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Morphometric and Gravimetric Parameters of the Rice Frog *Fejervarya limnocharis* Living in Areas with Different Agricultural Activity

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ABSTRACT

Use of agrochemicals in agricultural activity can lead to environmental contamination and affect non-target organisms including amphibians. In northern part of Thailand, there are many areas where agrochemicals, specifically herbicides, have been used for a long time. In this study, the rice frog *Fejervarya limnocharis* was used as a sentinel species to monitor potential relationship between agricultural activity, in form of herbicide utilization, and altered morphometric and gravimetric parameters. Frogs were field-collected on monthly basis during July 2010-June 2011 from a paddy field with intensive herbicide usage and a reference organic paddy field with no history of herbicide usage. Frogs were subjected to morphometry and gravimetry of liver, kidney, gonad and body. The results showed that condition factor of frogs in the contaminated site were significantly lower than those in the reference site, indicating potential impact on overall health. The gravimetric results showed that liver weight of frogs from the contaminated site were significantly higher than those in the reference site, indicating potential exposure to xenobiotics. There was no significant difference in kidney and testicular weight between these two sites. However, the frog from the impacted site had significantly higher ovarian weight than those from the reference site, indicating potential exposure to estrogenic substance. Overall, the results of this study could be used as early warnings of environmental health problems for other vertebrates living near the agricultural areas including human.

KEYWORDS

Herbicide; Amphibian; Sentinel Species; Condition Factor; Hepatosomatic Index; Gonadosomatic Index

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