

SPIDERS Arachnida: Araneae: Linyphiidae Dwarf Spiders *Erigone* spp.

DESCRIPTION

Spiders are general predators that feed on small insects and other arthropods. Spiders have a jointed exoskeleton, four pairs of legs, and two body regions: cephalothorax (fused head and thorax) and abdomen. Spiders typically have eight simple eyes but may have as few as four arranged at the front or on top of the cephalothorax. Spiders have fangs with which they capture and subdue prey. They also have two leglike appendages on the cephalothorax called pedipalps. Spiders also characteristically produce silk, which is used to construct webs, subdue prey, balloon or protect their eggs.

LIFE HISTORY

Spiders have incomplete metamorphosis: egg, spiderling, adult. Eggs are laid in egg sacs deposited in the habitat and protected by a silken cocoon. The female may provide protection either on the web or on her back or the egg sac may be deposited unprotected on the soil. After a suitable incubation period, spiderlings emerge and disperse. Spiders are cannibalistic and will consume each other even at this young stage; thus dispersal is imperative for survival. Some spiders, such as the dwarf spiders, climb to the top of plants and balloon on silk strands to a new habitat. Ballooning most frequently occurs in the fall but also occurs during the growing season. The dwarf spider balloons in early spring or they may overwinter in fields. As the spiderlings find prey, they continue to grow and develop, molting periodically until they reach their final molt and become sexually mature. After mating, females produce an egg sac. Dwarf spiders produce more than one egg sac per season, perhaps as many as four or five. In the fall, spiderlings balloon to protected habitats and the adults overwinter under crop debris.

IMPORTANCE

There may be as many as 10 to 15 different spider species that occur in potato fields, but most are not important for biological control of insects because they occur in very low numbers. Several spiders, such as the jumping spider, garden orb spider, and the long jawed spider, are large and conspicuous and have large webs, which makes them easy to see and gives a false impression as to their importance. The

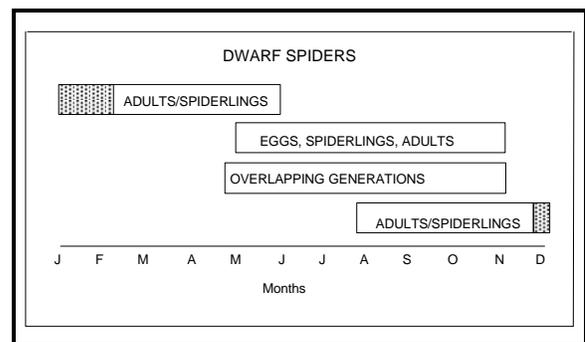


White crab spider



Brown crab spider

most important species are inconspicuous, typically 2 to 3 mm long, and live on the soil among senesced potato leaves or climb into the lower leaves. The most important spiders in potato are three species of dwarf spiders: *Erigone aletris*, *E. blaesa*, *E. dentosa*. The dwarf spiders contribute to biological control of green peach aphid (GPA). These spiders also interact with two other general predators in potatoes, the bigeyed bug (*Geocoris* spp.) and damsel bugs (*Nabid* spp.), to provide biological control of GPA. The impact of spiders and other general predators reduces GPA populations in the absence of foliar applied insecticides or conversely in the presence of soil applied systemic insecticides such as Temik or in fields planted to transgenic Btt potatoes.



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