Managing Drought in Louisiana Horticulture Crops

Fruit Production

The perennial nature of fruit production guarantees that an orchard is going to experience drought stress at some point. This same perennial nature means that drought stress experienced in one season can cause enduring effects that linger into the next production cycle. The most common form of drought stress experienced in Louisiana tends to be seasonal dry spells in July, August and September in northern and central regions of the state. This combined with the elevated temperatures during those periods can create stressful conditions that need to be ameliorated in some form.

Low-growing fruit, annual or perennial

The most common fruit in this category grown regularly in Louisiana is strawberries. When strawberries are grown commercially in south Louisiana, they rarely experience drought conditions during their normal annual production cycle. Those that stretch out the season longer for you-pick operations or grow them as a perennial are more likely to experience hot and dry conditions at some point.

Use these tips for minimizing stress in your late or perennial plantings:

- If plants are in movable containers, one of the best things you can do is move them into the shade in June or July and move them back into full sun conditions in late September or early October when the temperatures cool down. If your planting is in the ground, it may be worthwhile to invest in shade cloth for sun protection. Check the cloth regularly to ensure that it has good airflow underneath and is not trapping heat.
- When watering, aim to get the soil moist and avoid getting leaves wet in most cases. Moisture on the leaves can encourage pathogens that reduce productivity and can cause defoliation. One exception to this generalization is if the plants have missed watering or if other stressful conditions cause a drastic wilting. In those situations, moisture on the leaves can help recovery.
- Make sure that you are maintaining soil saturation, Strawberries are very sensitive to drought and heat conditions and can desiccate and die quickly in high temperatures in full sun. Plants grown in containers may need to be watered once or twice a day during the hottest and driest times of year. When possible, install automatic irrigation to ensure adequate soil moisture and adjust the irrigation rates seasonally. While you normally want substrate to dry out between waterings in ideal conditions, you will want the substrate to stay moist during stressful conditions.
- Know that in perfect conditions you will often lose 10% to 40% of your perennial strawberries every year due to the natural life cycle of the plant. Those can be replaced easily by the remaining plants that produce runners. In stressful years you may lose more or all of your plants and need to get a fresh start.
- Cease fertilization during hot and dry conditions to avoid pushing more growth and fruit that the plant will need to maintain.

Intermediate perennial fruit

Brambles (blackberries and raspberries), vines (muscadines and bunch grapes) and shrubby plant material (figs and mayhaws) fall into this category. Newly planted and young trees should also be treated the same until they reach a larger size.

- For ideal commercial production, investment in irrigation systems to ensure optimum production is highly recommended. Homeowners should at least have an irrigation plan for getting water to plants when critical conditions occur (two weeks without rain).
- In normal growing conditions, infrequent and deep irrigation is recommended to encourage root growth and reduce disease pressure. During hot and dry

conditions, plants use much more water for evaporative cooling and transpiration so a modification to irrigation patterns is beneficial. Ensure soil moisture remains constant and that roots have liberal access to water for best plant health. When growing conditions improve, go back to infrequent and deep watering to promote root growth and reduce disease pressure.

- For those without irrigation systems but within reach of hose outlets, consider letting a hose run at a slow trickle under the plants for long durations. Ideal placement would be halfway between the plant base and dripline to ensure slow spread in both directions.
- Regular pruning ensures that water is used more effectively and efficiently. This should be done during the appropriate time of year, usually at the end of dormancy for most commodities and production systems. Pruning later in the season during hot or dry conditions can create more stress than it relieves so it is not generally recommended.
- Cease fertilization during hot and dry conditions to avoid pushing more growth and fruit that the plant will need to maintain. Also avoid fertilization too soon after growing conditions improve as it can take a while for plants to normalize afterwards.
- Mulching is a critical component to ensure that soil moisture is retained longer and that soil temperatures are moderated. The reduction of soil temperature can play a large role in reducing plant water use and stress. A thick layer of mulch also ensures less water is lost through wicking at the soil surface or weed competition when compared to bare ground or turf growing systems.
- Fruit quality and quantity will be one of the first things a plant will consider sacrificing to stay alive. This is especially prominent in figs where drought stress can prevent fruit ripening or cause a mass fruit drop. Prolonged stress can potentially reduce the vigor of the plant or next year's crop.

Larger perennial fruit trees

Mature fruit and nut trees are included in this category. The daily water requirements vary greatly between tree type and maturity. Mature and large pecan trees may need up to 350 gallons of water per day for optimum production, but most trees will need much less than this.

- For ideal commercial production, investment in irrigation systems to ensure optimum production is highly recommended. Homeowners should at least have an irrigation plan for getting water to plants when critical conditions occur (two weeks without rain). Three weeks without water and elevated temperatures can lead to a decline in tree health and lingering damage.
- In normal growing conditions, infrequent and deep irrigation is recommended to encourage root growth and reduce disease pressure. During hot and dry conditions, trees use much more water for evaporative cooling and transpiration, but it is nearly impossible to completely saturate soils in orchard situations with large trees. You may have to enter a holding pattern where you are providing just enough water but not getting up to optimum levels based on your water source and conditions.
- Some water is better than none. Even though you may not be able to provide all the water a tree would like, supplemental irrigation can be good enough to prevent total crop loss or tree decline. For those without irrigation systems but within reach of hose outlets, consider letting a hose run at a slow trickle under the tree canopy for long durations. Ideal placement would be halfway between the trunk and dripline to ensure it slowly spreads in both directions.
- Fruit quality and quantity will be one of the first things a plant will consider sacrificing to stay alive. In pecans this is expressed by nut drop and an increase in wafer-like kernels.

- Multiple years of drought stress can contribute to tree decline and limb dieback. Watch trees carefully and ensure they do not become a risk to people or structures. If the limbs are not a threat, wait until temperatures are moderate and rainfall increases before considering pruning. Pruning too quickly causes tree stress and may mean it will need to be done twice as some dieback may occur even after conditions improve.
- Under prolonged heat and drought stress, fruiting trees may attempt to enter dormancy early or begin to shed leaves for survival. If you observe this, the tree will likely start the next season at a disadvantage and need special care to avoid long-term tree decline.

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