

ベトナム北部におけるイネウンカ類に対する殺虫剤の使用状況と散布法の評価

Current status of insecticide use by farmers for controlling rice planthoppers in the northern part of Vietnam

越境性害虫であるイネウンカ類の殺虫剤抵抗性の発達は、周年発生地域であるベトナムでの殺虫剤の使用状況に起因すると考えられる。ベトナム北部の稲作農家に対する聞き取り調査の結果、農家に使用された殺虫成分数が水田内のウンカ密度低下に寄与する程度は低かった(表1)。感水紙を用いて殺虫剤の付着程度を評価した結果、ウンカの生息部位である中位と下位で薬液の付着程度が低いことが明らかになった(図1)。付着程度が上がるほどウンカの死亡率が向上することから(図2)、ウンカの生息部位での薬液付着程度が低いことが農家による殺虫剤散布の低効果の一要因と考えられた。

Insecticide use in the source area of rice planthopper, a migratory insect pest of rice, is a key consideration to insecticide resistance development. It was revealed that the number of insecticide ingredients applied did not effectively reduce the density of planthoppers in the farmers' rice fields (Table 1). Insecticide droplet deposition evaluated using water-sensitive papers was low at the position of the rice plant where the planthopper lives (Fig. 1). Planthopper mortality increased with higher droplet deposition (Fig. 2). These results implied that one factor for the weak effect of insecticide application was due to the insecticide droplets not reaching the targets' habitats.

表 1 トビイロウンカとセジロウンカの密度に影響を与える要因の推定

Table 1. Results of generalized linear model analysis on variables affecting the density of rice planthoppers

Explanatory variables	d.f.	Estimated value	χ^2	p value
Location	1	0.63	4296.03	<0.001
Crop season	1	-0.31	662.63	<0.001
Applied number of ingredients	1	0.02	22.47	<0.001
Number of spiders	1	0.02	4534.75	<0.001
Number of mirid bugs	1	0.06	6285.56	<0.001

The applied number of insecticide ingredients was obtained by interviewing farmers in two villages in the northern part of Vietnam. The planthopper density was investigated in the farmers' fields at booting stage and used as response variable.

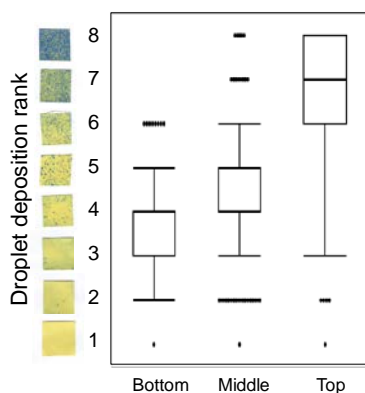


図 1 背負式散布機を用いた殺虫剤散布によるイネ植物体への薬液の付着程度
Fig. 1. Droplet deposition spraying using knapsack sprayers by farmers

Water-sensitive papers, of which colors change from yellow to blue with water deposits, were attached at different heights of the rice plants.

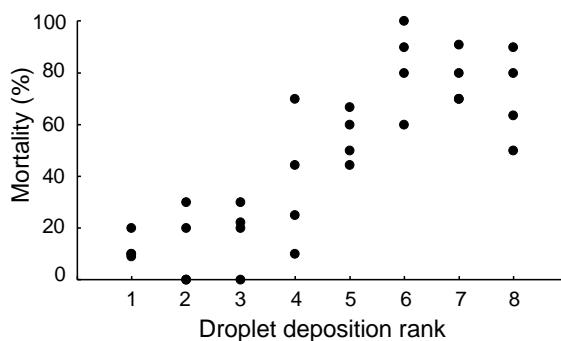


図 2 薬液の付着程度を変えたイネにおける24時間後のトビイロウンカ雌成虫の死亡率

Fig. 2. Relationship between the droplet deposition rank and mortality of *Nilaparvata lugens*

Insecticide contains 45% nitenpyram, 25% pymetrozine, and 5% imidacloprid (w/w).