

### Background information:

A typical young seedling consists of three main parts: the radicle (embryonic root), the hypocotyl (embryonic shoot), and the cotyledons (seed leaves). In botany, the **radicle** is the first part of a seedling (a growing plant embryo) to emerge from the seed during the process of germination. The *radicle* is the embryonic root of the plant, and grows downward in the soil (the shoot emerges from the plumule). If the radicle begins to decay, the seedling undergoes reemergence damping-off. This disease appears on the radicle as darkened spots. Eventually, it causes death of the seedling. After emergence of the radicle, the hypocotyl emerges and lifts the growing tip (usually including the seed coat) above the ground, bearing the embryonic leaves (called cotyledons) and the plumule that gives rise to the first true leaves. The hypocotyl is the primary organ of extension of the young plant and develops into the stem. The cotyledons open upon contact with light (splitting the seed coat open, if still present) and become green, forming the first photosynthetic organs of the young plant. Until this stage, the seedling lives off the energy reserves stored in the seed. The opening of the cotyledons exposes the shoot apical meristem and the *plumule* consisting of the first *true leaves* of the young plant.

Monocot

Dicot



### Journal entries concerning seedlings:

Leaves(cotyledons), roots (radicals), stems (hypocotyl) discoveries