Pest control systems that do not rely on chemical pesticides

More than 40% of the produced crops are lost because of pests and weeds. Recovering these lost harvests to support the world's growing population is of paramount importance.
In this project, we aim develop pest control systems that do not rely on chemical pesticides alone and are friendly to consumers, producers, and the environment alike, by integrating state-of-the-art technologies.

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Realization of zero pest damage agriculture by fully utilizing advanced physical methods and unused biological functions

Keywords: Blue laser light, Predator utilization technology, Symbiotic microorganisms, New IPM

Background

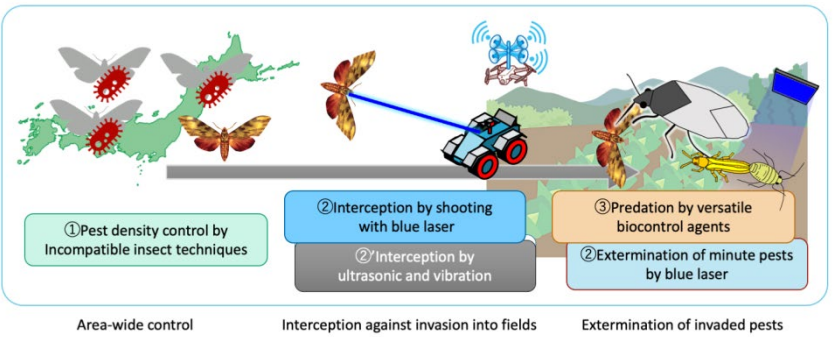
Need for a sustainable pest control technology

Crops have constantly been plagued by pests and weeds, and chemical pesticides have been applied for pest control. However, owing to the development of pesticide resistance and the heavy workload of spraying pesticides, we have reached a stage where there is a need to shift to innovative pest control strategies that do not rely on chemical pesticides alone.

Research Contents

Development of insect pest control technologies by using blue laser light, breeding new predator strains, performing behavior control, etc.

In this project, we aim to establish pest control systems that do not rely on chemical pesticides alone by developing and combining unprecedented pest control technologies, such as blue lasers, breeding and behavior control of new predator strains, and pest density control using symbiotic microorganisms. In this regard, we will develop sustainable agricultural systems that are friendly to consumers, producers, and the environment alike.



Targets by 2030

By 2030, we will apply advanced physical and biological methods to develop and demonstrate a prototype of a new zero pest damage agricultural technology to reduce the use of chemical pesticides.
By FY2021, we will develop techniques to enable real-time tracing of flying insect pests, which is necessary for sniping pests with blue lasers. In addition, we will develop techniques to modify the traits of natural predators via genome editing and using RNAi to create new predators that are highly adaptable to agricultural production environments and prey on large numbers of pests.

Cooperating Research Institutes

Kyoto University / National Agriculture and Food Research Organization / Tohoku University / Osaka University / Tokyo University of Agriculture and Technology / Setsunan University / The Jikei University School of Medicine / Tokyo University of Agriculture