THE SEASONAL AND ECOLOGICAL DISTRIBUTION
OF THE COMMON APHID PREDATORS
OF CENTRAL FLORIDA

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The different species of ladybeetles and syrphus flies, which are the chief predators of aphids, have their likes and dislikes as to their food and seasons of the year. To record some observations on these points is the object of this paper.

The records from August 1, 1926 to March 7, 1927 were taken from Mr. R. L. Miller's report of 1926 and 1927 of the Citrus Experiment Station, Lake Alfred, Florida.

_Cycloneda sanquinea immaculata_ Fab. (Blood Red Lady-beetle). Our most common ladybeetle predator on aphids seems to have a wider range of food and is more in evidence the year around than the other species.

The chief host of the Blood Red appears to be the new citrus aphid (_Aphis spiraeola_ Patch). It is found feeding in colonies of these aphids every month of the year but is more abundant from March until May, which are the months the aphids are most abundant. In October 1926 the beetles were fewer in proportion than any other month of the year, only three adults were observed in a count of 40,000 aphids. In January 1927, one adult was observed in a count of 22,600 aphids. There were very few citrus aphids in evidence during the months the beetles were at their minimum. During December 1926 and January 1927 only adults were observed, the larvae making their appearance in February.

As stated above the range of hosts of this beetle is rather wide as it has been observed feeding on the following aphids other than the citrus aphids: Melon Aphid (_Aphis gossypii_) on guava, hibiscus, okra, and melons; _Aphis rumicis_ on beans; _Aphis pseudobrassicae_ on turnips and rutabagas; _Myzus persi-

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ae on eggplants; *Aphis coreopsidis* on *Bidens*, and a green aphid infesting crab grass.

*Hippodamia convergens* Guer. seems to appear more or less spasmodically. In August 1925 crab grass was heavily infested with aphids and hundreds of larvae and adult beetles were present but in 1926 when the grass was infested Mr. Miller gives no account of observing them with the other predators that were present. From August 1926 to May 15, 1927 they were not observed feeding on citrus aphids or the truck crop aphids. From April 1927 to the present time, December 10, they have been in evidence every month.

*Hippodamia convergens* was the dominating predator on *Myzus persicae* on eggplants in April and May, 1927. As high as 59 larvae were counted on one eggplant. *Aphis pseudobrasicae* infesting turnips and rutabagas in the fall and winter months are important hosts also. *Aphis rumicis* infesting beans was practically controlled by *Hippodamia convergens* with the aid of a few other predators in a patch on the Experiment Station in June and July, 1927. In one count of 6000 aphids on the beans, 98 larvae and three adult beetles were found. The larvae were found to eat an average of 56 citrus aphids per day during their larval stage and adults 87 per day. 98 larvae and three adults should eat approximately 4,671 aphids per day.

In 1925 *Hippodamia convergens* was quite common feeding on the citrus aphid but in the year 1926 and 1927 there were very few observed feeding on this species of aphid.

*Scymnus collaris* Mclsh has been observed each month in the year but is less common in December and January.

This ladybeetle is the most common predator of the Grape Aphid, *Macrosiphum illinoisinsis* at the Citrus Experiment Station. It is also found feeding on *Aphis gossypii* and *Myzus persicae* infesting truck crops, *Aphis rumicis* on beans and to some extent the citrus aphid.

*Scymnus terminatus* Say is common in the spring and summer months.

The favorite host of this ladybeetle at the Experiment Station is *Myzus persicae* infesting eggplants and peppers. It is also a predator of *Aphis gossypii*, *Aphis rumicis*, and the citrus aphid although not very common.

*Coccinella oculata* Fab. is present in the spring and summer months.
This beetle is sometimes found feeding on citrus aphids but it is not a very common predator in this section. It is more of a scale eater but the larvae were observed feeding on mealy bugs that had infested a guava tree. These beetles were found feeding on mealy bugs in 1926 and 1927.

Vedalia (Rodolia cardinalis Muls.), or Australian Ladybeetle is the chief predator of the cottony cushion scale (Icerya purchasi Mask). The larvae are sometimes found feeding in colonies of the citrus aphid but are not common. We have never been able to rear a complete generation of these beetles through on the citrus aphid.

Twice-stabbed Ladybeetle (Chilocorus bivulnerus Muls.) is found in all months of the year, especially the adults.

It is primarily a scale feeding beetle but is occasionally found feeding on the citrus aphid. We have never been successful in rearing a complete generation through on aphids.

SYRPHUS FLIES

Baccha clavata Fab. is the most common syrphus fly in this section and leads all the other aphid predators with the exception of a couple of months in the year. It is present every month of the year but more abundant in the spring and summer months when the citrus aphids are working. According to Miller, eggs, larvae and pupae were killed by a temperature of 24° F. during January 1927, but they mostly withstood a temperature of 24° F. in January 1928.

The chief host of Baccha clavata larvae in this section is the citrus aphid and wherever this aphid is found the larvae of this syrphus fly is nearly always present. Although the citrus aphid appears to be the favorite host the larvae feed on a number of different species of aphids. They have been observed feeding on Aphis gossypii, Aphis rumicis, Macrosiphum illinoisii, Myzus persicae, Toxoptera aurantia, a green aphid infesting crab grass, and to some extent on Aphis pseudobrassicae.

Baccha lugens Loew is found during nearly every month of the year. Mr. R. L. Miller does not report any from November 8, 1926 to February 2, 1927. Since February 2, 1927 to December 10, 1927 they have been observed every month although only a very few larvae were observed in November and December. They were more common in August than any other month.

Baccha lugens is found feeding chiefly on the citrus aphid and Toxoptera aurantia which is known as the Grapefruit Aphid.
It has been observed feeding on *Aphis pseudobrassicae* on turnips and rutabagas.

*Syrophus wiedmanni* Johns. (*Syrophus americana* Wied.) is common in late fall, winter and early spring months. In 1925 and 1927 the month of May was the last these syrphus flies were observed until October. There is no record as to when the larvae were last observed in 1926 but they were not present during the summer months.

It seems quite likely that *Aphis pseudobrassicae* infesting turnips and rutabagas is the favorite host of this syrphus fly as these aphids are present during the cool months when these syrphus flies are the most abundant. Although citrus aphids are present in the fall, few larvae are found feeding on them, but in the spring when turnips are not grown and no *Aphis pseudobrassicae* are present, the syrphus fly larvae are common feeding on the citrus aphid until about May 15.

*Allographa obliqua* Say. is likely to be found in most any month of the year if suitable food is present, but they were found to be most common in November, December and January.

*Allographa obliqua* is the most common predator of *Aphis pseudobrassicae* at the present time, December 10, 1927, and this species of aphid appears to be its favorite host. It has been observed feeding on citrus aphids in March, April and November and on *Aphis rumicis* on beans in June and July. It was also a predator of the green aphids which infested the crab grass in August, 1925 and 1926.

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**DR. O. F. BURGER DIES**

Dr. Owen Francis Burger, Head of the Department of Plant Pathology of the Florida Agricultural Experiment Station and a member of our society, died on January 26 as a result of an automobile accident. Dr. Burger was born at Freeland, Pa., June 8, 1885. He received his A.B. from Indiana University in 1909; M.S. Florida in 1911; Harvard, 1915; Sc.D. Harvard, 1916. He was Assistant to the Plant Pathologist, Fla. Experiment Station, 1911-1913; Instructor in Plant Pathology, California, 1916-18. He has been head of the Department of Plant Pathology of the Experiment Station since 1918. His cheerful voice and helpful suggestions will be much missed by all his associates on the campus and his numerous friends over the entire state.