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Monitoring of Wheat Stored Product Insects According to Simultaneous Storage with Rice, Barley and Wheat in Storage Warehouse

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[Introduction]

In Korea, the self-sufficiency rate of domestic wheat (*Triticum aestivum* L.) is less than 1%, and in 2021, more than 4 million tons of wheat were imported from abroad. However, it is very unstable to rely on wheat supplies from abroad solely, as can be seen such as the recent surge in wheat prices due to the Russia-Ukraine war. In Korea, it is aim to increase the self-sufficiency rate to 5% or more. In order to increase the self-sufficiency of wheat, it is necessary to conduct research on post-harvest management along with improving productivity. As the first step to reduce damage during storage, this study was conducted to monitor and identify stored product insects that emerge during the simultaneous storage of wheat and rice in grain storage warehouse.

[Materials and Methods]

In order to monitor wheat stored product insects in the warehouse according to simultaneous storage with rice, barley and wheat, pheromone traps (IMM trap, LGB trap, dome trap) were placed inside and outside of the warehouse in Buyeo-gun, Chungcheongnam-do, Republic of Korea. The automatic temperature and humidity measuring device also placed inside and outside of the warehouse to measure temperature and humidity affecting ecological and behavioral characteristics of insects. Moreover, probe trap and temperature and humidity measuring device were placed into ton-bag which filled with wheat grain to monitor stored product insects inside wheat ton-bag.

[Results and Discussion]

Plodia interpunctella and *sitophilus zeamais* which feed on rice was monitored in the early aspect. After that, *Sitotroga cerealella* and *Cryptolestes* spp. were observed. In winter, as the temperature decreases, the number of stored product insects observed decreases, and the insects reappeared from April of the following year. In following year, as a similar aspect, *P. interpunctella*, *S. zeamais*, and *Cryptolestes* spp. were observed. *Cryptolestes* spp. was emerged inside the ton-bag which filled with wheat grain. However, after rice ton-bags were stored in the warehouse, the number of *S. zeamais* which in the wheat ton-bag was increased. This result demonstrated that the wheat ton-bag could be cross-contaminated by simultaneous storage with other grains in storage process.

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