# Impact of morphological and physiological variations in strawberries (*Fragaria*) on resistance to the tarnished plant bug, *Lygus lineolaris*, and the efficacy of the egg parasitoid, *Anaphes iole*

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**Abstract:**

The strawberry is one of the most important small fruit culture in Canada. There is hundreds of strawberry varieties which were developed based on morphological traits as well as physiological factors. Moreover, these varieties vary in their susceptibility to some diseases and pests. The tarnished plant bug, *Lygus lineolaris* (Palisot de Beauvois) (Hem.: Miridae) is an important pest of strawberries. In this study, we will assess the important of morphological and physiological characteristics of strawberry in the resistance of this plant to the tarnished plant bug. However, in order to use resistant cultivars of strawberries in integrated pest management programs, it is important to determine the effectiveness of natural enemies on these cultivars. To verify this hypothesis in the strawberry system, we will use *Anaphes iole* Girault (Hym.: Mymaridae), an egg parasitoid of tarnished plant bug. These results will help plant breeders to produce cultivars which are both resistant to this pest and amenable to the use of egg parasitoid.

Some strawberry cultivars used in this study
Right: June bearing cultivars
Left: Day neutral cultivars

*Fragaria x ananassa*

**Problem:**

Tarnished plant bug (TPB) is a pest which attacks approximately 385 species in more than 50 families of plants. The adult and the larva of this bedbug attack flowers, fruits, buds, leaves and stems of their plant hosts. In strawberries, the main damages are in the form of fruit deformation (catfaced) and abortion. Studies demonstrated that the morphological and/or physiological characters of the plant host can affect its resistance to herbivores. Thus, it is interesting to answer these questions:

- *What are the most important factors in the strawberry plants which can increase their resistance to TPB?*
- *Do the density and the efficiency of the parasitoids of TPB on strawberry plants vary according to the resistance of cultivars?*

**Objectives::**

- Determine the population of the TPB and its damage on some cultivars of strawberry in the farm.
- Study the effect of trichomes and achenes density on the oviposition of TPB and its parasitoide, *A. tole*.
- Verify the response of TPB and *A. iole* to strawberries odors.

Left: Adult of TPB, *Lygus lineolaris*
Right: Egg parasitoid of TPB, *Anaphes iole*

Strawberry fruit deformation (catfaced) caused by TPB

**Expected results:**

- In this study, we shall determine some resistant cultivars of strawberry to TPB.
- We shall establish a correlation between the morphological and physiological characters of strawberry and the resistance of this plant to TPB.
- We shall determine the efficiency of *A. iole* on the resistant or susceptible cultivars of strawberry to TPB.
- Our results can be used in biological control of the TPB on strawberry plants.
- These results will help the researchers (plant breeders) to produce resistant cultivars to the TPB.

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