

NORTH TEXAS

Winter across North Texas was wet and generally mild. The first killing frost occurred earlier than normal but only a handful of days below 32°F were observed following that event. Vines appeared to harden off well and minimal winter injury was reported.

Budbreak occurred slightly early for most locations but very uniformly across the region. Spring frost incidence was low this season, although a few more northern vineyards reported mild injury. Ample rainfall before and during budbreak encouraged highly uniform and vigorous vine growth. Disease pressure was elevated at this time. Anthracnose and phomopsis were present. Temperatures were normal to slightly above normal.

Spring was extremely wet, windy, and mild. Some growers, on poorly draining sites, tested positive for phytophthora root rot. Downy mildew and black rot pressure were at extremely high levels. Vegetative growth of vines was enhanced. Growers had to focus more on canopy management than previous seasons. Green stink bug populations were noticeably high at this time. Many egg masses were found on vines.

Bloom occurred slightly early to on average across most vineyard sites. Rain and wind during this time were a challenge. Vines put out expected number of clusters.

Fruit-set was slightly lower at most vineyard sites. This can be attributed to many cloudy days, excessive rain, and non-stop wind during this time. Some cultivars were unaffected due to differences in bloom and set phenology. Hens and chick clusters as well as bunch stem necrosis were observed at many sites. Disease pressure, primarily downy mildew, was extremely elevated. Vineyards near Stephenville reported isolated hail events, which damaged some clusters post fruit-set.

Summer was wet and mild up until the end of June when rain ceased, and temperatures soared. Vines continued to grow vigorously. Vines grown in poorly draining sites struggled due to excessive rain. Green stink bug, sharpshooter, leafhopper, and grape berry moth populations were average to high. Because of ample rainfall, nitrogen was leached from the soils and deficiency symptoms were noted. Magnesium and potassium deficiencies were exacerbated on many sites compared to previous growing seasons. Reports of phenoxy-herbicide injury were heightened during this time.

Veraison occurred slightly early for most vineyards but was uniform. Rain ceased at this time and high temperatures typical at this stage were noted. Ripening was hastened for most varieties. Drought stress became a serious issue possibly due to insufficient supplemental irrigation, poor acclimation of vines to the sudden increase in heat stress due to a mild and wet spring and increase in fungal disease incidence. Some varieties in a few vineyards, such as Cabernet-Sauvignon and Tempranillo, had Brix levels stall out in mid-summer. Vine stressors, such as drought, poor acclimation to high temperatures, and canopy defoliation due to downy mildew were likely to blame. Other vineyards reported excellent Brix

accumulation. All vineyards reported good to excellent color development in reds and flavor/aroma in whites and reds.

Harvest occurred slightly early for most vineyards. For growers who kept a tight and dynamic disease management program, the canopy and fruit remained beautifully clean. Because of the reduction in fruit-set due to weather conditions at bloom, yields were slightly down but fruit quality was very high. Color concentration was particularly high in red varieties across the region.

The 2019 growing season could be named the year of extremes for North Texas. It was the wettest growing season on record, with some locations receiving up to 60" of precipitation. Because of this, vines grew vigorously and uniformly. The downside is that nitrogen was heavily leached, poorly draining sites remained water-logged for extended periods of time, and insect and disease pressures were very high. This was the year for downy mildew in North Texas. Once July arrived, the rain stopped and temperatures soared abruptly, causing vines to express drought and heat stress. High winds were also very common especially around bloom. Yields were slightly down but fruit quality was excellent. Growers will need to pay particular attention to post-harvest vine care to ensure a productive season in 2020.

GULF COAST

Gulf Coast winegrowers are spread over more than 80 Coastal, East, and South Texas counties. These vineyards are united by their plantings of predominately Pierce's Disease tolerant winegrape varieties. Most growers lie within the Rio Grande Valley, Brazos Valley, Coastal Bend, with vineyards scattered throughout the Houston-Galveston and Sam Houston NF areas.

Winter 2018-2019 was generally wet. Rains became steady in October and continued through **dormancy** delaying pruning.

Budbreak began in February in the Rio Grande Valley, ending in early April in the Eastern Hills and Piney Woods vineyards where a mid-April freeze injured primary bud growth in early budding varieties. Once buds burst, continual rains and mild temperatures encouraged vigorous canopies of large leaves.

Spring rain continued, limiting tractor access into many vineyards trying to apply fungicide sprays. Humid, moderate weather and large canopies provided perfect conditions for downy mildew. Good disease management was impeded throughout the spring.

Bloom in Blanc Du Bois stretched over 10-14 days of light rain, wind, and cloudy skies. Consequently, **fruit-set** was poor in Blanc Du Bois resulting in many incomplete clusters. For Lenoir and later blooming varieties, weather conditions during bloom were drier with less wind. The flowers of the later varieties set full clusters. Downy mildew began showing in many vineyards, along with some black rot and anthracnose.

Between **fruit-Set** and **veraison**, the weather shifted quickly into drought throughout the region. Grape berry moth was prevalent, damaging more clusters than in years with drier winters and springs.

Veraison developed slowly as did ripening. Multiple varieties were hit by particularly persistent downy mildew. Indications of possible summer bunch rot began to show up in a number of varieties, chiefly the thin-skinned Blanc Du Bois. Monitoring maturity was challenged by uneven ripening, causing vineyard managers to question Brix and pH measurements for monitoring berry ripeness. Likewise, yields were

difficult to precisely estimate in the Blanc Du Bois vines with clusters either incomplete or affected by summer bunch rot.

Harvest for all varieties throughout the Gulf Coast occurred during hot, dry days. Lenoir grapes were largely unfazed by weather and large canopies, though there were some Lenoir blocks with summer bunch rots. The incomplete clusters and bunch rots in Blanc Du Bois complicated picking and prolonged picking labor hours, despite reduced yields. As is typical, most vineyards decreased irrigation before harvest in order to promote fruit ripening, ushering in signs of heat stress.

Post-harvest, many vineyards showed signs of heat/drought stress, and with some vine collapse. In 2019, early waterlogging left root systems in oxygen poor saturated soils. Vines with full canopies and small root systems were quickly exposed to heat and drought while expending energy to ripen fruit. Vines showing signs of heat and drought stress prematurely dropped leaves. In addition, downy mildew persistently infected new leaves.

Three incidents of herbicide injury were reported to extension. All showed symptoms of injury due to 2, 4-D.

HILL COUNTRY

Last **winter** was fairly mild for growers in the Hill Country region, with the exception of two hard freezes which book-ended it. The coldest days, where the temperature dropped as low as 16°F, occurred in mid-November and mid-March. With temperatures in the 60's and 70's before and after these days, a substantial amount of winter injury and frost damage were noticed, as well as fairly early **budbreak**. Hill country growers were long-pruning in January, which isn't entirely unheard of, but the tight pruning that followed was done before the hard freeze in March for several vineyards along the Highway 290 corridor. Luckily, enough shoots survived, and by April, the season was on the right track.

Bloom occurred within a normal time-frame this year. However, with near constant rain and strong prevailing winds throughout bloom, **fruit-set** was lower than expected. As the summer months progressed, these climatic conditions continued yielding highly vigorous vegetative growth on sites which had the capacity for it. In addition, growers noted a substantial number of shot berries, regardless of grape varieties. Highly vigorous canopies also meant higher disease pressure this year. The major concerns for the Hill Country were black rot, downy mildew, and trunk diseases, which are regularly an issue. In addition, Botrytis at bloom was noticed and, though not an economically important disease, Septoria leaf blotch much earlier in the season than is typical. Insect population levels were also incredibly high, yielding higher pressure for Pierce's Disease, as well as physical injury to vines.

By mid-June, the rains subsided, and temperatures rose to around 100°F for the first time in the season. This is in stark contrast to last season where vineyards were under drought conditions and faced extreme heat from May onward. Around the same time, first signs of **veraison** were seen in some varieties. Hot, mostly dry climatic conditions continued throughout July and August, and **harvest** of certain varieties began in late July, about 10-14 days later than the previous season. Berry quality was good where disease pressure had been managed appropriately. The good quality fruit is also in part due to climatic conditions, specifically the reduced amount of extreme heat until the end of the season. Rather than picking grapes based on pH, growers were able to allow clusters to hang on the vine and develop sugars and mature for longer than normal.

Overall, the major struggle Hill Country growers faced was keeping up a well-timed IPM program. Some weeks, particularly in heavy clay sites, there was too much moisture to get machinery through the vineyard, and the number of applications aimed for in any given year was exceeded well before harvest. At the same time, with shot berries and poor fruit-set, yields were lower than the vines are capable of producing. While all of the factors may suggest that it was a bad year for Hill Country grapes, this isn't necessarily the case. It was decidedly a tough year, but the berries that did mature were of good quality and the vines are going into dormancy with substantial carbohydrate stores and ready to weather the winter months.

TEXAS HIGH PLAINS & WEST TEXAS

Winter across the Texas High Plains and West Texas regions was dry and generally mild. These warmer than normal winter temperatures led to an overall reduction in the amount of winter injury when compared to the previous year. Little to no rainfall in January and February led to dry conditions as temperatures began to increase slightly into the early spring.

Budbreak occurred in March slightly earlier than normal for most locations across both regions. Incidence of spring frost were lower this year than the previous, but some light frost damage was reported by some more northern vineyard sites. The increase in air temperature and amount of sunlight present on the soil raised soil temperatures which led to a uniform overall budbreak. Increased rainfall from previous month provided adequate moisture for budbreak and early shoot growth.

Spring this year was characterized by high rainfall, and high winds. The increase in moisture provided by the high rainfall coupled with moderate overall temperatures lead to an explosion of canopy growth on highly vigorous sites. Higher stinkbug populations were seen early as a result of the wet conditions but caused relatively little damage. Although high rainfalls were common from budbreak until after fruit-set, disease pressure was kept low by high wind speeds effectively drying out the canopy. All these conditions lead to high amounts of vine vigor, which contributed to higher overall yields. High rates of phenoxy-herbicide damage in late spring to early summer were noticed at multiple vineyard sites across the Texas High Plains region.

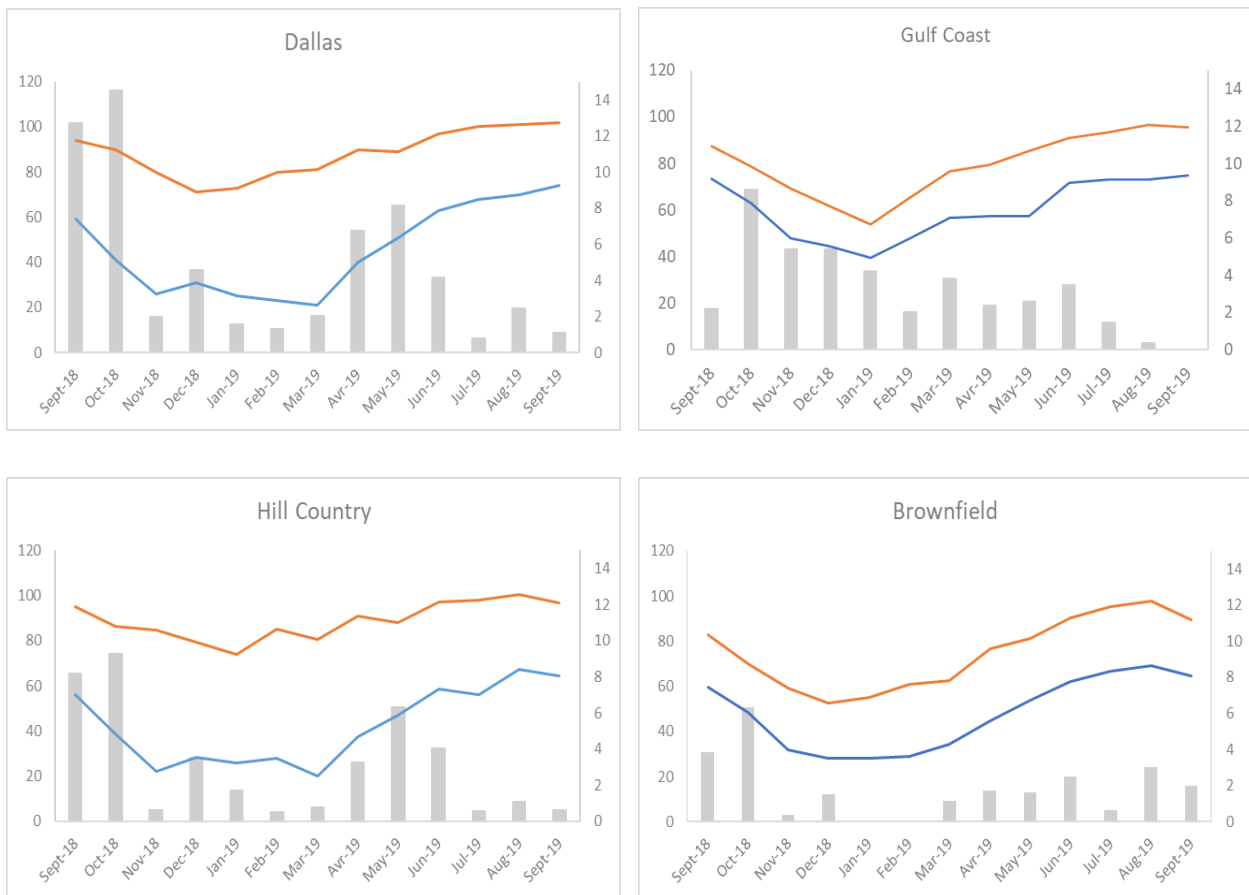
Bloom ranged from slightly early to average across both regions. Rainfall, high winds, hailstorms, along with warmer temperatures occurred during the 7-14-day along bloom period. All had an overall negative effect on fruit-set that lead to loose clusters and an increase in the percentage of shot berries.

Fruit-set percentages were lower due to adverse weather conditions that occurred during bloom. Some varieties were unaffected due to location and extremely large canopies that protected flowers and early clusters from weather damage. High incidents of hail damage on clusters prior to veraison were also seen in vineyards without hail netting.

Summer was wet and mild until the end of June and into July when rainfall ceased, and temperatures soared. Large canopies and heavy crop loads caused some incidence of water stress to vines during the latter part of the summer as temperatures increases. Water stress caused by the combination of canopy size, crop load, and sudden hot dry conditions slowed the overall ripening process. Incidents of insect and disease pressure remained low. High rates of phenoxy-herbicide damage were also documented during this period.

Veraison occurred in July around the normal timeframe for both regions and was mostly uniform. Some canopies with extremely heavy crop loads were delayed slightly. Ripening was hastened initially due to drought stress conditions experienced in July and vines displayed water stress symptoms during the heat even under irrigated conditions. Sugar accumulation was delayed on some varieties due to rainfall that occurred in August.

Harvest began right on schedule with early ripening varieties that even with all of the challenges this year presented decent quality. Initial reports of quality and tonnage were extremely favorable. However, sporadic rainfall has caused Brix levels to stall out in mid to late summer for late ripening varieties. This has caused the harvest season to be extended into late October. Initial quality reports have not been gathered on late ripening varieties due to delay in harvest.



Weather data for 2019 season.

Orange lines, Average maximum temperatures; Blue lines, Average minimum temperatures; Grey bars, Precipitation.