

-Short Communication-

## Growth and response of Asian clam, *Corbicula fluminea*, towards treated quail dung

Seong Wei Lee<sup>1\*</sup>, Faiz Anizam Azree<sup>1</sup>, Ramli Zharif<sup>1</sup>, Yusoff Akrimah<sup>1</sup> and Eh Rak Aweng<sup>2</sup>

1) Faculty of Agro Based Industry, Universiti Malaysia Kelantan Jeli Campus, 17600, Jeli, Kelantan, Malaysia.

2) Faculty of Earth Science, Universiti Malaysia Kelantan Jeli Campus, 17600, Jeli, Kelantan, Malaysia.

Received: November-18-2017

Accepted: January-13-2018

Published: April-02-2018

This paper described the response of Asian clam, *Corbicula fluminea*, in terms of movement and growth rate towards treated quail dung. Smoked Asian clam is a famous snack in Kelantan, Malaysia (Lee *et al.*, 2013). This Kelantanese traditional snack has been recognised as Malaysian heritage. Due to the facts, Asian clam population in Malaysia especially in Kelantan is declined rapidly because over exploitation of this clam in wild habitat. However, Asian clam is reported extensively as invasive species and pest in Portugal (Novais *et al.*, 2017), America (Beaver *et al.*, 1991) and China (Chen *et al.*, 2013). In order to fulfil the demand of Asian clam from market, Asian clam seller has to outsource this clam from neighbour countries such as Thailand and Cambodia. At present, this clam was sold at price of USD 3 per kg. Hence, it is a must to have Asian clam farming as the demand of this clam is expected to be increased in the coming years. In spite of the facts, this preliminary study is to reveal the effect of organic matter by using treated quail dung on the Asian clam growth and response. The experiment was carried out by using a container with the size 50 cm X 36 cm and divided into 3 sections A, B and C with equal size (Fig 1). Sand (sand 99.4%; silt 0.44%; clay 0.15%) was used as substrate with the thickness 2 cm was put in the container. 30 labelled Asian clams were put in Section A whereas Section B was reserved as buffer zone. Organic matter (treated quail dung) (quail dung was treated by using 100 ppm of 1 % phosphoric acid and 100 ppm of 1 % hydrogen peroxide) was mixed with sand in the Section C with concentration 1 % of the total weight sand of in Section C. Three replicates were applied in the present study. The replicates were located individually in an aquarium (122 cm X 46 cm X 46 cm) equipped with water pump to recycle the

water. The water parameters were maintained as follows: temperature at 25-28 °C, oxygen at 6-7 ppm and pH at 6-8. Asian clam growth rate and its movement toward organic matter were measured every week and monitored continuously 4 weeks. Asian clam growth rate was calculated Relative Growth Rate (RGR) =  $[(W_f - W_i)/W_i] \times 100\%$  ( $W_i$  = initial weight;  $W_f$  = final weight) (Lee *et al.*, 2017; Lee and Wendy, 2017). The results of the present study showed Asian clam growth rate was recorded as  $1.2 \pm 0.31\%$  and a total of  $43.3 \pm 6.67\%$  of experimental clam was moved from Section A to Section C in which contains treated quail dung. The survival rate of the clam was recorded as  $95.6 \pm 5.10\%$ .

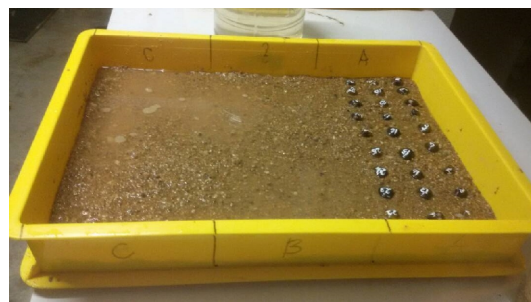


Fig. 1: Experimental design of the growth and response of Asian clam towards treated quail dung.

Based on the literature survey, application of quail dung is seldom reported. However, there is a lot studies have been done on chicken dung as fertilizer or raw material of fish feed. For instance, Elsaidy *et al.* (2015) reported application of fermented chicken dung as fish feed for Nile tilapia. The study found that water and fish fed with fermented chicken dung showed significantly ( $p < 0.05$ ) lower total bacteria coliform compared to chicken dung without underwent ferment-

tation. Treated quail dung that applied in the present study was free of bacteria and smell. Hence it's safe to be used as fertilizer to grow Asian clam. Furthermore, low mortality and promising growth rate of the present Asian clam indicating treated quail dung can be used in propagating Asian clam. Almost half of the experimental Asian clam moved towards treated quail dung. This revealed that treated quail dung can be used as feed for Asian clam. Bivalve feeding behavior can be either filter feeding or pedal feeding or both (Arapov *et al.*, 2010). In this case, Asian clam was also found can be fed by using both filter and pedal feeding. The finding of the present study showed that treated quail dung can be used as feed for Asian clam. However, further study need to be carried out to reveal optimum concentration of the dung in propagating Asian clam.

### Acknowledgement

This project was funded by Minister of Education Malaysia under Transdisciplinary Research Grant Scheme (TRGS) vot no: R/TRGS/A0.700/00387A/007/2016/000391

### References

- ✓ Arapov J., Ezgeta-Balic D., Peharda M. and Gladan Z.N. (2010) Bivalve feeding – How and what they eat? *Ribarstvo*, 68: 105-116.
- ✓ Beaver J.R., Crisman T.L. and Brock R.J. (1991) Grazing effects of an exotic bivalve (*Corbicula fluminea*) on hypereutrophic lake water. *Lake and Reservoir Management*, 7: 45-51.
- ✓ Chen H., Zha J., Liang X., Bu J. and Wang M. (2013) Sequencing and De Novo assembly of the Asian Clam (*Corbicula fluminea*) transcriptome using the illumina GAllx Method. *PLoS ONE*, 8(11): e79516.
- ✓ Elsaidy N., Fatma A. and Ghada A.K.K. (2015) Impact of using raw or fermented manure as fish feed on microbial quality of water and fish. *The Egyptian Journal of Aquatic Research*, 41: 93-100.
- ✓ Lee S.W., Wendy W., Zalina C.M., Ruhul M.A. and Sukree H. (2013) A study of *Edwardsiella tarda* colonizing live Asian clam, *Corbicula fluminea*, from Pasir Mas, Kelantan, Malaysia with emphasis on its antibiogram, heavy metal tolerance and genetic diversity. *Veterinarski Arhiv*, 83: 323-331.
- ✓ Lee S.W., Tey H.C., Wendy W. and Zahari M.W. (2017) The effect of house cricket (*Acheta domesticus*) meal on growth performance of red hybrid tilapia (*Oreochromis sp.*). *International Journal of Aquatic Science*, 9: 78-82.
- ✓ Lee S.W. and Wendy W. (2017) Malaysian rubber (*Hevea brasiliensis*) seed as alternative protein source for red hybrid tilapia, *Oreochromis sp.*, farming. *AACL Bioflux*, 10: 32-37.
- ✓ Novais A., Batista D., Cassio F., Pascoal C. and Sousa R. (2017) Effects of invasive clam (*Corbicula fluminea*) die-offs on the structure and functioning of freshwater ecosystems. *Freshwater Biology*, 62: 1908-1916.