

## Insect damage assessment – a field guide

### Chewers (Ch) – Fig.1

Chewers are insects that can eat most of the leaf material (succulent tissues, veins, midrib). They include the defoliators that destroy the *entire leaf blade* (only tougher mid-vein remains) and those that eat *distinct portions of leaf* such as distinct notches or circular holes cut from leaf margin, or small randomly scattered holes.



Fig. 1: Leaf chewers: left entire leaf blade destroyed; right distinct portions eaten

### Leaf miners (Mi) – Fig.2

Insects that feed upon succulent tissues while tunneling. In broadleaves, leaf miners feed between the upper and lower leaf surfaces: If the leaf is held up to the light, one can see either insect or frass within the damaged area (discolored or swollen leaf tissue area).



Fig. 2: Example of mined leaf

### **Gall makers (Ga) – Fig.3**

Insects that induce formation of galls and feed on their tissues



Fig. 3: Example of galls

### **Skeletonisers (Sk) – Fig. 4**

Insects that devour all leaf tissues, except veins and midrib



Fig. 4: Examples of skeletonized leaves

## Leaf-rollers (Ro) – Fig. 5

*Leaf-rollers* = insects that hide and feed inside one leaf or the tip of a leaf that it has rolled-up into a cigar-shaped tube.

*Leaf-folders* = Insects that fold up one leaf to make a shelter for hiding or feeding.



Fig. 5: Examples of rolled leaf: (left) folded leaf; (right) leaf rolled

## Leaf tiers (Ti) – Fig. 6

Insects that ties two or more leaves or needles together with silk threads, forming a tube in which to hide and feed



Fig. 6: Example of leaf tiers



### Sap feeders (Sa) – Fig. 7

Insects that have specialized mouthparts for sucking the fluids from plants, thereby causing discolored spots, deformities or killing the affected plant sections.



Fig. 7: aphids (left) and damage of sap feeders on oak (right)

### Shoots moth (Sh) – Fig. 8

Insects that feed within buds and cause shoot deformation or decay



Fig. 8: Example of a larva eating a shoot.

## Stem/bark borers (Bo) – Fig. 9

**Stem borers:** Insects that bore into the bark and feed on cambium tissue.

**Bark borers:** Insects that bore into and feed on the bark.



Fig. 9: Example of bark boring