

EGG PARASITES OF SUNN PEST IN THE CENTRAL PART OF IRANIAN PLATEAU

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ABSTRACT

These investigations, carried out during five consecutive years (1984 - 1988) in four central provinces of Iran, brought some of their important biological features to light. The main points are :

- 1 - All the five oophagous species of the genus *Trissolcus* (*T. grandis*, *T. semistriatus*, *T. vassilievi*, *T. basalis* & *T. rufiventris*) are able to survive in the vast cereal plantations where no trees exist. In other words they can hiberante in the bushes as well.
- 2 - *Trissolcus* oophagous parasites are active in all the hibernation sites of Sunn Pest in the mountains. In this regard the parasitized eggs of *E. integriceps* have been found in these places. This phenomenon confirms remaining and reproduction of an important portion of *E. integriceps* population in the mountains (RADJABI & TERMEH, 1988).
- 3 - In the wheat and barley fields, *Trissolcus* parasites can be found in the lowest regions (Ghom, Saveh & Khorramabad; 900 - 1100 m. high) as well as in the highest ones (Avadj with an altitude of about 2100 m.). This vast distribution of the species shows their considerable adaptability.

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- 4 - The high percentage of *Trissolcus* parasitism in various rain - fed and irrigated cereal fields shows the big natural reserve of these parasites, reaching in some most suitable places to 90%.
- 5 - The Sunn Pest egg parasites belonging to the genera *Gryon* (Scelionidae) and *Ooencyrtus* (Encyrtidae) have been identified and to some extent studied.

INTRODUCTION

Researches in Iran, had been focused mostly on the breeding of *Trissolcus* parasites, their bio- ecological features in the controlled conditions and their behaviors, while less attention has been paid to them, as well as those belonging to the other genera and families, in the natural conditions of Iran. This is why our knowledge about the distribution areas of *Trissolcus* and other egg parasites, their life cycle and their ecological relations with the various environmental conditions in different parts of the country is very little.

KAUSSARI (in ALEXANDROV, 1947) noticed the first, the *Trissolcus* egg parasites activity in Iran and then ALEXANDROV was the first to start the biological control against Sunn Pest in this country.

The group of MARTIN, RADJABI and JAVAHERI concentrated its efforts on the evaluation of biological control in Iran and in a much lesser extent, on the bio - ecological characteristics of *Trissolcus* egg parasites of Sunn Pest in some regions of the country, which the results appeared in some periodical reports through FAO in Tehran.

SAFAVI (1973) did some researchs on bio -ecology and behaviors of *Trissolcus* parasites in controlled conditions.

RADJABI and TERMEH (1988) started some field works to elucidate the fundamental reasons of the Sunn Pest gradual and steady expansion in Iran during the last decade.

MATERIALS AND METHODS

Investigations have been carried out in four central provinces of Iran, namely; Markazi, Hamadan, Lorestan and Tehran, where one of the most

infested regions is located (Varamin) and in the other hand all these provinces are suffering from the more and more extension of Sunn Pest in these recent years.

Fifty places have been surveyed throughout the above - mentioned provinces consisting of wheat growing regions as well as the hibernation sites of Sunn Pest.

To find out if the *Trissolcus* egg parasites existence in the hibernating sites of Sunn Pest, we surveyed five altitudes, two of them overlooking the irrigated wheat fields and the other three the rain - fed ones.

In order to determine the necessity of existence of the bordering trees for the survival of the Sunn Pest egg parasites, some surveys have been made in three vast rain - fed wheat plantations, where there have been no trees for kilometers. The distances were measured on the direct line from the point of survey and the nearest trees.

To have an idea of the natural parasitism, the observations have been made in both, irrigated and rain - fed wheat fields with an interval of 20 - 25 days during the egg - laying period of Sunn Pest.

RESULTS AND DISCUSSION

1- The possibility of Sunn Pest egg parasites survival in the treeless regions

ROMANOVA (1953) believes that *T. rufiventris* does not need the trees for hibernation, in other words they are able to survive in treeless regions. Our observations on the other species are summerized in Table 1.

As we will see later in the next chapter, these parasites are active in Sunn Pest hibernating sites where the nearest trees are located more than three kilometers far from them.

2 - Activity of *Trissolcus* spp. in the Sunn Pest hibernating sites

This research has been done in many bordering mountains of the cereal fields. The results are presented in Table 2.

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(بخش: آفات و بیماریهای گیاهی)

Table 1 - Survival of Sunn Pest egg parasites in treeless regions

Province	Region	Type of wheat	Distance (KM) *	<i>Trissolcus</i>				<i>Ooencyrtus</i>		<i>Gryon</i>
				<i>grandis</i>	<i>semitriatus</i>	<i>vassilievi</i>	<i>basalis</i>	<i>rufiventris</i>	<i>telenomicida</i>	<i>nigerrimus monspeliensis</i>
Markazi	Varcheh	Rain - fed	1/5	+	+	+	+	+	+	+
Hamadan	K. Ahang	»	2	+	+	+	+	+	+	+
Lorestan	Azna	»	1/6	+	+	+	+	+	+	+

* distance between surveyed locality and the nearest trees

Table 2 - Activity of *Trissolcus* egg parasites in Sunn Pest hibernation sites in Iran

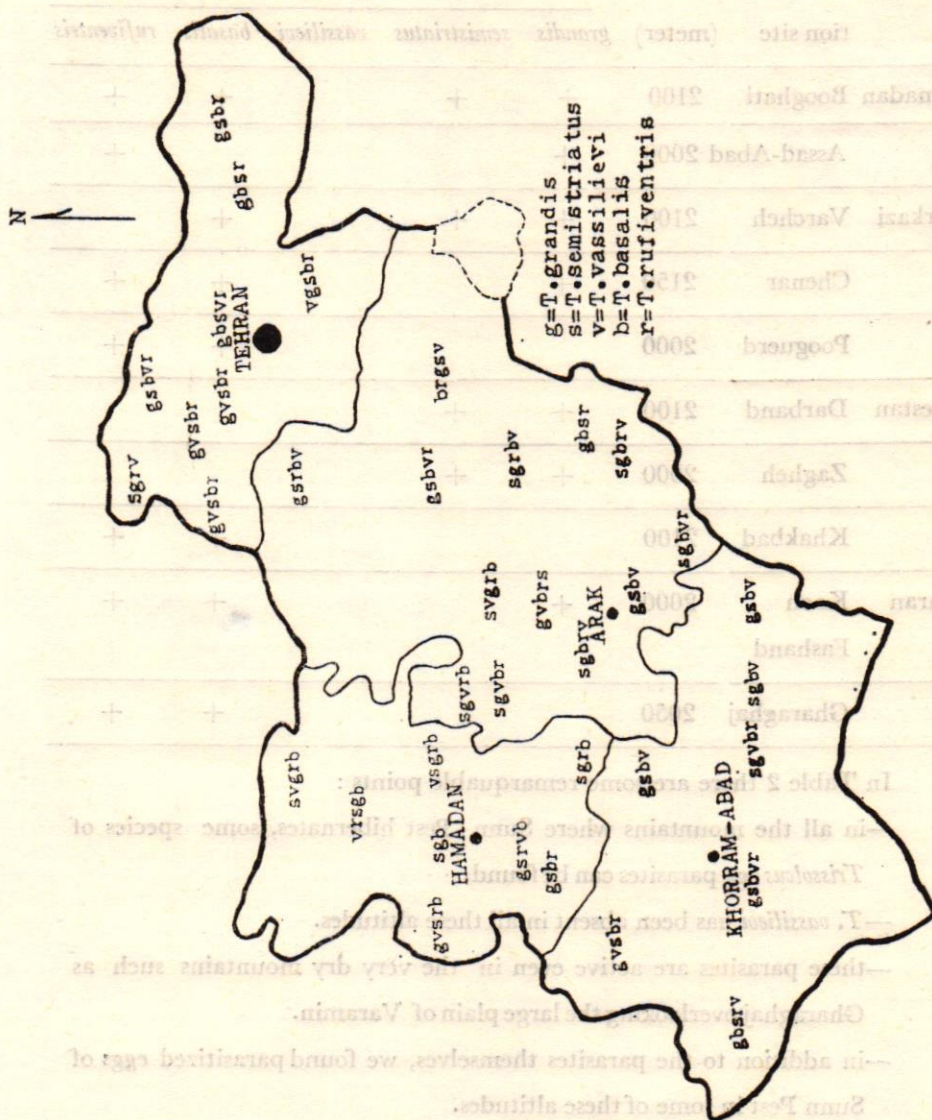
Province	Hiberna- tion site	Altitude (meter)	<i>Trissolcus</i> egg parasites found :				
			<i>grandis</i>	<i>semistriatus</i>	<i>vassilievi</i>	<i>basalis</i>	<i>rufiventris</i>
Hamadan	Booghati	2100	+	+		+	+
»	Assad-Abad	2000	+				+
Markazi	Varcheh	2100	+	+		+	
»	Chenar	2150	+			+	+
»	Pooguerd	2000				+	+
Lorestan	Darband	2100	+	+			
»	Zagheh	2000	+	+			
»	Khakbad	2100				+	+
Tehran	Kooh	2000	+			+	+
	Fashand						
»	Gharaghaj	2050				+	+

In Table 2 there are some remarkable points :

- in all the mountains where Sunn Pest hibernates, some species of *Trissolcus* egg parasites can be found.
- T. vassilievi* has been absent in all these altitudes.
- these parasites are active even in the very dry mountains such as Gharaghaj overlooking the large plain of Varamin.
- in addition to the parasites themselves, we found parasitized eggs of Sunn Pest in some of these altitudes.

3 - Distribution areas of Sunn Pest egg parasites in wheat growing regions.

The results concerning *Trissolcus* species are exposed in the Figure 1.



As it is shown in the Figure 1 :

—*Trissolcus* parasites are found everywhere in the surveyed provinces. In other words these wasps are active even in the places where Sunn Pest is not obviously found. DOGANLAR (1988) gives some significant explanations to this phenomenon by exposing the other hosts of these oophagous wasps.

—*T. grandis* and *T. semistriatus* are the most active species, being found in almost all the places surveyed.

The observations prove the existence of the other egg parasites, *Ooencyrtus telenomicida*, *O. nigerrimus* and *Gryon monspeliensis* in almost all the rain-fed areas particularly those of Hamadan province and the irrigated wheat fields of Tehran province (Karadj) and other provinces.

4 - Evaluation of natural reserve of *Trissolcus*

The details are given in the Table 3.

Table 3 - Evaluation of natural reserve of *Trissolcus*

Province	Locality	Density of hibernated Sunn Pest adults in the fields at the end of migration	Type of plantation	Percentage of Sunn Pest eggs parasitized by <i>Trissolcus</i> spp.
Lorestan	Azna	1/4	irrigated	94
Markazi	Khomeyn	1/6	»	95
»	Varcheh	1/5	rain - fed	23
Hamadan	Nahavand	1/9	irrigated	88
»	Malayer	2	»	57
»	Kabootar - Ahang	5	rain - fed	35
Tehran	Karadj	2/1	irrigated	66

As it is shown in Table 3, there is a big natural reserve of *Trissolcus* species, necessitating very much attention in applying chemicals.

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