

# Effects of landscape fragmentation and farming methods on biotic structure of paddy ecosystem in Sanshing, Ilan<sup>1</sup>

Guan-Hua Peng<sup>2</sup> Chi-Cheng Chen<sup>3</sup> Hui-Fei Hsu<sup>4</sup> Cheng-Zu Pan<sup>5</sup>

Chih-Ying Yu<sup>6</sup> Chung-Yu Hsu<sup>7</sup>

## Abstract

This study investigated the effects of landscape fragmentation by artificial building and road, organic farming or not on arthropods and amphibians in Sanshing, Ilan in 2017 and 2018. Low landscape fragmentation areas were set as low plant diversity in 2017 and high plant diversity in 2018. Results in 2017 showed that arthropod species and individuals could be captured in high landscape fragmentation paddies higher than low landscape fragmentation paddies significantly, but in 2018, the result showed that arthropods species and individuals could be captured in low landscape fragmentation paddies higher than high landscape fragmentation paddies significantly. The highest arthropod species among paddies was 50.3 in high landscape fragmentation and organic paddies in 2017 and was 66.7 in low landscape fragmentation and organic paddies in 2018, rice pests and natural enemies were the same trend. In farming methods aspect, rice pests and natural enemies which were captured in conventional paddies were higher than organic paddies in 2017, but the result were opposition in 2018. Amphibian individuals affected by fragmentation and farming factors interaction significantly in 2017, but there was no significant effect in 2018, and amphibian species in low landscape fragmentation paddies were higher than in high landscape fragmentation paddies. Transect line survey observed higher amphibian species and individuals in low landscape fragmentation areas than high landscape fragmentation areas in 2017 and 2018. This study showed low landscape fragmentation areas were suitable for amphibian, although landscape fragmentation and farming method could affect arthropods population, it had more powerful effect from plant diversity. In the view of biological control functions, it will have superiority in large scale organic agriculture system by reservation and establishment of green belt.

Keywords: paddy, ecological function group, arthropod, amphibian, organic farming

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1. Research article No.290 of the Hualien District Agricultural Research and Extension Station.

2. Research assistant, Lan-Yang Branch Station, Hualien DARES.

3. Researcher, Hualien DARES.

4. Director, Crop production division, Agriculture and Food Agency, COA.

5. Associate researcher, Lan-Yang Branch Station, Hualien DARES.

6. Assistant researcher, Lan-Yang Branch Station, Hualien DARES.

7. Assistant researcher, Division of Crop Environment, Hualien DARES.