

INTRODUCTION

The DNA sequences of the mitochondrial COI gene confirmed that *Thrips tabaci* Lindeman, 1889 is not a single pest species, but preferably a cryptic species complex. The currently recognized individuals are arrhenotokous leek- (L1), thelytokous leek- (L2), and arrhenotokous tobacco-associated (T) *T. tabaci* biotypes. This concept is based on sequence variation of the mitochondrial cytochrome oxidase I (COI) gene; differences in reproductive mode, and host plant choice (Brunner et al. 2004, Toda and Murai 2007). Both L1 and T biotypes reproduce by arrhenotoky where females are produced from fertilised eggs and males are produced from unfertilised eggs and L2 biotype reproduce by thelytoky where females are produced from unfertilised eggs. Based on recent research, L1 and L2 biotypes perform better on cabbage plants and T biotype perform better on tobacco plants (Li et al. 2014, Chatzivassiliou et al. 2002). Inbreeding increases the loss of favourable heterozygote combinations, causes a reproductive fitness reduction, and thus the harmful consequences of inbred referred to as inbreeding depression (Hedrick and Garcia-Dorado 2016). Since related individuals co-exist in a population and mating between relatives is possible it is necessary to study the effects of inbreeding on the longevity, fecundity, egg hatchability rate, and the sex ratio of the arrhenotokous *T. tabaci* biotypes.

MATERIAL AND METHODS

Treatment:- To initiate the experiment, 20 females of L1 and T biotypes were isolated randomly from the stock culture, and reared individually in 2-ml microcentrifuge tubes held at 23 °C under long daylight (16L: 8D) conditions. The cabbage and tobacco leaf discs were provided for L1 and T lineages, respectively, as a food source, oviposition substrate and humidity control. The newly hatched progeny from these mothers were raised to adulthood and those progeny were considered as F₁ (outbred) and used as a parental generation for the subsequent inbred line. Then, to ensure a possibility to obtain a son from virgin female: 47 and 30 virgin adult females of L1 and T biotypes, respectively were kept isolated individually on their preferable food leaf discs for 2 days at 23 °C, After 2 days, the reproducing females were placed at 15 °C . To fasten the developmental time of the son, the leaf discs with eggs were placed at 23 °C. When the son became adult, single mother and son were confined into the same microcentrifuge tube for 48 h. Then the male was removed, and the female adult was kept isolated individually for the rest of its lifetime. The progeny produced from these mothers were considered as F₂ (inbred). The fecundity, egg hatchability, longevity and sex ratio of the progeny were measured in F1 (outbred) and F2 (inbred) lines.

REFERENCES

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Results

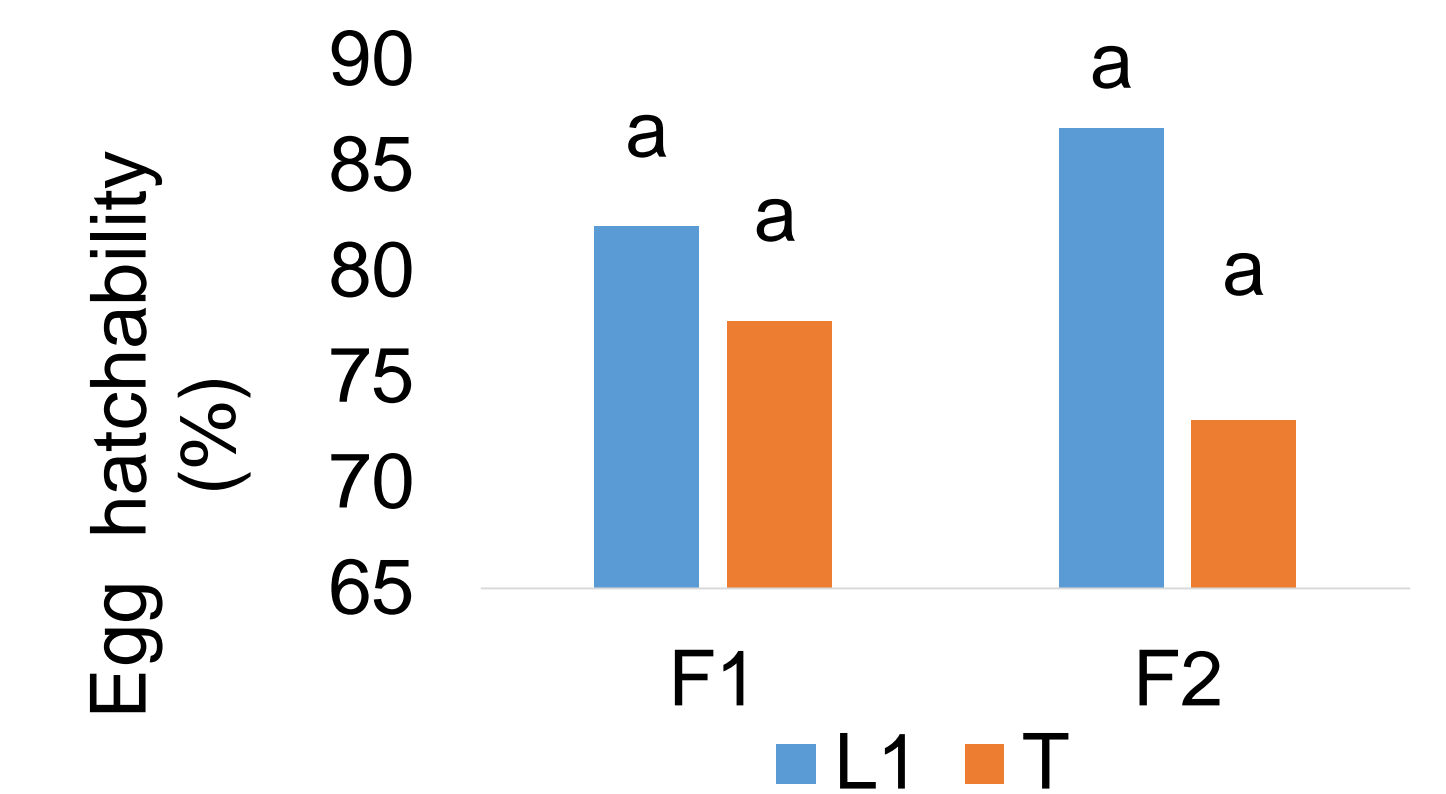
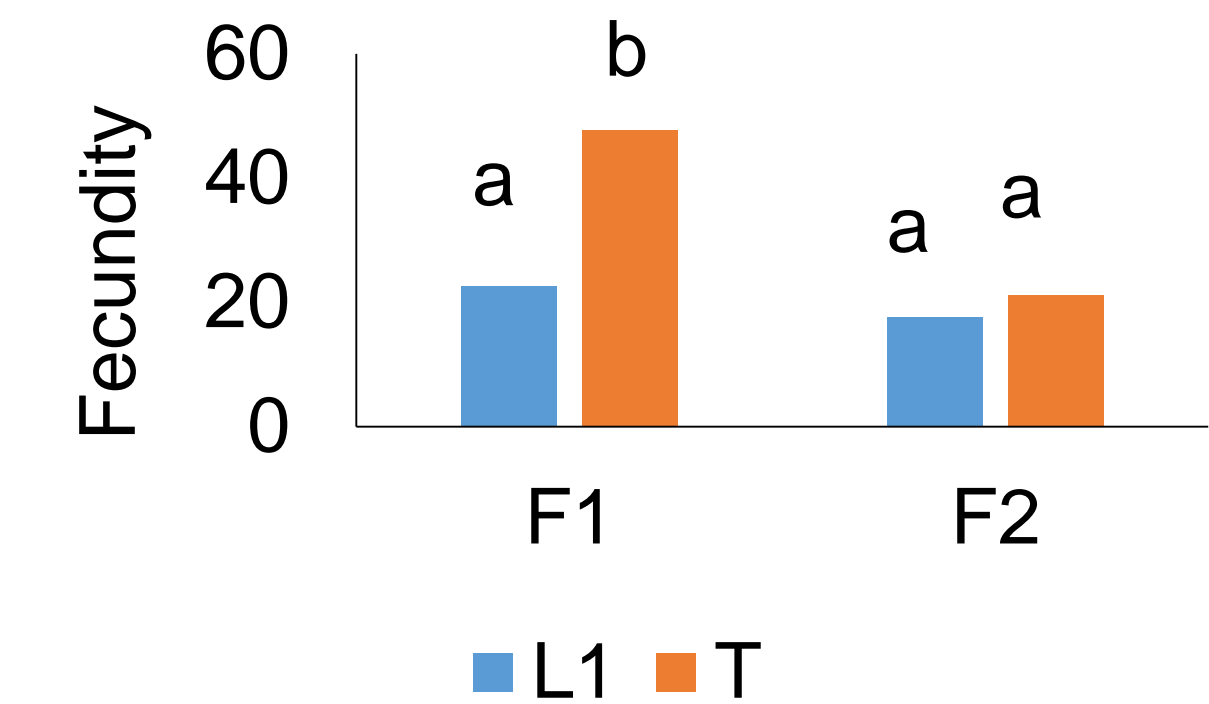
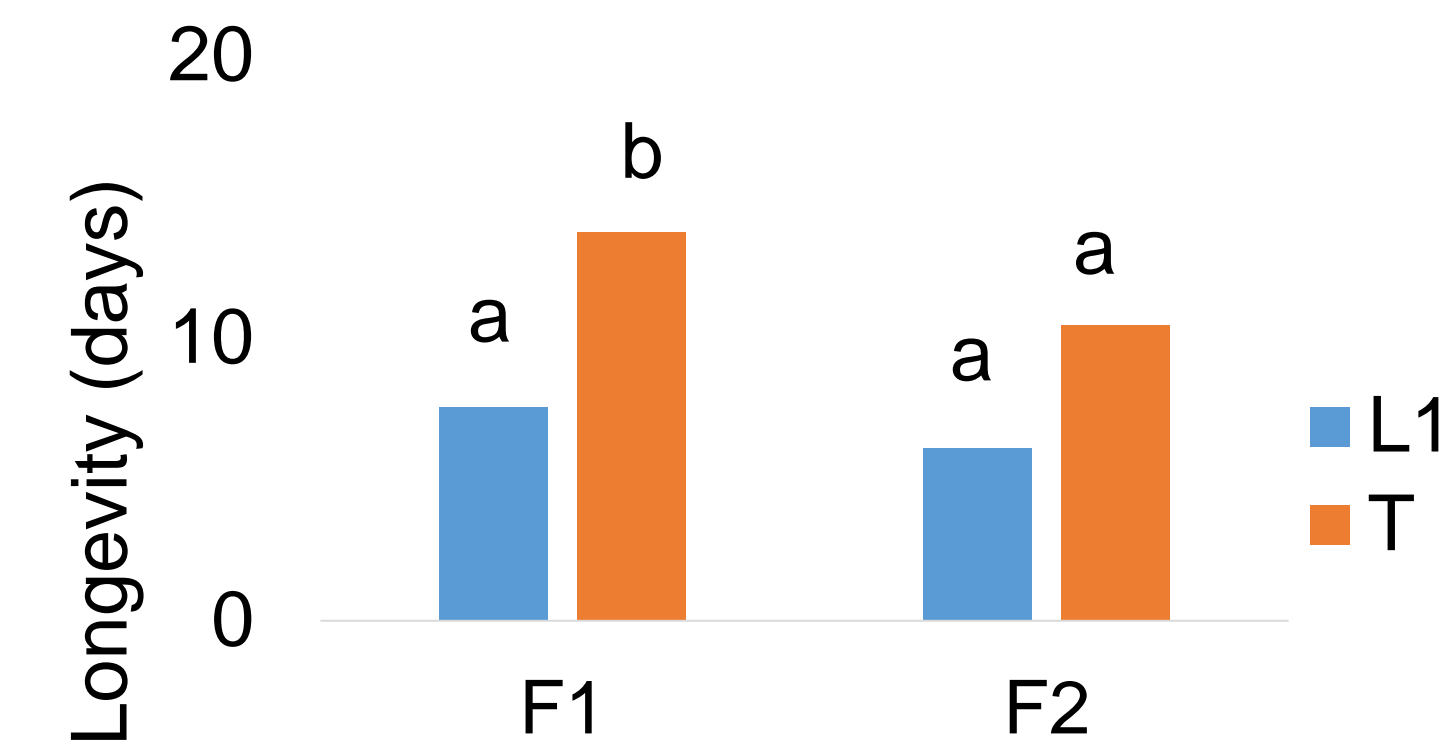


Table: The proportion of male and female

Biotypes	F1		F2	
	Male:	Female	Male:	Female
L1	1:	2.49a	1:	2.5a
T	1:	1.5a	1:	2.1a

DISCUSSION AND CONCLUSION

This study demonstrates that mother and son inbreeding had a depression effect on the tested lifetable parameters of T biotype. The negative effect was observed in the F2 generation. The longevity and fecundity of T biotype showed inbreeding depression whereas inbreeding depression was not observed in the L1 biotype. On the other hand, there was no significant difference between outbred and inbred lines regarding egg hatchability, and sex ratio of L1 and T biotypes. Henter (2003) reported that inbreeding depression is less intense in the haplodiploid insect species, as a result of selection purging deleterious alleles. However, based on our result the incidence of inbreeding depression is detectable in the haplodiploid T biotype of *T. tabaci*. Although, the incidence of inbreeding depression due to mother and son inbreeding may not be excluded in the L1 biotype as the effect was observed in the brother and sister inbreeding (Woldemelak and Fail, unpublished).