The effect of canola fertilization on predation and development of *Aphidoletes aphidimyza* on *Lipaphis erysimi*

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Variation in plant quality not only affects the performance of herbivores but also influences on their predator efficiency. So in this article laboratory study was conducted to determine how mustard aphid (*Lipaphis erysimi* Kalt.) reared on canola (*Brassica napus* L.) with different nitrogen availabilities influenced total consumption and developmental time of predatory midge (*Aphidoletes aphidimyza* Rond.) larvae. Aphids consumed by *A. aphidimyza* in this experiment were reared on plants grown under four nitrogen treatments including 0, 75, 150, and 225 kg N. ha⁻¹. Using a completely randomized design with 10 replicates, 25 aphids of similar developmental stage (3rd instar nymphs) from each plant were placed into a 1.5 × 9 cm petri dish containing water agar (2%), filter paper and a fresh leaf of the same nitrogen treatment. Similar developmental stages were used to ensure that each predator received a similar number of aphids. The dishes were placed into a germinator at 25±1°C and 60±10 RH. Predatory midge eggs were selected based on similar age and a single egg was placed into a Petri dish containing aphids. The Petri dishes were checked every 24 h after starting the feeding trial. The number of aphids eaten by predator was counted every day and all aphids were replaced with new ones. No predator midge consumed all of the aphids provided, so its consumption was not limited by aphid availability, but influenced by aphid quality. The experiment continued until pupal stage. The results showed that increased nitrogen fertilization of canola significantly decreased the total predation of gall midge larvae. Larvae fed on aphids reared on plants receiving higher nitrogen levels had the lowest total consumption rates (6.9±0.4 and 8.8±0.5 in 225 and 150 kg N.ha⁻¹, respectively). Moreover increased nitrogen availability had significant effect on larval duration time. Larvae fed on aphids reared on plants fertilized with the highest nitrogen level had the shortest larval duration period (3.7±0.1 days).

**Keywords:** nitrogen fertilizer, predatory mide, tritrophic level.