

## Leaf Blister Mites

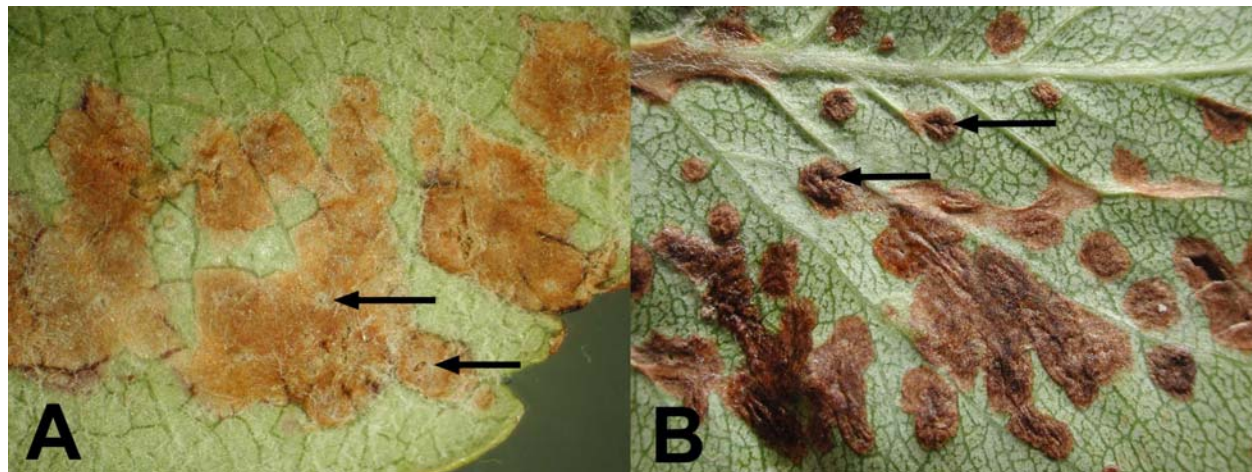
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Leaf blister mites are members of the eriophyid mite group, mites that are almost microscopic in size (less than 0.3 mm in length). They can cause problems on apple and pear in orchards or backyard trees that have not been treated effectively with typical pesticides available to control other apple & pear pests like codling moth and pear psylla. Most common cases are in trees that have not been sprayed with any dormant oil treatments or which have been abandoned / neglected to the point where shoot growth in the upper and center portion of the tree is so dense as to make it nearly impossible to get penetration of any spray applied into the interior of the tree. Blister mites can also go to hawthorn shrubs/trees and to other related plants (mountain ash, cotoneaster, quince, serviceberry, and snowberry).

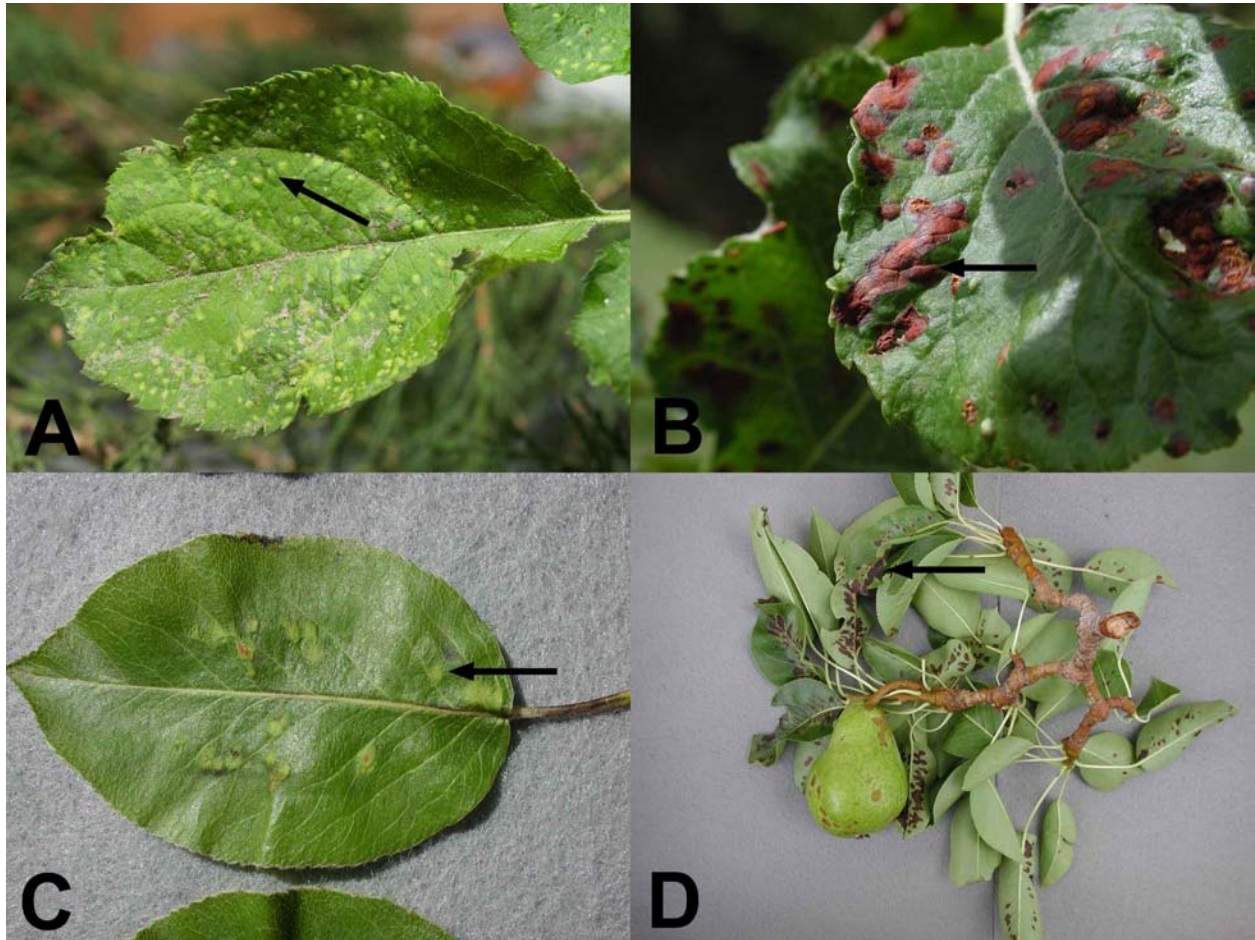
Blister mites can feed on both leaves and fruit. Symptoms on leaves consist of blisters on the surface of the apple or pear leaf (Fig. 1). If one looks carefully at the center of the blister, a small opening can be seen through which the mites move into and out of the “blister” to the leaf surface (Fig. 2). The blisters



**Fig. 1.** Leaf blister mite colonies (arrows) on leaves of apple (A), pear (B), and hawthorn (C). Colonies on the pear leaf are older than colonies on the apple and hawthorn leaves.



**Fig. 2.** Blisters on apple (A) and pear (B) leaf undersurface with entry openings at the center of the colony blisters (arrows).



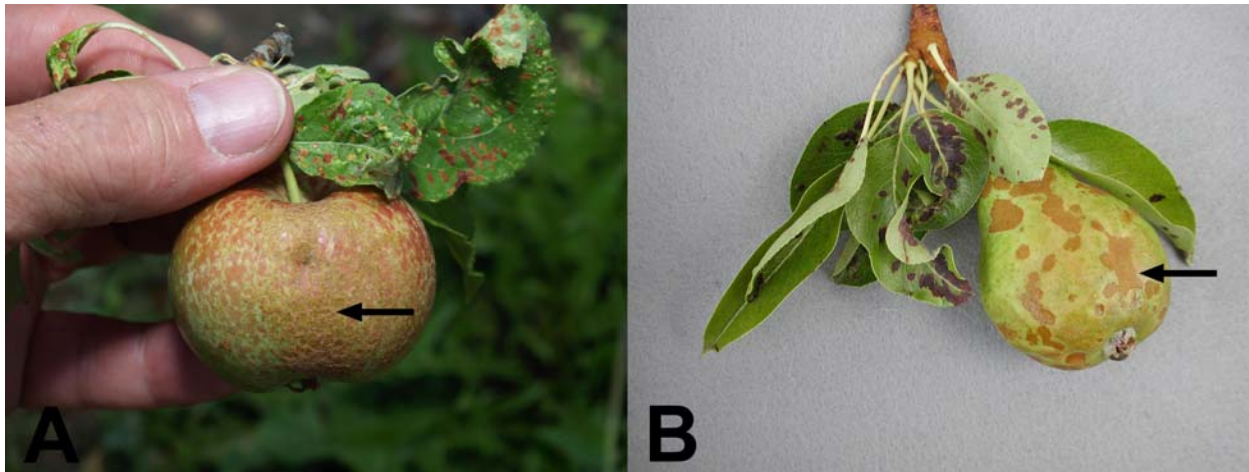
**Fig. 3.** Apple (A, B) and pear (C, D) leaves with young blisters (A & C, arrows) and old blisters (B & D, arrows).

begin with fairly small size, but expand over the following weeks. They initially have a paler-than-normal green leaf color, become increasingly more pale to yellowish with time, and eventually become brownish in color as the “blisters” age and the affected tissue dies (Fig. 3). Leaves in the interior and lower portion of the tree are more commonly those affected, especially in abandoned or neglected trees. Fruit damage consists of scarring of the fruit surface and occurs when populations are sufficiently high on spur leaves to feed on developing fruit buds before bloom (Fig. 4).

Both mites are extremely tiny (0.2 - 0.23 mm long) and cannot be seen without the aid of a good hand lens (10X to 20X) or a binocular microscope (20X to 35X magnification is needed for best viewing). They have a tapering, carrot shaped body which is cream white to light- to amber-yellow in color; and two pairs of very short legs that are found at the head end of the mite (Fig. 5).

Blister mites overwinter as mature females at the base of buds or under the outer bud scales. These overwintering females then penetrate deeper into the buds as the buds begin to swell in the spring and lay their eggs on the developing live tissues. Only 20 to 30 days are required to go from egg to mature adult during these spring months. The feeding of these females and the young causes blisters to form on the developing leaves. The leaf cells at the center of the blister die and pull apart to provide an opening into the blister which the first spring generation then enter and feed on the soft leaf tissue inside. Several

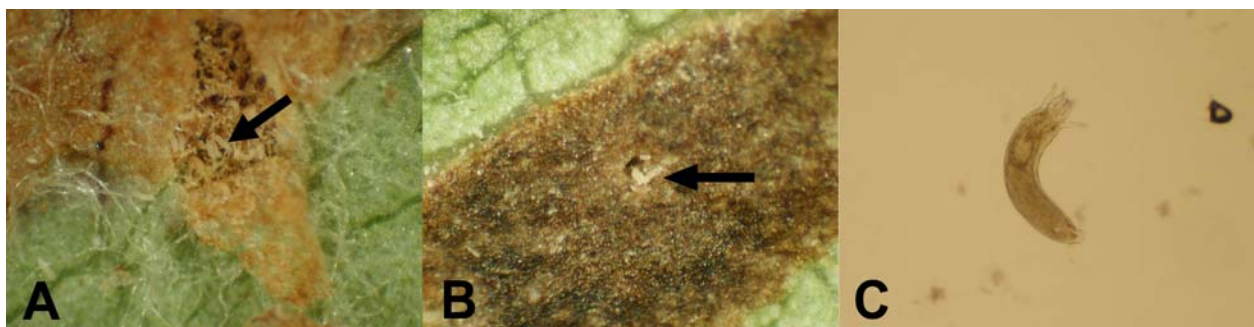




**Fig. 4.** Apple (A) and pear (B) fruit with fruit damage (scarring or russet, arrows) caused by leaf blister mite feeding on the skin surface of the young fruit structures before or at bloom.

generations develop within these blisters during the growing season, with the mites moving out of the blisters to create blisters and colonies on other nearby developing leaves; this is especially the case when populations are high, when the blisters become crowded, or when the leaves become heavily damaged. The method of spread between trees or orchards has not been definitively determined, but wind, birds, or insects are suspected.

Blister mites typically are not a problem in trees managed with a good integrated pest management program. Best timing for control sprays is following harvest when the females move to the base of the buds or begin to move to the buds themselves. Lime-sulfur & oil can work in this timing. Pre-bloom sprays can prevent damage that occurs just before and during bloom. Biological controls don't work well for blister mites; the predatory mite, *Typhlodromus occidentalis*, will feed on exposed mites, but cannot get into the blisters.



**Fig. 5.** Leaf blister mites: A) apple leaf blister mites (arrow) within leaf blister with covering leaf tissue pulled back. B) pear leaf blister mites (arrow) at colony blister opening. C) adult pear leaf blister mite (as seen through the microscope).