ABSTRACT OF EXHIBIT
TAIWAN INTERNATIONAL SCIENCE FAIR

CATEGORY: **ZOOLOGY**
TITLE: **BIOLOGICAL CONTROL OF *Aphis craccivora* KOCH., A COMMON PEST OF THE COW PEA *Vigna unguiculata* (L.)**
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The purpose of this project is to control the *Aphis craccivora* Koch. on the cow pea *Vigna unguiculata* (L.) by using two predators, the earwigs (black) beetle, *Proeus simulans* Stallan and the ladybird beetle, *Micraspis discolor* (F.). The experiments were carried out in the closed system in the laboratory and in the opened field with various ages of *Proeus simulans* Stallan and *Micraspis discolor* (F.) from the 1^{st} - 4^{th} stage of embryo to the adult form. Prior to the study in the field, the capability of the predators, *Proeus simulans* Stallan and *Micraspis discolor* (F.), that can eat the *Aphis craccivora* Koch. within a period of time was set up in the laboratory. The result showed that the 1^{st}-4^{th} stage of embryo of *Micraspis discolor* (F.) can eat 8.46 ± 1.25 – 12.50 ± 0.60, at 95% confidence, *Aphis craccivora* Koch. per day, while its adult can eat at the average number of 43.66 ± 0.78, at 95% confidence, per day. The 1^{st}–3^{rd} stage of *Proeus simulans* Stallan embryo and the adult form can eat *Aphis craccivora* Koch. at the average number of 2.37 ± 0.33 – 3.74 ± 0.29 and 9.84 ± 0.36, at 95% confidence, per day, respectively. This data showed that *Micraspis discolor* (F.) was more efficiency as predator than *Proeus simulans* Stallan. The insecticide activity of these two predators in the closed field (8 m x 9 m) was then determined. The number of *Aphis craccivora* Koch. on the plant was randomly counted everyweek for 10 weeks. It was found that the number of *Aphis* on the experimented and control groups were 16.20 ± 4.30 and $2{,}582.00 \pm 102.40$, at 95% confidence, per plant, respectively. The result support the efficiency of the two predators in controlling the pest. When the experiment was set up at the two opened field (6 m x 30 m, each field), 27.51 ± 2.74 and 52.11 ± 5.21, at 95% confidence, of *Aphis craccivora* Koch. were found on the plant of experimented and control groups, respectively, at the 10^{th} week. The lower number of *Aphis* on the control plant might possilbly due to the interference from natural predators. From this study, the biological control of *Aphis craccivora* Koch. on the cow pea *Vigna unguiculata* (L.) could be achieved by using *Proeus simulans* Stallan and *Micraspis discolor* (F.). To avoid the use of chemical insecticides, biological control should be trained to farmers to help reduce the environmental problem.