

Crown Mite Damage on Spinach

investigations demonstrate value of early chemical treatment for control of relatively new mite affecting spinach leaves

W. H. Lange and O. G. Bacon

Damage to spinach by the crown mite—*Tyrophagus dimidiatus* (Hermann)—was first observed to be of economic importance during the spring of 1949 in the Santa Clara Valley. Since that outbreak the mite has caused periodic damage to fall and spring planted spinach in most areas, but is more destructive in the coastal growing regions.

Often, it is necessary to apply insecticides to control the crown mite prior to the usual applications for leaf miner control. As plants become larger chemical control becomes increasingly more difficult.

The small, translucent mites occur in the crowns of the plants, feeding on the young, interfolded leaves. Damage at this early stage appears as a black stippling, later progressing to small, circular holes, then blackened areas. The petioles develop normally, but the blades become stunted, disfigured, and in general have a ragged, unthrifty appearance. As many as several hundred mites may occur together in the interfolded leaves. The mites require considerable moisture and as the leaves grow out they migrate down to the new growth.

The crown mite belongs to the family Acaridae—Tyroglyphidae—a group which are not usually considered field pests. Many are associated with decaying organic matter, decaying bulbs and tubers, and fungi. In recent years, however, two other species in this same family have caused damage to certain

Chemical Control of the Spinach Crown Mite					
Applied by hand applicators, March 20, 1954 (plants 18" high, with 10 leaves) Woodland					
Treatment	Rate actual chemical per acre	Average number mites per leaf		Per cent control	
		2 days	9 days	2 days	9 days
A. Parathion 2% dust	1.0 lb.	0.70	0.31	88	87
B. Parathion 2% + Ovex 7.5% dust	0.8 lb. 3.0 lbs.	0.50	0.20	91	92
C. Parathion E.C. spray	1.0 lb. (100 gals.)	1.24	0.64	78	74
D. Nicotine 3.5% alkaloid dust	2.8 lbs.	1.50	0.50	74	79
E. Nicotine spray 40% alkaloid	1 pint 40% (100 gals.)	2.31	1.91	59	21
F. Aramite 3% dust	1.86 lbs.	2.70	1.04	53	57
G. Check		5.68	2.42
Significance: 5% level		0.52	0.48		
1% level		0.71	0.65		

vegetables in California—*Caloglyphus berlesei* (Michael), to germinating beans and *Rhizoglyphus solani* Oudemans, to seedling onions.

The spinach crown mite is 0.5–0.7 mm long—1" equals 25 millimeters—with long, seta-like hairs projecting posteriorly from the body. They deposit the small, white eggs singly, or in groups of 4–5 between the interfolded, new leaves. The eggs are ovoid, about 0.14 mm long by 0.07 mm wide, and the surfaces of the eggs are minutely pitted. As the plants grow, eggs and mites of all stages occur together.

The crown mite is often found in association with two other mites, a *Histioglyphus* sp.—close to *feroniarum* (Duf.)—and a *Rhizoglyphus* sp., both considered of secondary importance, feeding on de-

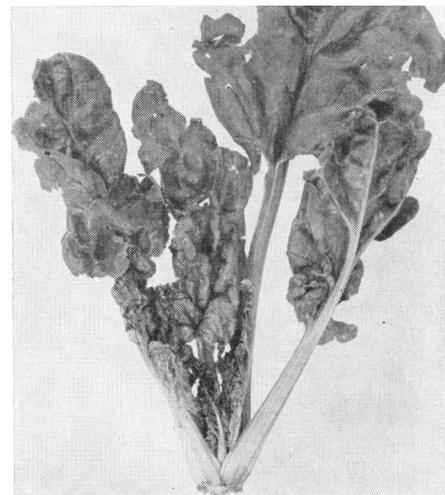
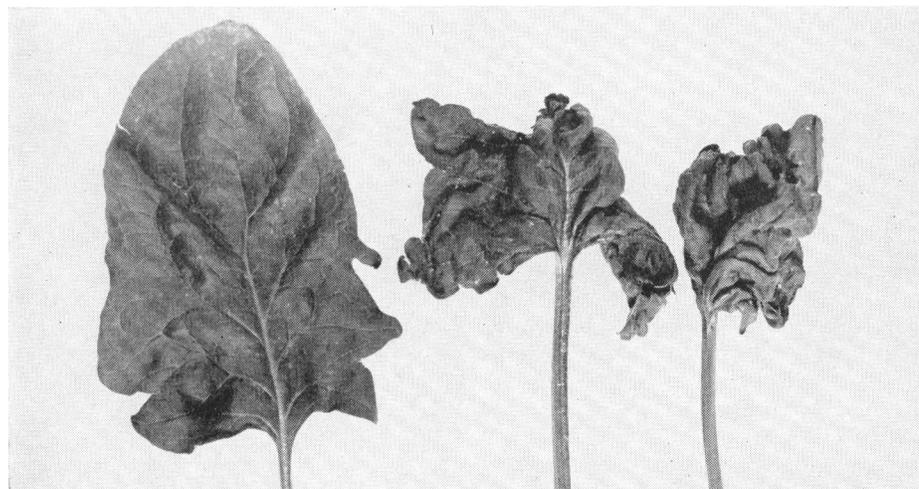
caying plant material. In addition, the seed corn maggot often selects damaged plants, and the larvae cause additional crown damage.

Damage of a tendipedid fly—*Hydrobaenus* (*Smittia*) sp.—may sometimes be confused with that of the crown mite. The fly larvae feed on the new growth eating out small holes which later on appear as shot-holes in the mature leaves. Mite damage usually appears as a more severe type of damage as the entire leaves are stunted and disfigured.

In certain years damage has been quite widespread in the spinach areas but usually damage occurs only to localized portions of fields and not to large acreages. Damage often follows a row effect

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Left—undamaged spinach and, right—disfigured by crown mite.



Ragged appearance of spinach plant due to crown mite feeding.



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SPINACH

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—running with the rows—or it may be a circular area, usually the low part of a field. The damage often appears similar to that caused by certain chemicals applied for weed control.

Dry, warm weather, and rapid growing conditions often circumvent more severe damage from the crown mite.

Applications of excessive amounts of organic fertilizer—or disking under large amounts of plant debris—may lead to mite damage under certain conditions.

The application of a 2% parathion dust at 40–50 pounds per acre applied by ground equipment has proved satisfactory under most conditions. Sprays are effective only on small plants and 75–100 gallons of spray per acre are usually necessary.

When an average of five mites or more occur per center leaf, control may be necessary. Control is usually best when the plants are small as coverage is very difficult with usual commercial equipment at economic rates. After the damage is done chemical applications are of little value.

The table on page 9 indicates the value of parathion and parathion-Ovex dusts and the poor performance of the spray materials.

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The mites mentioned in the above report were identified by Dr. F. M. Summers, Entomology Department, University of California, Davis; Dr. H. H. J. Nesbitt, Carleton College, Ontario, Canada; and Dr. E. W. Baker, U. S. Department of Agriculture, Washington, D.C.

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