

Promising new parasite of the

Egyptian Alfalfa Weevil

imported from southern Iran

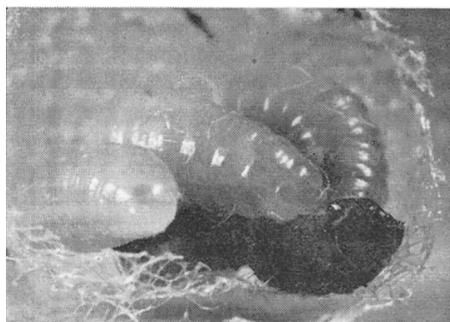
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The Egyptian alfalfa weevil—*Hypera brunneipennis* (Boh.)—has become an increasingly serious pest of alfalfa in southern California during recent years. In 1961 weevil populations were the heaviest on record, and in the Imperial Valley alone many thousands of acres of alfalfa required insecticidal treatment. All evidence indicates that the Egyptian alfalfa weevil will continue to pose a serious threat to first and second cutting alfalfa in southern California.

The Egyptian alfalfa weevil is native to the Near East and North Africa, apparently, and was accidentally introduced into the Yuma Valley on the California-Arizona border about 25 years ago. Like many immigrant insects the weevil escaped its important natural enemies when transported to the American continent which may explain, in a large measure, the abundance of the pest in southern California.

The increasing seriousness of the Egyptian alfalfa weevil and the inefficiency of existing biological control agents in southern California led to a search for additional natural enemies in the Middle East. The search was centered in the hot lowlands of southern Iran, where parasites adaptable to the climate of the southern California desert might occur. Among several species obtained, one external parasitic wasp—*Dibrachoides druso* (Walk.)—appears to be a particularly promising enemy of the Egyptian alfalfa weevil.

Larvae of parasite feeding on cadaver of prepupa of weevil within its cocoon.



The female *Dibrachoides* attacks by probing through the weevil cocoon with her ovipositor and stinging the contained prepupa or pupa. The sting paralyzes the host and the parasite may then deposit



Female parasite probing her host with her ovipositor.

one to several eggs externally on the host, or she may feed on the blood which oozes through the sting wound. Feeding on the weevil blood is a necessary prerequisite to egg production by the parasite and also results in destruction of many weevils over and above those destroyed by the parasitic feeding of the larvae. Parasite pupae are formed nakedly within the weevil cocoon and when transformed to adults they chew their way out of the host cocoon to attack more weevils.

Large numbers of the parasite were produced in the insectary at Riverside during the weevil season and material from this source was colonized in alfalfa fields in Imperial, Riverside, and San Diego counties. To enhance chances of parasite establishment, the test plots were kept free of insecticidal treatments and were left uncut for the duration of the weevil activity period. Approximately 50,000 mated female parasites were released in the plots during January through April, 1961.

Parasite recovery studies were made in three plots in Imperial County and two in San Diego County. Parasitized weevils were found in all five plots and there was

evidence that the imported wasp passed a full generation and a partial second one in several of these plots. The parasites performed particularly well in a plot in the San Pasqual Valley of San Diego County, where 22% of the weevil cocoons in a sample taken on March 25 contained parasites.

Field recovery of the wasp and its apparent successful reproduction in the release plots does not mean that the parasite has become permanently established. It must survive the long weevil aestivation period, resume its reproductive activity, and then pass through the 1962 weevil season on its own devices. Thus it will probably be at least two years before establishment of the wasp from Iran can be ascertained.

The performance of *Dibrachoides* thus far indicates that it is fully adapted to the Egyptian alfalfa weevil biologically, and has gained an initial foothold in the field at several places. This potentially valuable parasite seems to have an excellent chance of becoming a permanent component of the beneficial insects in alfalfa in California.

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Pupa of Egyptian alfalfa weevil parasitized by larvae of the Iranian parasite.

