

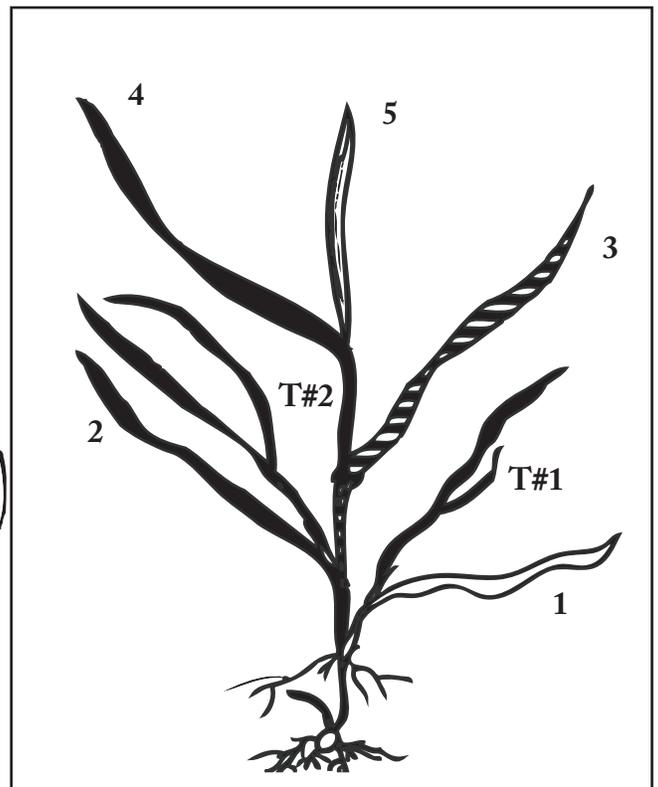
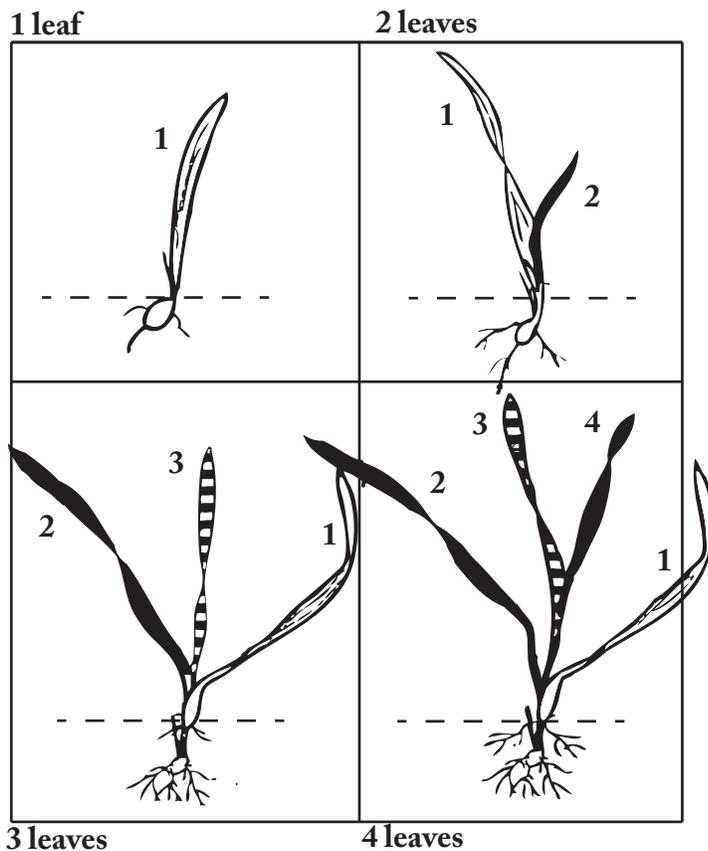
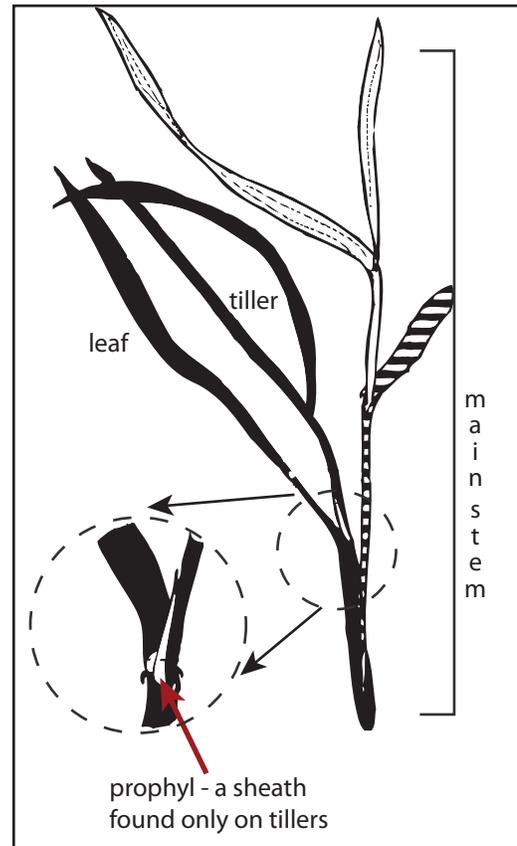
# How to Identify Crop and Weed Leaf Stages

Recognition of plant growth stages is essential for effective weed control. Many herbicides are safe on a crop only when applied at a specific growth stage. Similarly, weeds are controlled only when they are at certain growth stages. For most post-emergence products, growth stages are described by number of leaves.

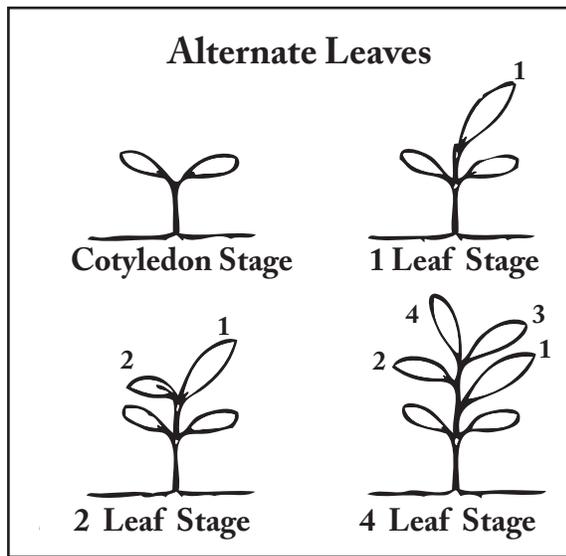
## Cereals and Annual Grass Weeds

Leaves are counted, starting at one for the first leaf, and progressing up the primary shoot. Tillers are important but not counted as leaves. A leaf should be counted as soon as it emerges, but may be labeled as early, mid or full leaf. The early leaf stage is when it begins to emerge, the full stage is just before the next leaf emerges. (Figure 2).

Tillers, or stools, are the secondary shoots of a grass plant. The first tiller emerges from the axil of the first leaf, the second just above the second leaf and so on. Tillers generally appear at the three to four leaf stage. Be sure to identify tillers, and count only leaves on the primary shoot. As well, do not remove any leaves from the main shoot when separating the tillers.

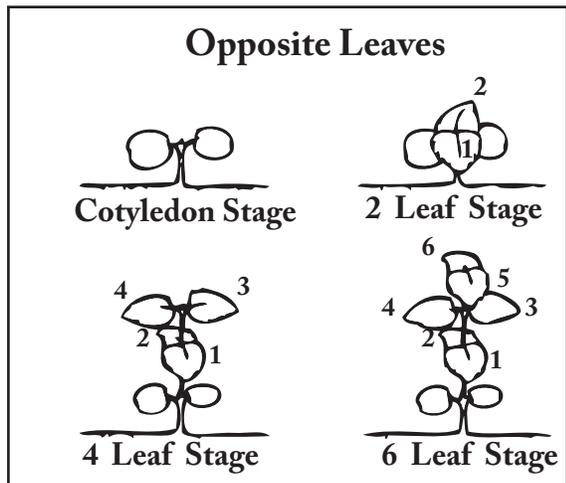


# Leaf Stages for Broadleaf Weeds

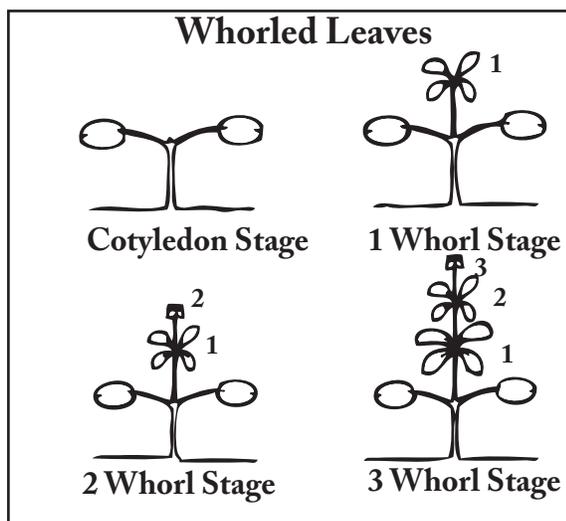


**Cotyledons** - These are the seed leaves which usually emerge above ground. On some plants, such as fababeans, lentils and peas, they stay below the soil surface. Cotyledons are not true leaves and are not counted when determining leaf number. They are a different shape than the true leaves and may dry up and disappear at an early stage.

**Alternate leaves** - Some plants have one leaf at each node on the stem. The next leaf emerges at the next higher node and extends away from the stem in the opposite direction. These plants (lamb's quarters and wild mustard are good examples) are said to have alternate leaves. To determine the leaf stage, simply count the numbers of leaves present (Figure 3).



**Opposite leaves** - Plants with two leaves at each node, one on each side of the stem, are said to have opposite leaves. The next pair of leaves on the next node are rotated about 45° so that they are not directly over the previous pair. Plants with opposite leaves have even-leaf numbers only. When counting, the leaf number progresses from cotyledons to 2 leaf, 4 leaf, etc. These plants generally appear shorter than plants with alternate leaves at a similar leaf stage. Be sure to count each pair as two leaves. Hemp nettle is a weed which has opposite leaves (Figure 3).



**Whorled leaves** - More complex plants like cleavers may have whorled leaves. These plants have three or more leaves at each node on the stem. The leaf number in each whorl may vary, so be sure to count each individual leaf unless label recommendation refers to the number of leaf whorls (Figure 3).