

Explore natural enemies that contribute successful pest management

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Abstract

Parasitoid wasp is a general term for hymenopteran insect that has a parasitic life. Because of their parasitic nature, most parasitoid wasps are small (about 2 mm in length), and if one does not pay close attention, there are few opportunities to see them in the field. Despite their inconspicuous presence, parasitoid wasps have made significant contributions to food production as natural enemies for pest control. Many successful cases of pest control have been reported in various parts of the world, including *Anagyrus lopezi* (a natural enemy of the cassava mealybug), which is said to have protected the food supply of 20 million people in Africa and continues to be of benefit today, and *Torymus sinensis* (a natural enemy of the chestnut gall wasp), which has proven useful in Japan and is now also used in Europe. This presentation will focus on the speaker's recent research results on the use of natural enemies in pest control.

Toward control of the fruit-piercing sting bugs, *Plautia stali*, *Halyomorpha halys*, *Glaucias subpunctatus*, I confirmed taxonomic status of egg parasitoids, *Trissolcus japonicus* and *T. plautiae*. These egg parasitoids had been considered as the same species, while they have subtle morphological difference, mating isolation, and genetic difference. Moreover, I resurrected results of earlier studies that documented ecological traits of *T. japonicus* and *T. plautiae* through examination of the voucher specimens.

The stable fly, *Stomoxys calcitrans*, has been known as serious pest of cattle industry. Its active and painful blood-sucking behavior causes significant decrease of productivity. In addition, the stable fly mechanically transmits at least 18 sorts of bovine pathogens. The current control measures require substantial efforts and costs to farmers, then these methods are not working well in most cases, especially in large-scale farms. Under such a situation, I detected *Spalangia cameroni*, a useful natural enemy against the stable fly. The possibility of biological control that will be the first case in domestic livestock industry has been opened up.

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