

Environmental factors that affect plant growth and health include Light [February newsletter], Temperature [this newsletter], Moisture [April], and Nutrition [May].

Like our own bodies, plant processes slow in cold weather and speed up in warmth. Plants in their correct temperate zone, tolerate the coolest temperatures during dormancy. This may be well below freezing. Seedlings tolerate the warmest temperatures [60-80 degrees] while mature plants grow best in moderate temperatures.

When temperatures exceed the specie preference, the plant becomes stressed. One response to high temperatures for cool season crops like lettuce, spinach, and mustard is to bolt. Undesirable flowers rather than leaves develop and the plant acquires a bitter taste.

Temperatures too cool for warm season crops like basil, tomatoes, and cilantro respond by failing to set fruit; they become stunted and demonstrate poor overall health. This creates stress on the plant that can persist even after preferred conditions are met. One early spring that endowed us with sunny, warm temperatures but persistently cold nights, I planted 8 basils. They showed no growth; they were scrawny, they lost foliage. For 5 weeks they waited patiently for me to intervene. After the day and night temperatures improved, they slowly responded but it took them longer to become sturdy and flavorful than if I had just planted them at the correct time and temperature.

By altering temperature and light conditions, we can manipulate bloom time. Chrysanthemums bloom longest when daytime temperature is maintained at 59 degrees. If you have a Christmas cactus, you probably noticed that it flowered under decreased daylight and cooler temperature conditions. My Easter cactus flowers with more light and warmer temperatures as in the spring. Spring blooming bulbs are planted in the fall under lessening temperatures as the season progresses through winter. This seemingly dormant period allows for bulb maturation. As soil temperature increases in the spring, the bulbs are stimulated to grow.

This past winter [if you can call it that!], daffodils grew to 4", onions to 5", and iris to 6" in early February.

Trees came out of dormancy and the sap is flowing. However, if a cold snap arrives, the shorter plant material will die back partially or in full. Unfortunately,

trees cannot return to dormancy now. The volume of sap will decrease, bud set could be disappointingly



low, and fruit production severely compromised. When day and night temperatures vary by 10-15 degrees, plant photosynthesis and respiration occur at optimal rates. High temperatures increase the respiratory rate of plants. They sweat to cool their leaves just like people and pets do. But when the respiratory rate significantly exceeds food production, the plant becomes stressed and stunted. For plant growth and health then, photosynthesis must exceed respiration. We accomplish this by planting the specimen in the correct amount of light and temperature; sometimes this requires us to shade a plant during the hottest part of the day, provide extra water to re-hydrate the plant, and utilize a wind break that can slow respiration.

[Think of a few years ago when rhododendron died at an exceptional rate. The sun was very bright that winter, causing the pores or stomata on the leaves to open to release water vapor to cool the shrub. Since the ground was frozen, roots could not replace the water lost. The shrubs became dehydrated and died. In this case, respiration far exceeded hydration and photosynthesis.]