食害順序の違いに対する行動反応」

### 3. 論文概要 (600 字程度)

The attractiveness of herbivore-induced plant volatiles (HIPVs) from a specific plant species to arthropod natural enemies has been well established. However, the effect of a mixture of HIPVs from multiple plant species and sequences of herbivory by multiple herbivore species on behavioral responses of predators has been not clear. Therefore, I studied i) responses of a generalist predator (*Orius strigicollis*) to HIPVs emitted from cotton bollworm (*Helicoverpa armigera*) larvae-damaged multiple plant species (tomato, French bean and sweet corn) in a laboratory, ii) attractiveness of HIPVs from multiple plant species to the predator in outdoor conditions, and iii) responses of the predator to HIPVs emitted from different sequences of herbivory by multiple herbivore species.

*O. strigicollis* preferred HIPVs emanating from *H. armigera*-damaged multiple plant species to HIPVs emanating from a single plant species in the laboratory and outdoor experiments. Reconstructed HIPVs from multiple plant species was more attractive to the predators than reconstructed HIPVs from a single plant species. In support of these, the predators exterminated greater numbers of *H. armigera* larvae from multiple plant species than the single plant species. The enhanced attractiveness of HIPVs from multiple plant species to predators was a result of an additive effect of HIPVs from the three plant species when offered as a whole.

HIPVs emitted from different sequences of herbivory by multiple herbivore species also affected the responses of the predators. In most choice tests, the predators preferred volatiles emitted from seedlings sequentially damaged by *Frankliniella occidentalis* followed by *H. armigera* than single species herbivory, simultaneous or the reverse sequence of multi-species herbivory. The HIPV constituents emitted from seedlings varied based on herbivore species and sequences of herbivory by multiple herbivore species. These variations might have mediated the predator to modify its responses. The current studies provide evidence that attractiveness of HIPVs to predators can be enhanced using a mixture of HIPVs from multiple plant species and their responses can be modified using HIPVs emitted from plants exposed to different sequences of herbivory by multiple herbivore species.

4. 学位に付記する専攻分野の名称 博士 ( )  
Degree Name Doctor of Philosophy

主任研究指導教員氏名 Kiyoshi Nakamuta