Students will match three plant stimuli—(1) light, (2) temperature, and (3) both light and temperature—with the responses they produce in plants.

Write the following plant responses on cards, and have your students match each one with the correct stimulus or stimuli, provided here.

- Leaf fall—Light (shortening days)
- Facing the sun—Light (phototropism response to blue rays)
- Color formation on fruit—Light (UV rays and red rays)
- Carbohydrate production—Both (light for photosynthesis and temperature)
- Bud dormancy—Temperature (cold temperatures satisfy rest period)
- Plant growth rate—Both (too cold no growth, not enough light spindly growth)
- Plant dormancy—Both (shortening days, cold temperatures)
- Seed stalk formation—Both (biennials flower if cool temperatures occur after planting, long day-length response)
- Flowering—Both (cold temperature to satisfy rest or vernalize and light for a day length response)
- Seed germination—Both (correct temperature needed, some seeds need light)
- Bulb formation—Light (long-day response, latitude sensitive)
- Plant desiccation—Both (sunlight heats side of plant, temperature freezes the ground so soil can’t provide water lost by aboveground plant parts)
- Plant dead in spring—Temperature (excessive mid-winter cold or warm weather followed by intense cold)
- Severity of plant pests—Temperature (warmer temperatures make pests reproduce faster, mild winters pass with no winterkill of pests)
- Respiration rate—Temperature (respiration rate rises with temperature)
- Flowers/buds frozen—Temperature (spring frost, deep winter freeze)
- Bark splitting—Both (low nighttime temperatures freeze bark, sunlight heats bark during the day)
- Photosynthesis—Both (rate rises with temperature up to a certain point, violet blue and orange red rays of light are required)
- Plant pushed out of ground in winter—Temperature (alternate freezing and thawing “heaves” the plant)
- Leaves crisp/damaged—Both (spring frost, heat effects, sunburn)
- Variety selection—Both (temperature and hardiness, summer heat tolerance, spring frost avoidance or tolerance, light shade adaptation, day lengths required)
- Vegetable maturity rate—Both (related to heat units and more photosynthesis on longer days)