

# Host-preference and parasitic capacity of four new candidates of *Trichogramma* spp. against some stored product lepidopterous pests

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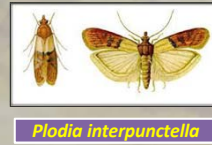
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## Objectives

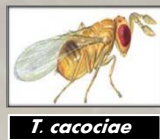
Testing host preference and parasitic capacity of new candidate egg parasitoid wasps against some stored product lepidopterous pests



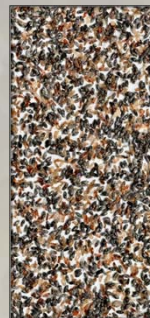
Hosts were eggs of following moths



## Trichogramma candidates



## Parasitized eggs



## Methods for testing host preference

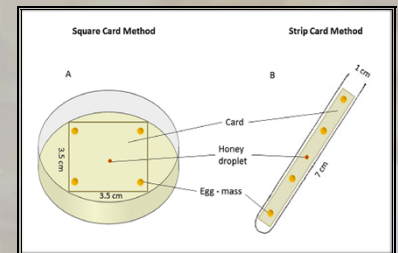


Fig.1. Square and strip for testing host preference by *Trichogramma* wasps.

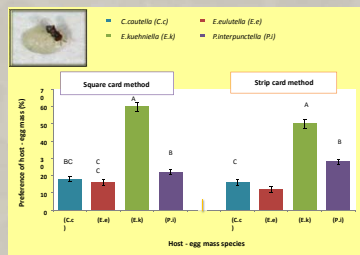


Fig.2. Host-species preference (% ± SE) in choice tests by individual females (n = 10 × 6 trials) of *T. bourarachae* between egg masses of four lepidopterous stored product insect species using square and strip card methods.

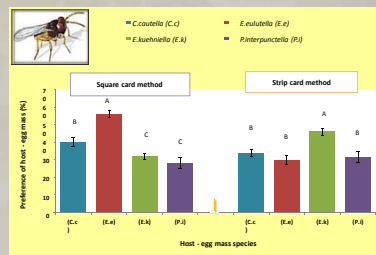


Fig.3. Host-species preference (% ± SE) in choice tests by individual females (n = 10 × 6 trials) of *T. evanescens* between egg masses of four lepidopterous stored product insect species using square and strip card methods.

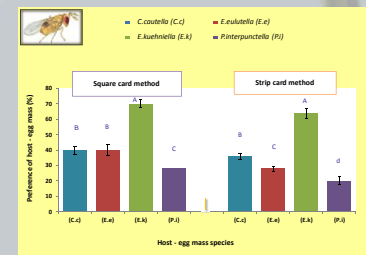


Fig.4. Host-species preference (% ± SE) in choice tests by individual females (n = 10 × 6 trials) of *T. cacociae* between egg masses of four lepidopterous stored product insect species using square and strip card methods.

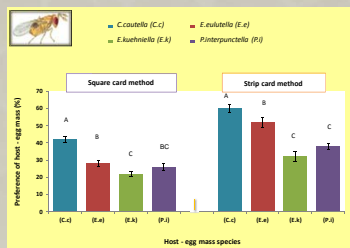


Fig.5. Host-species preference (% ± SE) in choice tests by individual females (n = 10 × 6 trials) of *T. cordubensis* between egg masses of four lepidopterous stored product insect species using square and strip card methods.

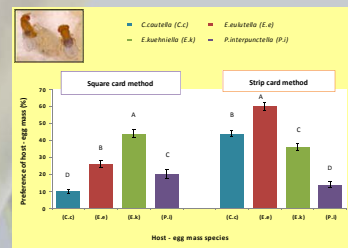


Fig.6. Host-species preference (% ± SE) in choice tests by individual females (n = 10 × 6 trials) of *T. euproctidis* between egg masses of four lepidopterous stored product insect species using square and strip card methods.

Table 1: Average parasitic capacity / day of individual females (n = 10 × 3 trials) of five *Trichogramma* species provided with unlimited host eggs.

<i>Trichogramma</i> spp	Host - eggs				
	<i>S. cerealella</i>	<i>C. cautella</i>	<i>E. elutella</i>	<i>E. kuehniella</i>	<i>Plodia</i>
<i>T. borarachae</i>	43.2 ± 1.2 A	13.1 ± 1.5 C	30.7 ± 1.4 B	39.3 ± 0.9 A	33 ± 1.8 B
<i>T. evanescens</i>	39.3 ± 0.9 A	30.4 ± 0.8 C	21.5 ± 0.8 E	35.8 ± 0.8 B	27.5 ± 0.6 D
<i>T. cacociae</i>	37.7 ± 0.6 A	23.5 ± 0.9 D	21 ± 0.6 E	28.9 ± 0.6 B	26.9 ± 0.6 C
<i>T. cordubensis</i>	34.7 ± 1.2 A	16.8 ± 0.5 C	17.5 ± 0.62 C	32.2 ± 0.9 B	34.4 ± 0.9 AB
<i>T. euproctidis</i>	39.2 ± 1.6 B	25.3 ± 1.6 C	22.6 ± 0.8 C	35.8 ± 1.1 B	48.2 ± 2.4 A

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## Acknowledgment

The first author of this poster was sponsored by the Alexander von Humboldt Foundation during his stay at JKI Berlin.



## Abstract

The host-preference and parasitic capacity of four local *Trichogramma* spp. towards four species of stored product lepidopterous eggs was investigated in laboratory experiments in order to select new candidate species for inundative releases against some insect pests in product storages. Experiments were carried out by offering a single parasitoid female in choice and no-choice assays eggs of the Indianmeal moth, *Plodia interpunctella* (Hubner), the Mediterranean flour moth, *Ephestia kuehniella* Zeller, the warehouse moth, *E.elutella* (Hubner), and the almond moth, *Cada cautella* (Walker). The *Trichogramma* species were collected from arid and semi-arid areas in Egypt. These were *T. bourarachae*, *T. cordubensis*, *T. euproctidis*, *T. cacociae* and we compared them with the common wasp used against stored product pests (*T. evanescens*). The bioassay for host-preference of *Trichogramma* was carried out by offering a single female wasp the choice between equal numbers of host eggs on square cards and /or strip cards. In a Petri dish, *E. kuehniella* was a highly acceptable host species for *bourarachae*, *euproctidis*, and *cacociae* wasps. While *elutella* and *cautella* eggs were more acceptable for *evanescens* and *cordubensis*, respectively. In strip card method, *E. kuehniella* eggs were highly acceptable for *bourarachae*, *cacociae*, and *evanescens*. Eggs of *elutella* and *cautella* were more acceptable for *euproctidis* and *cordubensis*, respectively. The comparative study of parasitic capacity of the *Trichogramma* spp. was carried out under 'no choice conditions' by exposing freshly emerged single wasps to an unlimited number of host eggs. Significant differences were found among the parasitic capacity of the tested *Trichogramma* spp. *T. cordubensis* and *T. euproctidis* showed a good parasitic potential against *P. interpunctella* and *E. kuehniella*; *T. Bourarachae* against *P. interpunctella*, and *T. evanescens* against *E. kuehniella*. However, dissection of host eggs with wasp-emergence holes showed that all tested wasps had a propensity to superparasitize the host eggs. *T. cordubensis*, *T. euproctidis*, and *T. borarachae* showed promise for further investigation into selecting a biological control agent against stored product lepidopterous pests in arid conditions.