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Attraction of Flowering Plants to Fruit Fly Males

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The guava fruit fly (GFF), *Bactrocera correcta* (Bezzi); the melon fruit fly (MFF), *B. cucurbitae* (Coquillett); the Oriental fruit fly (OFF), *B. dorsalis* (Hendel); and the Asia melon fly (AMF), *B. tau* (Walker) (Diptera: Tephritidae), are economically important pests to agricultural crops in Thailand. The fresh samples of 24 plant species belonging to 6 families were examined for the male attractant source for these *Bactrocera* speciesWe found that 12 plant species were attractive to male fruit flies as follows:. *B. correcta*: flowers of *Cananga fruticosa*, *Tabernaemontana sananho*, *Colocasia esculenta*, *Spathiphyllum floribundum*, *Spathiphyllum cv. Starlight*, *Spathiphyllum cannaefolium*, *Spathiphyllum* sp., *Spathiphyllum cv. Sensation*, *Bulbophyllum lasiochilum* and *Gardenia augusta*; *B. dorsalis*: flowers of *Cananga odorata* and *Bulbophyllum patens*; *B. cucurbitae*: flowers of *Cananga fruticosa*, *Tabernaemontana sananho*, *Colocasia esculenta*, *Spathiphyllum floribundum*, *Spathiphyllum cv. Starlight*, *Spathiphyllum cannaefolium*, *Spathiphyllum* sp., *Spathiphyllum cv. Sensation*, *Bulbophyllum lasiochilum* and *Gardenia augusta*;*B. ta*u: flowers of *Cananga odorata* and *Bulbophyllum patens*.

Keywords: Male Fruit Fly, Bactrocera, Flowering Plants

Introduction

Fruit flies (Genus *Bactrocera*) are some of the most important insect pests that caused damage to more than 28 food crops such as cucumber, sponge gourd, bitter cucumber, wawgourd, ivy gourd, watermelon, etc. Female adults laid batches of eggs in fruits by puncturing the skin with their ovipositors It made fruit rot and fell down onto the ground resulted in heavy loss of food product. At present, there is no method to reduce insect population efficiently in nature. Therefore, attempts to evaluate the various methods for controlling fruit flies include cue lure to attract the fruit flies male (Metcalf, 1990). Insect-borne plants is to eliminates them and prevent them from breeding It would be a good method to reduce the destruction rate and to control the fruit fly. His is a

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method for farmers to apply without cost and it is an environmentally friendly method (Miller *et al*. 2004; Vargas *et al*. 2001; Vargas and Prokopy 2006). The results of Messing *et al*. (1995) found that the use of marigolds can attract a male fruit fly the most. Siderhurst and Jang (2006, 2010) showed that the smell of plants can attract male flies: the fresh leaves of *Polyscias guilfoylei* and water extracts was found that to attractonly females. In Thailand, local plant attracted to fruit flies wasas following include Crinum Lily (*Crinum asiaticum*), Sweet Oleander(*Nerium oleander*) and Holy Basil (*Ocimum sanctum*) (Ali *et al*., 2011; Khattak *et al.*, 2009).

Objectives: to evaluate plants that attracts fruit fly males in a naturae.

Materials and methods

Rearing of Fruit fly

Fruit flies were e collected from infected cucumber in nature. All adults were transferred to a plexiglas cage 30×40×30 cm provided with a piece of cotton soaked with the mixture of yeast hydrolysate and honey solution or sugar at the ratio of 3:1 as the feeding resource and cucumbers in the cage. The female adult laid eggs for 1-2 days and its larvae reared with the slice cucumber slices. After those fruit fly developed to adults, they were sex determination, individually male and female for tatractants efficiency testing. Adult fruit fly was test at laboratory conditions (27 ± 2 ℃, 65% relative humidity and a photoperiod of 16L: 8D h)

Male of Fruit Fly Efficiency Attractants of Flowering Plant

The experiment on the smell of flowering plant to evaluate effect on male fruit fly include *Artabotrys siamensis*, *Cananga fruticosa*, *Cananga odorata*, *Plumeria obtuse*, *Tabernaemontana divaricate*, *Tabernaemontana sananho*, *Colocasia esculenta*, *Spathiphyllum floribundum*, *Spathiphyllum* cv. *Starlight*, *Spathiphyllum cannaefolium*, *Spathiphyllum* sp., *Spathiphyllum* cv. *Sensation*, *Acampe rigida*, *Bulbophyllum bittnerianum*, *Bulbophyllum eupreum*, *Bulbophyllum lasiochilum*, *Bulbophyllum patens*, *Euclinia longiflora*, *Gardenia augusta*,*Gardenia carinata*, *Ixora spectabilis*, *Brunfelsia Americana*, *Brunfelsia uniflora* and *Cestrum nocturnum.* 50 Male adult period 15-30 day releases in experimental cage which has transparent style size 30×30 cm. The experimental plant attractant to male adult of fruit fly into flower placed in plate in put the experiment box and observe the reaction to male of fruit fly.

Results and Discussion

Attraction of Flowering plants, 24 plant species, were evaluated to 4 speciesof fruit fly maleincluding *B. correcta*, *B. cucurbitae*, *B. dorsalis* and *B. tau*. Flowering plants which attract male adult of *B. correcta* are in the family Annonaceae: *Cananga fruticosa*, family Apocynaceae: *Tabernaemontana sananho*, family: Araceae: *Colocasia esculenta*, *Spathiphyllum floribundum*, *Spathiphyllum cv. Starlight*, *Spathiphyllum cannaefolium*, *Spathiphyllum sp.* and *Spathiphyllum cv. Sensation*, family Orchidaceae: *Bulbophyllum lasiochilum* and family Rubiaceae: *Gardenia augusta* (Table 1). Plant attractants to *B. dorsalis* include family Annonaceae: *Cananga odorata* and family Orchidaceae: *Bulbophyllum patens*. Plant to attractants *B. cucurbitae* include family Annonaceae: *Cananga fruticosa*, family Apocynaceae: *Tabernaemontana sananho*, family Aracea: *Colocasia esculenta, Spathiphyllum floribundum, Spathiphyllum cv. Starlight, Spathiphyllum cannaefolium, Spathiphyllum* sp. *and Spathiphyllum cv. Sensation,* family Orchidacea: *Bulbophyllum lasiochilum*, and family Rubiaceae*: Gardenia augusta*. The flowering plants with attractants to the male adult of *B. tau* include plant family Annonaceae: *Cananga odorata* and family Orchidaceae: *Bulbophyllum patens*. Nishida *et al*. (2000) reported a similar result that oil from flower Ylang-ylang (*Cananga odorata*) has isoeugenol which can attract *B. correcta* and *B. dorsalis*. Dwarf ylang-ylang (*Cananga fruticosa*) can attract *B. cucurbitae* and *B. tau*. Tan (2000) reported that *Bulbophyllum patens* in the family Orchidaceae can lure *B. albistrigata*, *B. caudate*, *B. cucurbitae* and *B. tau*. This finding is consistent with Yong (1990) *Bulbophyllum patens* have affect in attractant of *B. cucurbitae* and *B.tau* but *Bulbophyllum lasiochilumc* have affect on *B. correcta* and *B. dorsalis*. Nishida *et al*. (1991, 1993, 1997, 2009) reported that Dendrobium (*Dendrobium speciosum*) attract *B. cucurbita*.

Table 1. Respones of fruit flies to the flowering plants

Plant family	Scientific name	Fruit fly species*			
		Bco	Bdo	Bcu	Bat
Annonaceae	*Artabotrys siamensis*	-	-	-	-
	Cananga fruticosa	+	-	+	-
	Cananga odorata	-	+	-	+
Apocynaceae	*Plumeria obtuse*	-	-	-	-
	Tabernaemontana divaricata	-	-	-	-
	Tabernaemontana sananho	+	-	+	-
Araceae	*Colocasia esculenta*	+	-	+	-
	Spathiphyllum floribundum	+	-	+	-
	Spathiphyllum cv. Starlight	+	-	+	-
	Spathiphyllum cannaefolium	+	-	+	-
	Spathiphyllum sp.	+	-	+	-
	Spathiphyllum cv. Sensation	+	-	+	-
Orchidaceae	*Acampe rigida*	-	-	-	-
	Bulbophyllum bittnerianum	-	-	-	-
	Bulbophyllum eupreum	-	-	-	-
	Bulbophyllum lasiochilum	+	-	+	-
	Bulbophyllum patens	-	+	-	+
Rubiaceae	*Euclinia longiflora*	-	-	-	-
	Gardenia augusta	+	-	+	-
	Gardenia carinata	-	-	-	-
	Ixora spectabilis	-	-	-	-
Solanaceae	*Brunfelsia americana*	-	-	-	-
	Brunfelsia uniflora	-	-	-	-
	Cestrum nocturnum	-	-	-	-

* Bco = *Bactrocera correcta*

Bdo = *Bactrocera dorsalis*

Bcu = *Bactrocera cucurbitae*

Bta = *Bactrocera tau*

Conclusion

Flowering plants had different ffect on fruit fly male. *Bactrocera correcta*, and *B. cucurbitae* showed positive respond to the same flower plants but not *B. dorsalis* and *B. tau*. The composition of oil from these plant families should be further analysed for male lure products.

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