

# Current Distribution of Wheat and Barley Insects in Syria and Some Implications for Cereal Pest Management

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## Abstract

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Fields of wheat and barley in the major cereal growing areas of Syria were sampled for insect pests. Russian wheat aphid, *Diuraphis noxia* (Kurdjumov), was found for the first time in rainfed barley in southern Syria, in irrigated barley fields in the desert steppe of central Syria, and in irrigated wheat and barley along the Euphrates River Valley. Some sunn pest, *Eurygaster integriceps* Put., damage was observed in northern Syria, but ground pearl, *Porphyrophora* sp., infestations were

uncommon. Cereal leaf beetle, *Oulema melanopus* L., was locally abundant in southern Syria, and wheat stem sawflies, *Cephus* sp., were observed south of Aleppo. The potential for insect pest damage to wheat and barley in Syria is discussed.

**Key words:** Barley, ground pearl, leaf beetle, Russian wheat aphid, stem sawfly, sunn pest, Syria, wheat.

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## Introduction

Many countries in the Mediterranean region share common insect pest problems on wheat and barley. About 55 insect species distributed across 8 orders are considered pests of wheat and barley in West Asia and North Africa. Most of these pests occur in Syria (2,3). While many cause insignificant damage or occur in localized populations, some cause considerable crop loss across the region. This paper presents observations on cereal insect pests obtained during a recent inspection of wheat and barley fields throughout the major cereal growing areas of Syria, and incident to ICARDA's 1993/94 field research season.

## Materials and Methods

A survey of wheat and barley insects, with emphasis on Russian wheat aphid, *Diuraphis noxia* (Kurdjumov) (RWA), was conducted in northwestern, southern, and eastern Syria in mid-April 1994. Fields of cereals were examined for aphids and other cereal insects at the following sites: south of Homs near the Anti-Lebanon

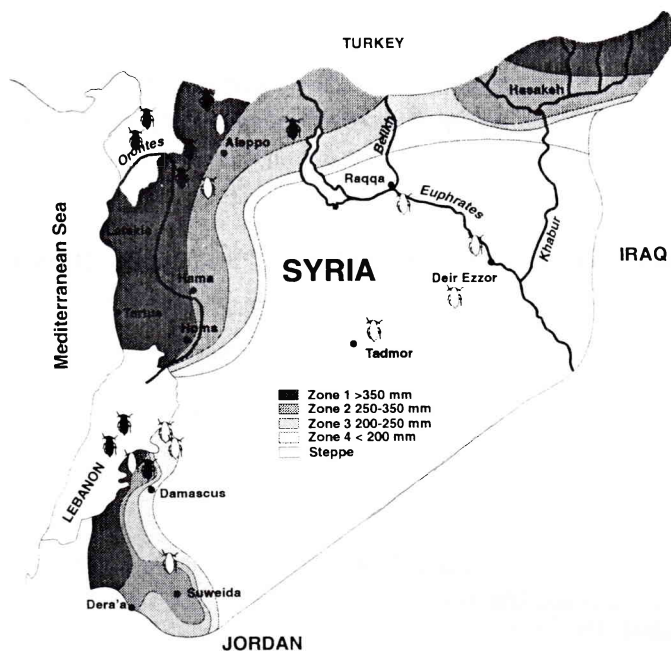
mountains, the Syria-Lebanon border near the Damascus-Beirut road, the Hauran Valley near Ezra'a and Dera'a, Jebel Druze near Suweida, Saleh, and Shabha; fields along the Tadmor-Deir Ezzor Road; fields from Deir Ezzor to Aleppo along the Euphrates River Valley. Sampling procedures were the same as those employed in Miller *et al.* (6) where the peripheries and interiors of randomly selected cereal fields were visually examined for plants showing symptoms of RWA infestation. About 100 m<sup>2</sup> were searched in each field, with emphasis on field perimeters. Infestation was confirmed by observing RWA on plants showing stunting, leaf curling, and leaf striping.

## Results and Discussion

RWA was found in areas representing Syria's major wheat and barley growing areas (Fig. 1). Specifically, it was present in barley in the high valleys adjacent to Lebanon along the Damascus-Beirut road, in sparse barley in the Hauran area near Shabha, in irrigated barley

just east of Tadmor, in irrigated barley midway between Tadmor and Deir Ezzor, and in irrigated wheat and barley in the Euphrates Valley outside of Deir Ezzor and Raqqa. Fig. 1 also shows sites where RWA was found in past years in Syria. Few aphid mummies, or other aphid predators were observed during the survey. This may have been due to the earliness of the season, since Rechmany *et al.* (9) and Miller *et al.* (6) described earlier several parasitoids and predators attacking RWA in Syria. Observations in RWA-infested fields subsequent to this survey have also shown that natural enemies are abundant late in the season, corresponding roughly to the heading stage in wheat and barley (R.H. Miller, ICARDA, unpublished data).

Very few other cereal pests were observed during



**Figure 1.** Map showing sites where RWA were collected during the present survey (unfilled symbols) and where RWA has been collected in past surveys (filled symbols). Also shown are rainfall zones for Syria's agricultural areas. Rainfall data for the northern Orontes River drainage are not included and the area is left blank.

this study, an exception being high populations (nearly 1 insect/m<sup>2</sup>) of cereal leaf beetle, *Oulema melanopus* L. in wheat near Bosra and Saleh on the foothills of Jebel Druze. In all cereal fields, *Rhopalosiphum maidis* Fitch was the most common aphid species observed, especially on barley, with *Schizaphis graminum* (Rondani) and *Rhopalosiphum padi* (L.) also found on wheat in the Hauran Valley and in the Euphrates River Valley.

Subsequent field observations have shown that wheat stem sawfly, *Cephus pygmaeus* L., is heavy in 1994 near Saraqueb, 50 km south of Aleppo, and that sunn pest, *Eurygaster integriceps* Puton, is present along Syria's northern border with Turkey, although not in densities as high as in past years.

Margarodid scales, commonly called ground pearls (family=Margarodidae), have been reported infesting marginal cereal growing lands near Raqqa. Though they are serious locally, they appear not to be an economically serious pest throughout much of their range which extends into rainfall zones receiving up to 400 mm. None was observed in the present survey, but localized heavy infestations were previously observed near the village of Breda, about 70 km southeast of Aleppo. Ground pearl infestations gradually expand in area infested area and increase in severity during the continuous planting of wheat and barley monocultures in regions receiving 250 mm annual rainfall or less. Control methods successfully used to control ground pearls in west Asia include fallows, crop rotation, and insecticides (4).

These observations, along with others made over the years in other regions of the country, suggest that in most years there are relatively few economically serious cereal insect pests in Syria. Those that occur frequently have restricted distributions although local damage may be severe. This situation contrasts with the perennial serious threat to cereals due to the aphids *R. padi* and *S. graminum* in the Nile Valley of Egypt and Sudan (8,10), to Hessian fly, *Mayetiola destructor* Say, in North Africa (5), and to *E. integriceps*, in rainfed regions of Turkey, Iran, Iraq, and Romania (1).

The presence of RWA throughout Syria's rainfed wheat and barley producing regions, and in the periphery of irrigated wheat fields, suggests that RWA outbreaks are likely to occur throughout Syria during periods of prolonged drought as has been observed in North Africa. Rapid expansion of endemic RWA populations to outbreak levels has recently been observed in Morocco, Tunisia, and Algeria (7). There, RWA increased from isolated spots in rainfed wheat and barley to nearly 100% infestation levels after three years of drought in Algeria's High Plateau and northern Tunisia, and after two years of severe drought in northern Morocco. The use of drought and RWA-resistant varieties in rainfed areas may be useful in preempting the threat of RWA outbreaks in Syria and North Africa.

## المخلص

ميللر، روس وعزت غنوم. 1994. التوزيع الحالي لحشرات القمح والشعير في سورية، وبعض الإقتراحات في ادارة آفات محاصيل الحبوب. مجلة وقاية النبات العربية. 12 (1): 80-82

(*Oulema melanopus*) فكانت كثيفة محلياً في جنوبي سورية، ولوحظت إصابات بديور الحنطة المنشاري (*Cephus* sp.) جنوبي حلب. وتناقش المقالة الضرر المحتمل لمحصولي القمح والشعير في سورية نتيجة الإصابة بالآفات الحشرية.

كلمات مفتاحية: من القمح الروسي، السونة، لآلى الأرض، خنفساء الأوراق، ديور الحنطة، قمح، شعير، سورية.

تم إجراء مسوحات حقلية لحصر الآفات الحشرية لزراعات القمح والشعير، في المناطق الرئيسة لزراعة هذين المحصولين في سورية. وقد وجدت إصابات بمن القمح الروسي (*Diuraphis noxia*)، للمرة الأولى، في حقول الشعير البعلي، في جنوب سورية، وفي حقول الشعير المروي في البادية السورية، وفي حقول الشعير والقمح المروية على طول وادي نهر الفرات؛ ولوحظت بعض أضرار السونة (*Eurygaster integriceps*) في شمالي سورية؛ ولم تكن الإصابة بلآلى الأرض (*Porphyrophora* sp.) منتشرة على نحو شائع. أما خنفساء الأوراق

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