UC Landscape Plant Irrigation Trials™
2018-2020 Trial Results

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Executive Summary

During the 2018-2020 UC Landscape Plant Irrigation Trials™ (UCLPIT) 26 taxa were evaluated in the trial fields located at UC Davis and South Coast REC in Irvine CA. Plants were installed in Fall 2018 or Spring 2020 and irrigated regularly over their first summer to establish the plants. Researchers imposed deficit treatments corresponding to the Water Use Classification of Landscape Species' (WUCOLS) high, moderate, and low categories of water need from April 2020 to October 2020.

While we were able to continue the irrigation treatments and data collection in 2020, unfortunately due to COVID-19 we had to cancel the Open House events. We did send out a limited survey in mid-summer to previous participants. Participants rated one representative plant of each taxa and were also surveyed about their favorite plant, which plants they would utilize professionally, and 90 responded.

Based on the data collected UCLPIT is awarding a Blue Ribbon, our highest distinction reserved for plants that maintain mean overall appearance scores of 4 (very good) or higher on the low irrigation treatment to:

UC Davis Blue Ribbon Winners (WUCOLS Region 2)

- *Buddleia* x 'SMNBDBT' Pugster Blue™
- *Hypericum kalmianum* 'Deppe' Sunny Boulevard®
- *Lippia* 'ECOLOPIA2' Pink Kurapia®
- *Lomandra longifolia* 'Katrinus Deluxe'
- ×*Pyracomeles* 'NCXP1' Juke Box®
- *Rhagodia spinescens* 'SAB01' Aussie Flat Bush™
- *Rosa* 'NOA168098F' Flower Carpet® Pink Supreme

Results Summary

Table 1. Mean of overall appearance ratings on each treatment percentage of ETo on a 1-5 scale where 1 is lowest, 5 is highest. Suggested irrigation recommendation indicates the minimum irrigation level where aesthetics and growth were not compromised.

	UC Davis				South Coast REC			
	Average Overall Appearance rating (by ETo% treatment)			Rec. Rate	Average Overall Appearance rating (by ETo% treatment)			Rec. Rate
Plants in Full Sun Field	80	50	20	ETo%	80	50	20	ETo%
Buddleia x 'SMNBDBT' Pugster Blue™	4.3	4.3	4.1	20	3.7	3.6	3.6	20
Cotinus coggygria 'NCCO1' Winecraft Black®	3.2	3.4	3.3	20	3.1	3.1	3.1	20
Eremophila glabra 'EREM1' Grey Horizon™	3.1	3.2	3	20	3.6	3.6	3.5	20
Hamelia patens Sierra Red™	3.8	3.8	3.6	50	3.3	2.9	3.1	20
Hesperaloe parviflora 'MSWNPERED' Sandia Glow®	3.7	4	3.7	20	3.3	3.3	3.3	20
Hypericum kalmianum 'Deppe' Sunny Boulevard®	4.1	4	4	20	1.9	1.7	1.8	NR
Laurus nobilis 'MonRik' Little Ragu®	2.3	2.3	2.4	20	3.4	3.3	3.2	20
Lippia 'ECOLOPIA2' Pink Kurapia®	3.5	4.3	4.5	20	-	-	-	-
×*Pyracomeles* 'NCXP1' Juke Box®	4	4.1	4	20	3.3	3.3	3.3	20
Rhagodia spinescens 'SAB01' Aussie Flat Bush™	4	4	4	20	3.6	3.6	3.7	20
Rhaphiolepis indica 'Parhap' Oriental Pearl	4	3.8	3.8	20	3.6	3.5	3.5	20
Rhaphiolepis indica 'sPg-3-003' Redbird™	2.9	2.9	2.7	20	2.6	3	2.9	20
Rosa 'Baillim' Chi™	3.9	4	3.9	20	3.3	3.5	3.3	20
Rosa 'KORfizzlem' Lemon Fizz Kolorscape®	3.6	3.7	3.6	20	3.2	3.1	2.9	50
Rosa 'Meiggili' Peach Drift®	3.9	3.7	3.8	20	3	2.8	3	NR
Rosa 'Meimirrote' Apricot Drift®	4	3.9	3.9	20	3.5	3.4	3.5	20
Rosa 'NOA168098F' Flower Carpet® Pink Supreme	3.8	4.1	4	20	3.4	3.6	3.4	50
Rosa 'Radral' Coral Knock Out®	2.8	2.9	2.7	NR	2.3	2.2	2.2	NR
Ruschia lineolata 'Nana'	3.6	3.9	3.4	20	3.3	3.4	3.2	20
Tecomaria capensis Riot Red®	3.2	3.1	3.2	20	3.7	3.6	3.8	20
Vitex agnus-castus 'Bailtextwo' Galactic Pink®	3.8	3.9	3.6	20	3.5	3.5	3.1	50

Plants in 50% Shade Field	UC Davis Mean Overall Appearance rating (by treatment Eto%) 80	50	20	Rec. rate ETo%	South Coast REC Mean Overall Appearance rating (by treatment Eto%) 80	50	20	Rec. rate ETo%
Hydrangea paniculata 'LeeP1' White Wedding®	3.6	3.3	2.9	50	-	-	-	-
Hydrangea quercifolia 'BIV01' *Tara®*	3.6	3.1	3.4	20	2.7	2.8	2.9	20
Ilex crenata 'Farrowone' Sky Box®	-	-	-	NR	2	1.4	1.4	NR
Lomandra longifolia 'Katrinus Deluxe'	4.6	4.3	4.3	20	2.7	2.7	2.5	20
Rhododendron 'Robleza' Autumn Bonfire™	-	-	-	-	2.2	2.2	1.3	NR

Methods

Twenty-four plants of each taxa evaluated (Table 1) were placed 2 meters apart in rows 2 meters apart at each trial site. Plants were installed in fall 2018 and spring 2019, with bare-root roses planted in January or February 2019. In spring 2019 researchers replaced any plants that had perished after the initial planting, stock permitting. Rows were 1 meter wide and covered with 5-7 cm. (2-3”) of chipped bark mulch. Rows were separated with a 1-meter-wide dirt path. Plants were placed according to a randomized complete block layout with two blocks (north and south) in the full sun field and with one block in the 50% shade field. The UC Davis trial field consists of Yolo Clay Loam soil and has the capability to evaluate plants in full sun or 50% shade conditions. The trial field in Irvine is located at the UCANR South Coast Research and Extension Center (South Coast REC), the field consists of San Emigdio fine sandy loam, is irrigated with reclaimed irrigation water, and has the capability to evaluate plants in full sun conditions. Selected species were evaluated at both sites, plants requiring partial shade conditions were only evaluated at UC Davis. From fall 2018 to April 2020 researchers irrigated the plants regularly to fully establish the plants. Irrigation was halted during the winter as researchers expect the plants to survive our mild, wet winters without irrigation.

From April 2020 to October 2020 researchers implemented deficit irrigation treatments at both sites. Plant material was irrigated according to a weather-based irrigation protocol with daily ETo information for each site retrieved from the California Irrigation Management Information System (CIMIS). Irrigation occurred when 50% of plant available water (PAW) was removed to align with common landscape irrigation practices. Researchers imposed three treatments 80%, 50%, and 20% of ETo to correspond with the High, Moderate, and Low categories of water need listed in the Water Use Classification of Landscape Species (WUCOLS). At each irrigation researchers applied an amount of water equal to 50% of PAW for each site, all treatments received the same amount of water at each irrigation. Researchers vary the frequency of irrigations for each treatment, over the deficit season the highest treatment is irrigated more frequently than the lowest treatment. The hypothesis is that plants using water

at a lower rate than the reference plant will take longer to use up the plant available water in the soil, or if all available water is used, they can withstand drought conditions until water is provided again. This is achieved by modifying the daily reference evapotranspiration (ETo) by the percentage associated with each treatment the way a crop or landscape coefficient is used.

Table 2. Site conditions at UC Davis and South Coast REC during the deficit season in 2019. All data obtained from CIMIS, *https://cimis.water.ca.gov/WSNReportCriteria.aspx*.

	Parameter	*Apr*	*May*	*June*	*July*	*Aug*	*Sept*	*Oct*
UC Davis	Total ETo	5.38	7.37	8.49	8.4	6.97	5.56	4.9
	Total Precipitation	1.19	0.3	0.08	0	0	0	0
South Coast REC	Total ETo	4.47	6.59	5.93	7.23	7.19	5.45	4.38
	Total Precipitation	5.36	0.49	0.2	0.15	0.39	0.34	0.06

Table 3. Irrigation in full sun field at UC Davis.

Irrigation % of ETo	Count of Irrigations	Mean Interval (days)	Date (Deficit Period: 4/6-10/12/20)	Total water applied (in.)
80	18	10	4/21, 5/1, 5/10, 5/23, 6/1, 6/10, 6/19, 6/27, 7/5, 7/13, 7/22, 7/30, 8/9, 8/18, 8/29, 9/10, 9/25, 10/8	27.9
50	11	16	4/27, 5/13, 5/31, 6/15, 6/28, 7/11, 7/25, 8/8, 8/25, 9/13, 10/4	16.8
20	4	40	5/26, 7/2, 8/7, 9/22	5.6

Table 4. Irrigation in 50% shade field at UC Davis.

Irrigation % of ETo	Count of Irrigations	Mean Interval (days)	Date (Deficit Period: 4/6-10/12/20)	Total water applied (in.)
80	7	22	5/4, 5/28, 6/19, 7/6, 7/25, 8/13, 9/8, 10/8	9.6
50	4	36	5/17, 6/24, 7/24, 8/27, 10/8	7.6
20	1	-	7/17	1.9

Table 5. Irrigation in the full sun field at South Coast REC. Total Water Applied includes the 20% leaching fraction applied to prevent salt buildup.

Irrigation % of ETo	Count of Irrigations	Mean Interval (days)	Date	Total water applied (in.)
80	18	9	4/24, 5/4, 5/5, 5/13, 5/24, 6/2, 6/12, 6/22, 7/3, 7/10, 7/18, 7/26, 8/4, 8/12, 8/21, 8/29, 9/8, 9/20, 10/2	26.9
50	10	16	5/1, 5/17, 6/4, 6/18, 7/6, 7/18, 8/1, 8/14, 8/29, 9/16, 10/5	16.4
20	4	41	6/6, 7/15, 8/27	4.5

Table 6. Irrigation in the 50% shade field at South Coast REC. Total Water Applied includes the 20% leaching fraction applied to prevent salt buildup.

Irrigation % of ETo	Count of Irrigations	Mean Interval (days)	Date	Total water applied (in.)
80	7	22	5/7, 6/1, 6/20, 7/9, 7/27, 8/14, 9/8, 10/5	5.2
50	3	34	5/26, 6/29, 7/30, 9/4	2.2
20	1	-	9/4	1.5

During the period of April to October when irrigation treatments are implemented, plant width, length, and height measurements were taken monthly during treatments. A plant growth index (PGI) was calculated to quantify the growth of plants using the formula $[(l + w)/2 + h]/2$, where l, w, and h represent length, width, and height of the plant (Irmak et al. 2004). To account for differences in initial plant size a relative PGI was calculated for each plant each month during the deficit irrigation treatments using the formula PGI_m/PGI_i, where PGI_i stands for the initial PGI, and PGI_m stands for the month's PGI.

Qualitative performance ratings (on a scale of 1-5, 5 being the highest) were taken monthly in the following categories: foliage appearance, flowering abundance, pest tolerance, disease resistance, vigor, and overall appearance (the "WOW" factor). Researchers collected supplemental flowering abundance and overall appearance ratings two weeks after each monthly measurements and complete quality ratings date were taken.

Statistical analysis was completed with support the UC Davis Statistics Lab. PGI, foliage quality, floral abundance, disease and pest resistance, vigor, and overall appearance results were compared using a Kruskal Wallis H Test with pairwise comparisons conducted using a Mann Whitney U test. RPGI data was analyzed using ANOVA in conjunction with Tukey's HSD test. Irrigation recommendations represent the treatment with the lowest irrigation level where growth and aesthetics were not compromised.

Table 7. Aesthetic ratings rubric used by trials staff and open house participants.

RATING	5	4	3	2	1
Foliage	perfect to excellent; plant is in full leaf with no signs of leaf burn, disease, or insect damage, and has an appealing shape and uniformity	same as 5 except for minor tip burn, edge damage, or minor damage to only a few leaves that does not much affect the overall appearance	acceptable but not its best; non-uniform; minor damage to all leaves that is less evident from a distance, or severe damage to no more than 25% of plant	unacceptable; moderate damage to most of the plant or major damage to more than 25%; plant is declining and may not recover; may be extremely non-uniform	unacceptable; close to dead
Flowering	full, glorious bloom; the height of bloom for the species	61-80% of plant in bloom	41-60% of plant in bloom	21-40% of plant in bloom	1 bloom open to 20% in bloom
Pest Tolerance/ Disease Resistance	no visible damage	minor to moderate damage to one or two leaves or stems, or only very minor damage to a few leaves (<25%)	minor damage to many of the leaves or flowers; appearance still acceptable from a distance (25-50%)	major damage ; appearance unacceptable (51-75%)	severely damaged and probably dying (>75% affected)
Vigor	pushing out a lot of new growth from every growing point	pushing out new growth from many growing points	Plant is surviving and healthy, but not pushing out much new growth, if any	Plant is very small for the species or unhealthy, and declining	Plant is barely alive; close to death
Overall Appearance	An impressive plant: everything works together: flowers (if present), leaves, the shape and condition of the plant are all very appealing. It has the WOW factor that makes it an attractive garden plant, even if each individual factor isn't perfect.	a very attractive plant: may be a 5 when in bloom, or just a very nice species that lacks the WOW factor or is not quite at its prime	Acceptable but nothing special; may be past or not quite to its prime; might be better if more uniform; may be described as an 'okay' plant.	unacceptable for any of the above reasons	completely unacceptable and not likely to improve

Outreach

For 2020, when normally three Open House events would have taken place, we adapted our outreach due to extreme COVID-19 pandemic restrictions. First, our dedicated website was launched in early spring: https://ucanr.edu/UCLPIT. On this platform, and promoted via Facebook and Twitter, we posted a highlight article of plants and their performance in early May (https://ucanr.edu/sites/UCLPIT/Open_House/2020_Spring_Plant_Updates/). Next, in late July we created a Qualtrics survey with high quality photos of each plant at both Davis and Irvine, giving participants the opportunity to score plants in several categories and provide feedback on whether they would use them or recommend them to clients. In early August, we sent this to all who had previously participated in one of our Open Houses at each site. In this way we were able to maintain interest and connection with our target audience and provide additional exposure to the plants and value to our cooperators. We continued to post photos on our Facebook page to feature plants that were performing well. Using a grant from Saratoga Horticultural Research Endowment, we were able to hire a student to add individual plant pages for all species evaluated to date. Between May of 2020 and 2021, there have been over 12,200 individual page views on our website and almost 7,700 individual views of plant profile pages. In spring of 2021, the online magazine *Pacific Horticulture* solicited from us two articles we submitted on the trials and the best performing plants.

- https://www.pacifichorticulture.org/articles/the-quest-for-the-best/
- https://www.pacifichorticulture.org/articles/best-plants-in-low-water-field-trials-named-blue-ribbon-winners/

Results & Discussion Introduction

Results are listed alphabetically by scientific name, with plants in full sun first, followed by those planted in shade. The cultivar and trademark name, if applicable, are listed in the header associated for their taxa. In the discussion for each cultivar, the market name is used for simplicity. Irrigation recommendations represent the treatment with the least irrigation where growth and aesthetics were not significantly compromised. Where 'NR' is listed in the header for 'Recommended Irrigation Rate', it means the plant is not recommended in this region or, in the case of South Coast REC, it may additionally mean not recommended for use with reclaimed water. It should be noted that 2020 was a heavy wildfire year and many plants became dusted with ash during warm weather months. Some species may have had foliage performance affected by this, but without a control comparison, we have no way of saying for certain. Photographs in Davis in particular have an orangish cast to them from late July through September when ash in the air was heaviest and the ambient light itself was hazy and orange.

Full Sun Results

***Buddleia* × 'SMNBDBT' Pugster Blue®**

Location	Final W x H	Rec. Irr. Rate	Mean O/A Rating
UC Davis Final	131 cm (52'') x 91 cm (36'')	Low	4.1
South Coast REC Final	189 cm (74'') x 123 cm (48'')	Low	3.6

Pugster Blue® is a medium-sized, symmetrical, compact form of butterfly bush whose green leaves have grey-green undersides. Cone-shaped panicles of pale purple flowers are borne late spring to fall, and as with all butterfly bushes, the most impressive flush of bloom comes first. In Davis, the big flush appeared in late June through July followed by significant flower coverage in August and blooms through October (Photos 1a-b). In Irvine, the first big flush came in June followed by modest blooms through July, though there were always some open flowers through October (Photo 1c). Close inspection reveals rich orange corolla tubes on each individual flower (Photo 1d). These flowers are fragrant, producing a honey-like scent that is noticeable when close to the plant, especially during the big flush early in the cooler morning hours. The prolific blooming leaves masses of spent flower spikes which some might find objectionable. Retention of spent flowers did not negatively impact ratings collected by trials staff in the long run, as the dark color of the spent flowers tended to blend into the foliage rather than competing with blooming flowers. If desired, periodic deadheading could be performed in the landscape to remove spent blooms.

Pugster Blue performed beautifully in the Davis heat and received high marks for overall appearance throughout the season on all treatments, earning it our Blue Ribbon™ award for very good performance on low water in Davis. In Irvine Overall Appearance scores peaked in June with a slow decline in July. These trends also appeared in the foliage quality and pest resistance scores with foliage testing the threshold of unacceptability in the October ratings in Irvine (Table 8b). Vigor ratings at both sites remained high throughout the duration of the deficit period. Interestingly, in Irvine higher vigor scores were observed in the less frequently irrigated treatments. Since no significant differences in the growth rate (Figures 1a and 1c) or Overall Appearance ratings between treatments occurred at either site, we recommend Pugster Blue be irrigated on low water in WUCOLS zones 2 and 3.

***Cotinus coggygria* 'NCCO1' Winecraft Black®**

Location	Final W x H	Rec. Irr. Rate	Mean O/A Rating
UC Davis Final	105 cm (41'') x 135 cm (53'')	Low	3.3
South Coast REC Final	120 cm (47'') x 153 cm (60'')	Low	3.1

Winecraft Black® is a medium to large-sized shrub with roundish reniform leaves which emerge a rich wine-red color before turning a dark black-purple with a silvery sheen (Photo 2a). The common moniker smokebush is ascribed to *Cotinus* due to the flowering: the individual florets are small and not showy, while the multitudinous pedicels and rachises result in showy panicles with a hazy or smoky appearance. Winecraft Black flowered from late April/early May to early/mid-June in Davis and Irvine (Photo 2a). Overall, the plants were more floriferous in

Irvine, with a floral score of at least 1 recorded during June for 20 of 21 plants, whereas in Davis this only occurred for 9 of 24 plants. The foliage color (Photos 2d-e) and overall form of this plant were non-uniform, and we believe this is a shrub that would have benefitted from pruning to shape and perhaps more time to grow to its full potential. Unfortunately, this non-uniformity did impact ratings, especially later in the season as leaves dropped from bare lower branches as the plants grew.

In Davis, differences in the relative plant growth index (RPGI) were observed during the deficit season between the high and medium treatments compared to low treatment, with the plants on the low-water treatment (Fig. 2b). In Irvine, a similar situation occurred, the medium and low-water treatments yielded significantly less growth than the high treatment (Fig. 2d). Thrips damage negatively impacted foliage quality on all treatments in Davis by mid-August, though from a distance this damage wasn't as noticeable. In Irvine, pest resistance was statistically better on the less frequently irrigated treatments. Vigor scores began to decline as plants stopped pushing new growth in September at both sites, which is expected for plants that are winter deciduous (Tables 9a & 9b). At both sites, no difference in Overall Appearance ratings was observed between treatments. For this reason, researchers recommend irrigating Cotinus Winecraft Black on low in WUCOLS regions 2 and 3. However, if a larger plant is desired in region 2, Winecraft Black could be irrigated on medium water in region 2.

***Eremophila glabra* 'EREM1' Grey Horizon ™**

Location	Final W x H	Rec. Irr. Rate	Mean O/A Rating
UC Davis Final	144 cm (57'') x 30 cm (12'')	Low	3.0
South Coast REC Final	272 cm (107'') x 50 cm (20'')	Low	3.5

Grey Horizon™ is a low growing, prostrate groundcover from Australia with silver-grey leaves (Photo 3a). Tubular orange flowers with prominent stamens are not very showy as they appear nestled in or below the foliage (Photo 3b). Flowering started in late winter at both sites, mostly ending before measurements were collected in Irvine and by early May in Davis. In Irvine, several plants continued to flower regularly throughout the summer, while there were a few plants that occasionally flowered in Davis, but in neither site was flowering a significant feature in overall appearance. Although from a distance this plant appeared full, they quite consistently developed a bare spot in the middle at the crown due to the prostrate, horizontal growth of the stems (Photo 3c). This impacted overall appearance scores at both sites, especially in Davis. To overcome this in a landscape, pruning of central stems to encourage branching in the spring should be considered. If used to spill over a wall, it might not be an issue at all. Plants were not bothered by pests or disease in either location. No difference in growth between treatments was observed at either site. Researchers did not observe any differences in aesthetic quality between treatments at either site. Based on our results we recommend irrigating Grey Horizon on low water in WUCOLS Regions 2 and 3.

***Hamelia patens* Sierra Red™**

Location	Final W x H	Rec. Irr. Rate	Mean O/A Rating
UC Davis Final	51 cm (20'') x 42 cm (16'')	Medium	3.8
South Coast REC Final	98 cm (38'') x 82 cm (32'')	Low	3.1

Sierra Red™ is a cultivar of *Hamelia patens*, a shrub native to subtropical and tropical parts of Florida, Mexico, Central and South America. Sierra Red has bright, glossy green foliage, with reddish coloration at the growing points with clusters of bright orange tubular flowers borne from summer to fall, occasionally followed by blue-black fruits (Photo 4a). In Davis, this plant died to the ground during the winter, had 17% total mortality, and surviving plants only began to emerge in late June making July the first time it was big enough to collect data. While some plants did achieve acceptable size and good overall appearance, with several putting on attractive floral displays in September and October, the late emergence from dormancy really limits its use as a perennial in WUCOLS Region 2.

In Irvine, Sierra Red held much of its foliage as it overwintered from establishment to the treatment year, but almost 38% of plants did not survive the establishment year. Inscrutably this disproportionately affected the replicates in the high treatment, though all treatments received the same amount of irrigation during the establishment year. Flowering was modest from July through October. Plants at this site were bothered by thrips, aphids, and mealybugs which adversely affected both foliage ratings and overall health and appearance. This combined with some plant non-uniformity led to overall appearance scores never averaging much more than just acceptable appearance in Irvine. In Davis, a statistically significant difference in vigor was observed between the high and low treatments (Table 11a). However, since more of the plants on the high treatment were amongst the first to break dormancy, this unevenness confounds meaningful analysis. The late emergence in Davis and mortality in Irvine have resulted in a less than ideal dataset. Based on the data collected, researchers recommend Sierra Red be irrigated on medium in WUCOLS region 2 and low in region 3.

***Hesperaloe parviflora* 'MSWNPERED' Sandia Glow®**

Location	Final W x H	Rec. Irr. Rate	Mean O/A Rating
UC Davis Final	105 cm (42'') x 50 cm (20'')	Low	3.7
South Coast REC Final	96 cm (38'') x 51 cm (20'')	Low	3.3

Sandia Glow® is a slightly smaller more compact version of the species red yucca with long, narrow, slightly folded leaves and watermelon red blooms on long stalks that begin appearing in April or earlier in Irvine and in May in Davis, continuing to send up flowers throughout the growing season. They are unbothered by pests or disease and in Davis performed best during the hottest time of the summer even on the lowest irrigation treatment (Photos 5a-b). The reclaimed water at the Irvine site may be responsible for some of the tip damage and pale foliage on many specimens there which affected the overall appearance. Where reclaimed water is not in use, this should be a reliable performer where a medium-sized succulent is desired.

No difference in growth or aesthetic measurements were observed on either treatment. Since Sandia Glow produces spikes, researchers opted to record the number of bloom spikes on each replicate to assess floral quantity, rather than using the scale in the rubric. Researchers recommend irrigating Sandia Glow on low water in WUCOLS regions 2 and 3.

***Hypericum kalmianum* 'Deppe' Sunny Boulevard®**

Location	Final W x H	Rec. Irr. Rate	Mean O/A Rating
UC Davis Final	74 cm (29'') x 49 cm (19'')	Low	4
South Coast REC Final	41 cm (16'') x 38 cm (15'')	NR	NR

Sunny Boulevard® forms a tidy little mounded deciduous shrub with small, bright green, strap-shaped leaves that emerged in early May (Photo 6a). Maintenance for this cultivar was limited to cutting back stems to 6-8" in height in early spring before new growth started to emerge. In Davis this burst into bloom with bright yellow flowers that continued through July and were very attractive to pollinators (Photo 6b-d). The buff-colored spent flower heads were not at all unattractive and these maintained excellent to very good appearance on all irrigation treatments through the summer (Photo 6e) and only began to decline into the acceptable to good category in September. In Irvine, the plants never performed up to their potential, and since neither pests nor disease could be identified on the plants, the yellowing leaves and poor performance is most likely due to the reclaimed water (Photo 6f). Using the observations of plants in southern California and the data collected, researchers were unable to develop an irrigation recommendation for WUCOLS region 3 other than to avoid use in landscapes irrigated with reclaimed irrigation water. In WUCOLS region 2 researchers recommend Sunny Boulevard be irrigated on low water.

***Laurus nobilis* 'MonRik' Little Ragu®**

Location	Final W x H	Rec. Irr. Rate	Mean O/A Rating
UC Davis Final	29 cm (11'') x 40 cm (16'')	Low	2.3
South Coast REC Final	61 cm (24'') x 68 cm (27'')	Low	3.2

Little Ragu® is a compact form of sweet bay with deep green, aromatic leaves. Results for this cultivar were compromised in Davis by foliar necrosis symptoms and stunted growth (Photo 7a-b). As the season progressed, some plants grew partially out of these symptoms but never enough to attain an average of acceptable appearance for any treatment. At the end of the trial, plants were excavated, and roots sent off for analysis by Dr. Johanna Del Castillo Munera. Pathogens were found on all samples. *Phytophthora cinnamomi* was observed on samples from the high and medium treatments, and interestingly *Phytopythium littorale* was recovered from the low treatment. As a result, further plants were excavated with findings of *Phytophthora capsici, P. mengi, and P. tropicalis.* Interestingly, this case was the first report of *P. mengi* on *Laurus*. It is believed that these pathogens arrived with the plants. Since the disease triangle consists of a susceptible plant, a pathogen, and the right conditions for the pathogen to attack a plant, it is possible the different irrigation treatments created conditions favoring different *Phytophthora* species, although further investigation would be needed to

confirm. Because of these disease issues, Little Ragu did not reach its potential in Davis. In Irvine, plants did not appear to be affected by the reclaimed water treatments, though disease resistance scores declined as the deficit season progressed (Photo 7c). Unfortunately, plants grown at South Coast REC were not submitted to test for pathogens. After analyzing the data collected, Little Ragu is assigned a low water recommendation for WUCOLS regions 2 and 3.

***Lippia nodiflora* 'ECOLOPIA2' Pink Kurapia®**

Location	Final W x H	Rec. Irr. Rate	Mean O/A Rating
UC Davis Final	136 cm (54'') x 1 cm (0'')	Low	4.5

Pink Kurapia® is the latest in this line of very low, vigorous groundcovers. With the same characteristically shorter internodes of New White Kurapia, Pink created a tight mass of small leaves on spreading stems (Photo 8a). Plants bloomed with scores of pale pink blooms in May and June and continued pumping out modest numbers of flowers right through October, which was highly attractive to bees and butterflies (Photo 8b). Due to gopher predation in the establishment period reducing the number of replicates, researchers were unable to statistically compare results between treatments. However, due to the high levels of aesthetic quality observed over the deficit season researchers recommend irrigating Kurapia Pink on low water in WUCOLS region 2. Additionally, since Kurapia is used as a lawn analog, it should be noted that this recommendation may not translate to sprinkler-based irrigation systems since this trial applies water below the canopy via drip at the soil surface. Proving its utility for low water landscapes, Pink Kurapia is a recipient of our Blue Ribbon™ award for plants that performed at a very good to excellent level on the lowest irrigation treatment.

×*Pyracomeles* 'NCXP1' Juke Box®

Location	Final W x H	Rec. Irr. Rate	Mean O/A Rating
UC Davis Final	119 cm (47'') x 51 cm (20'')	Low	4
South Coast REC Final	155 cm (61'') x 64 cm (25'')	Low	3.3

Juke Box®, an intergeneric hybrid of *Pyracantha* and *Osteomeles*, is a small, mounding evergreen shrub with shiny green leaves (Photo 9a). These tidy shrubs are billed as a disease-free boxwood alternative, though their natural habit was more spreading in our trial and would require pruning for a formal hedge. Their overall appearance and foliage health were consistently very good in Davis, though the occasional plant developed a non-uniform shape, which would be easily corrected with minor pruning. During the high heat of Davis summer, the leaves did fold somewhat during the day, though evaluators did not feel this negatively affected the overall appearance (Photo 9b). Plants appeared somewhat more stressed during deficit irrigation in Irvine as the season progressed, which may have been the result of the reclaimed water. There was no difference in growth or overall appearance between treatments at either site. We recommend Juke Box be irrigated on low water in WUCOLS Regions 2 and 3 but would not recommend it for use with reclaimed water (Photo 9c).

***Rhagodia spinescens* 'SAB01' Aussie Flat Bush™**

Location	Final W x H	Rec. Irr. Rate	Mean O/A Rating
UC Davis Final	177 cm (70'') x 66 cm (26'')	Low	4
South Coast REC Final	298 cm (117'') x 91 cm (36'')	Low	3.7

Aussie Flat Bush™ is a compact, low-growing shrub or tall groundcover with arrow-shaped, bluish grey-green leaves covered in stipules (Photo 10a-b). Plants maintained an informal mounding growth habit in Davis with very healthy foliage, and only a few yellow leaves late in the year. Overall appearance in Davis was very good on all treatments throughout the treatment year earning it our Blue Ribbon™ award for high performance on low water. In Irvine plants showed a few symptoms of yellowing leaf tips, possibly from the reclaimed irrigation water, but nevertheless performed well. Although some plants in Irvine developed a bare center, they typically filled in without pruning as the year progressed. No differences in plant growth or aesthetic quality were observed between treatments at either site. As such, we recommend irrigating Aussie Flat Bush on low water in WUCOLS regions 2 and 3.

***Rhaphiolepis indica* 'Parhap' Oriental Pearl**

Location	Final W x H	Rec. Irr. Rate	Mean O/A Rating
UC Davis Final	53 cm (21'') x 27 cm (11'')	Low	3.8
South Coast REC Final	69 cm (27'') x 32 cm (13'')	Low	3.5

Oriental Pearl is a dense compact form of this species with deep green, ovate leaves typical of this shrub. White flowers appeared on some shrubs in April and May (Photo 11a), but only a few bloomed heavily, which we think is more a reflection of the limited amount of time these long-lived perennials had been in the ground rather than the cultivar's potential. When digging them up at the end of the trial, we also noticed that some specimens had severe root girdling from poor propagation methods at the nursery stage, and this certainly could also have affected their performance in this trial. Oriental Pearl in Davis outperformed plants in Irvine, where plants had acceptable appearance most of the year, but developed necrotic leaf tips and leaf loss as the season progressed. Plants had good to very good appearance in Davis on all treatments throughout the year. Since irrigation treatment had no significant effect on growth or appearance at either site, we recommend irrigation for Oriental Pearl at the low level in WUCOLS Regions 2 and 3.

***Rhaphiolepis indica* 'sPg-3-003' Redbird™**

Location	Final W x H	Rec. Irr. Rate	Mean O/A Rating
UC Davis Final	49 cm (19'') x 43 cm (17'')	Low	2.7
South Coast REC Final	61 cm (24'') x 54 cm (21'')	Low	2.9

Redbird™ gets its name from the variously hued new red foliage that emerges on this medium to large evergreen shrub (Photo 12a). These ovate leaves mature into the bright green characteristic of the species. Because this is a larger shrub, we feel Redbird would have been better evaluated as larger material from the outset or in a longer trial than just two years. The

stock we received was very young #1-sized material, and while a few plants were very good looking, many never achieved fullness or uniformity during the trial period at either site. Although foliage quality itself was not generally compromised by pests or disease, vigor and the form of plants were inconsistent and sometimes straggly (Photo 12c). This appearance is something that would normally even out with time and pruning on this genera, and we feel this plant would have scored higher in subsequent years with the normal horticultural practice of pruning to shape. Performance was not significantly affected by irrigation level. Since there were no significant differences in growth or aesthetics between treatments at either site, we recommend irrigation at the low level for Redbird in WUCOLS Regions 2 and 3.

***Rosa* 'Baillim' Chi™**

Location	Final W x H	Rec. Irr. Rate	Mean O/A Rating
UC Davis Final	167 cm (66'') x 98 cm (39'')	Low	3.9
South Coast REC Final	230 cm (91'') x 108 cm (42'')	Low	3.3

Chi™ is a vigorous climbing or free-form arching floribunda rose shrub with large clusters of true red rosettes (Photo 13a). If shrubs are pruned back in winter, these flower clusters first appear on a rounded shrub (Photo 13b), but as the season progresses, Chi sends out new, longer canes with additional sprays of vibrant red flowers like an explosion of fireworks (Photo 13c). This form requires either trellising or a very wide planting space. It was especially sprawling in Irvine (Photo 13d). Plants were virtually never without some bloom from May through October. The form, however, during these intermittent growth spurts was often lop-sided and some might find this non-uniformity unappealing. Although there was the minor leaf damage from chilli thrips usually found on all our roses, these were disease-free in Davis. Chi was a very good performer on low water in Davis, nearly earning the Blue Ribbon™ award. Plants had acceptable scores in Irvine early on, but foliage was affected by the coastal “June gloom” weather, succumbing to powdery mildew, and began to decline sooner in the season than in Davis becoming almost defoliated by October. This may also have been the accumulated effect of reclaimed water. This would be a useful rose in southern California, but should be planted further inland, away from summer overcast and fog, with good air circulation and higher quality water for best performance. Our data revealed no loss of performance on the lowest irrigation level; therefore we recommend irrigation on low water in WUCOLS Regions 2 and 3.

***Rosa* 'KORfizzlem' Lemon Fizz Kolorscape®**

Location	Final W x H	Rec. Irr. Rate	Mean O/A Rating
UC Davis Final	90 cm (35'') x 61 cm (24'')	Low	3.6
South Coast REC Final	117 cm (46'') x 87 cm (34'')	Medium	3.1

Lemon Fizz is a medium-sized shrub rose in the Kolorscape® series with deep green foliage that contrasts nicely with the vivid lemon-yellow simple blooms (Photo 14a). This was the earliest rose to bloom in our field with its biggest flush in April. These blooms hold their color until they shatter and fall cleanly from the plant. Foliage in Davis was mostly clean with

little damage from pests or disease. Overall appearance was good on all treatments and unaffected by irrigation treatment. The only disappointment of this shrub rose in Davis was in the meager re-bloom: only a handful of the 21 plants ever achieved significant bloom coverage, and that only in April or May, after which only a few blooms were ever found on a plant at any one time. Although bloom performance might improve with age, we were only able to observe the plant for 2 years. Lemon Fizz did not perform well on the low water treatment in Irvine, and all treatments there had some plants with foliage affected by disease during their coastal "June gloom" weather, particularly powdery mildew and botrytis of the blooms, but plants mostly outgrew this during the hotter, drier months (Photo 14b). There were no significant irrigation effects on performance in Davis, therefore we recommend low irrigation in WUCOLS Region 2. In Irvine, both flowering and overall appearance were significantly compromised on low water, hence our irrigation category recommendation in WUCOLS Region 3 is medium.

***Rosa* 'Meiggili' Peach Drift®**

Location	Final W x H	Rec. Irr. Rate	Mean O/A Rating
UC Davis Final	106 cm (42'') x 54 cm (21'')	Low	3.8
South Coast REC Final	111 cm (44'') x 57 cm (22'')	NR	NR

One of the latest in the Drift® rose series, Peach Drift® formed tidy, low mounds of small leaves covered with peachy-pink blooms blended to yellow in the center (Photo 15a). These open-faced blossoms with accessible pollen fade to pale pink as they age. Flowering was greatest in May and June, but some blooms were on the plants throughout the season. Like others in this series, they do not form hips, but eventually shed their faded blooms and calyces to self-clean. For a period in June, however, the brown petals clinging to the dead calyces detracted from the overall appearance (Photo 15b). The foliage of this cultivar was prone to powdery mildew in both sites, and though it mostly outgrew it in Davis, it persisted in Irvine. Foliage at the Davis site also began developing edge necrosis in early July and this increased through the rest of the season, though they still averaged good landscape appearance overall. Because the climate was seriously detrimental to the foliage health, we would not recommend this cultivar for coastal regions like Irvine. Growth and aesthetics were not altered by irrigation treatment in Davis, and we recommend irrigation at the low level in WUCOLS Region 2.

***Rosa* 'Meimirrote' Apricot Drift®**

Location	Final W x H	Rec. Irr. Rate	Mean O/A Rating
UC Davis Final	109 cm (43'') x 55 cm (22'')	Low	3.9
South Coast REC Final	105 cm (41'') x 62 cm (25'')	Low	3.5

Apricot is another new rose in the Drift® series. Apricot Drift® forms low, uniformly mounded shrubs with small leaves (Photo 16a). These mounds produced masses of small, fragrant, pale pink rosettes reminiscent of 'Cécile Brünner' beginning in April and peaking in May in Davis (Photo 16b), with some blooms through October. With the cool beginning to summer in 2020 in Irvine, peak bloom was later in July and August. In both sites, Apricot Drift was less affected by either pests or disease than the Peach Drift, yielding higher overall

appearance scores. Especially in the heat of Davis, these maintained an overall appearance in the very good range until September when they began to look a bit tired but still acceptable. In Davis, Apricot Drift very narrowly fell short of the threshold for our Blue Ribbon™ award for outstanding performers on low water. Our data supports a recommendation of low water use for WUCOLS Regions 2 and 3.

***Rosa* 'NOA168098F' Flower Carpet® Pink Supreme**

Location	Final W x H	Rec. Irr. Rate	Mean O/A Rating
UC Davis Final	152 cm (60'') x 65 cm (25'')	Low	4
South Coast REC Final	163 cm (64'') x 76 cm (30'')	Medium	3.6

Pink Supreme is a groundcover rose in the Flower Carpet® series with dark green foliage and vivid deep pink flowers (Photo 17a). These blooms are open-faced with accessible pollen and were frequently visited by bees (Photo 17b). This vigorous grower occasionally sent out long canes in a non-uniform pattern, but they generally filled in as the season progressed making them a candidate for large sweeping banks of bloom where the plants could be massed to good effect. In Davis, plants bloomed significantly in May/June, and August, with a majority of plants on each treatment scoring a 1 or 2 in the intervening months. In Irvine, after the May/June first flush, plants continued to flower consistently in the following months with a slight repeat peak in August. However, a few plants suffered significantly in foliage health and overall appearance from powdery mildew infections in Irvine. Neither growth nor aesthetics were affected by irrigation in Davis, and we recommend irrigation on low water in WUCOLS Region 2, also awarding this the Blue Ribbon™ award for high performance on low water. In Irvine, growth was unaffected, but flowering and late season vigor were significantly better on medium water, and we therefore recommend medium water for WUCOLS Region 3 when using reclaimed water.

***Rosa* 'Radral' Coral Knock Out®**

Location	Final W x H	Rec. Irr. Rate	Mean O/A Rating
UC Davis Final	135 cm (53'') x 82 cm (32'')	NR	NR
South Coast REC Final	139 cm (55'') x 89 cm (35'')	NR	NR

Coral Knock Out® is a medium-sized shrub rose with generally uniform habit. In both Davis and Irvine, the foliage on this rose was unacceptable in appearance and health from spring through fall, unlike other roses we have evaluated in the Knock Out® series. It was affected by both black spot and thrips damage yielding plants without good leaf coverage. In Davis, leaves on some plants wilted frequently on all irrigation treatments during the hottest part of the summer. Coral Knock Out put on a nice flush of bright coral-orange blooms in April and May in Irvine. The first bloom was more modest in Davis and dead brown petals hung on the plant rather long before self-cleaning, giving the plants a messy appearance much of the season. In both locations, many plants had significant leaf loss by September due to the combined stresses of disease, heat, and reclaimed water. Because of the serious foliage issues,

we would not recommend Coral Knock Out in either the hot inland valley or coastal regions of California.

***Ruschia lineolata* 'Nana'**

Location	Final Width	Rec. Irr. Rate	Mean O/A Rating
UC Davis Final	84 cm (33'')	Low	3.4
South Coast REC Final	109 cm (43'')	Low	3.2

Ruschia is a genus native to the drier regions of southern Africa. This species and cultivar, commonly called Dwarf Carpet of Stars, is a very low-growing succulent groundcover with a tight growth habit (Photo 19a). Although Nana blooms with tiny, pale pink star-shaped flowers, these were very sparse in Davis, with a few more blooms in Irvine from August through October. Many plants in Davis developed reddish-brown tips as the season progressed (Photo 19b). Because of our protocol of planting in mulched rows, Nana developed a lumpy appearance in our fields as it grew out over the chunks of bark. We would recommend not using chipped material for mulch when planting, but perhaps just covering soil with compost until plants have filled in.

In Irvine, the relative growth rate of the plants on the medium treatment was significantly better than the plants on the low treatment (Table 19d). The foliage in Irvine consistently displayed orange tips which may have been a response to the use of reclaimed water, although a similar pattern was seen in Davis, though to a lesser extent. While the highest mean foliage and overall appearance scores were achieved by plants irrigated on medium at both sites, the plants on the low treatment were not unacceptable, and were not significantly different in aesthetic ratings. As such we recommend low irrigation in WUCOLS regions 2 and 3 for *Ruschia* 'Nana', though in Irvine if faster growth for fill in was desired, it could be irrigated at the medium level. Due to its potential use as a lawn analog, this recommendation may not translate to sprinkler-based irrigation systems since this trial applies water below the canopy via drip at the soil surface.

***Tecomaria capensis* Riot Red®**

Location	Final W x H	Rec. Irr. Rate	Mean O/A Rating
UC Davis Final	194 cm (77'') x 138 cm (54'')	Low	3.2
South Coast REC Final	211 cm (83'') x 173 cm (68'')	Low	3.8

Riot Red Cape honeysuckle is a perennial shrubby vine that remained in leaf in our milder Southern California site but was deciduous in Davis. This cultivar may not be reliably winter hardy in Davis, as only 14 of 24 plants emerged in the spring of 2020. Although billed as a summer bloomer, no flowers showed up in Davis until October 2020, and then only meagerly on two plants. By late October in Davis several more plants had begun to flower (Photo 20a). While a November data collection in Davis was planned to record progress, cold temperatures negatively impacted the plants to the point of cancelling the event. After flowering from late fall 2019 to early spring in 2020 in Irvine, plants were pruned in April to remove lanky old growth and improve shape. While researchers at both sites grew the plant without a support,

we would recommend some form of trellis, tuteur, or similar structure when grown in the garden. Though one or two plants in Irvine had a few flowers in summer, most flowering was light and occurred in October on over 50% of plants. Plants were unbothered by pests or disease at both locations, but without the expected bloom feature, these did not impress simply as foliage plants. Based on our experiences, the climate in WUCOLS region 2 limits Riot Red's application for widespread landscape use. If growing in region 2, researchers recommend a protected site, such as against a south or west facing wall. Since differences in growth or aesthetics between treatments were not observed at either site, researchers recommend this plant be irrigated on low water in WUCOLS regions 2 and 3.

***Vitex agnus-castus* 'Bailtextwo' Galactic Pink®**

Location	Final W x H	Rec. Irr. Rate	Mean O/A Rating
UC Davis Final	203 cm (80'') x 129 cm (51'')	Low	3.6
South Coast REC Final	185 cm (73'') x 135 cm (53'')	Medium	3.5

Galactic Pink is a dwarf chastetree with the typically palmate leaves of *Vitex* but with pale pink blooms from June through October. These blooms were most showy in June in Davis and July in Irvine (Photo 21a). Throughout the rest of the summer, there were always a few of the long pink spikes scattered among the tawny green spent flowers stalks. In the heat of Davis, flowering, foliage, and overall appearance were generally better than in Irvine. Foliage quality declined significantly in the October ratings, because while plants were green overall, the leaves were speckled with small black or gray spots. Due to the timing of this occurrence, researchers believe this resulted from soot and ash from wildfires. From early August to early October the trial site in Davis was periodically covered in a smoky haze and ash to the extent that staff had to wear N-95 masks during data collection events. In Irvine researchers observed significant differences in foliage quality, floral abundance, and overall appearance between high and medium treatments in comparison to the low water treatment (Table 28b). As a result we recommend Galactic Pink be irrigated at the medium level in WUCOLS Region 3, especially where reclaimed water is in use. In WUCOLS region 2 researchers recommend Galactic Pink be irrigated on low water, though based on observations, this cultivar may perform better at the higher end of the 10-30% of ETo range.

50% Shade Results

***Hydrangea paniculata* 'LeeP1' White Wedding®**

Location	Final W x H	Rec. Irr. Rate	Mean O/A Rating
UC Davis Final	38 cm (15'') x 36 cm (14'')	Medium	3.3

White Wedding is a deciduous perennial shrub with a somewhat more compact stature than most *H. paniculata* cultivars. After a late winter pruning of the previous year's stems to viable growing points, it formed attractive mounds of bright green foliage that contrasted beautifully with the large white flower heads held close to the leaves by sturdy stems (Photo 22a). They bloomed prolifically in Davis in July and August, with the panicles fading gracefully

from white to celadon and finally sepia in late summer and early fall (Photo 22b-d). The faded flower heads persisted and generally remained attractive to the end of the trial. In September, the plants started to drop their foliage and browned edges started to develop on some of the remaining foliage. Overall it appeared as if the plants had gone dormant (Photo 22e). Over the subsequent months, staff noticed that the White Wedding began to leaf out, pushing out bright new growth from dormant buds as if it were spring. At the end of October, this activity was observed at some level in 19 individual plants. Since this same occurrence was also observed in several individuals receiving regular water planted in an adjacent field, this likely isn't a treatment effect. Due to the timing, researchers are unsure if the earlier browning and loss of leaves could have been an impact from the smoke and ash from wildfires occurring at the same time. Although foliage fading in September is not atypical for hydrangeas, this should be considered when making decisions about landscape placement. Growth and several aesthetic parameters, specifically foliage quality, floral abundance, vigor, and overall appearance, were compromised on low water (Table 29 & Fig. 22b). We therefore recommend placing this in the medium category of water use for WUCOLS Region 2.

Hydrangea quercifolia* 'BIV01' *Tara®

Location	Final W x H	Rec. Irr. Rate	Mean O/A Rating
UC Davis Final	83 cm (33'') x 60 cm (23'')	Low	3.4
South Coast REC Final	83 cm (33'') x 61 cm (24'')	Low	2.9

Tara is a deciduous perennial oak-leaved hydrangea that forms a relaxed mound. Deeply lobed leaves appeared in early spring followed in May by large, conical, double panicles of white blooms (Photo 23a). These flowers fade first to pale green and then to a tawny brown and persist through fall. The buff-colored flower heads on hydrangeas are often viewed as a feature; as such, staff did not deadhead spent flowers (Photo 23b). However, since Tara yielded good looking foliage right through the fall, some might prefer its looks as a foliage plant if deadheaded. In Davis, there were no significant irrigation treatment effects, and we therefore recommend irrigation on low water in WUCOLS Region 2.

Tara's foliage may have suffered the effects of reclaimed water in Irvine. After leaves emerging and looking good through July (Photo 23c), plants began to develop serious edge burn, especially on the two highest irrigation treatments, and never achieved quite acceptable appearance after July (Photo 23d). Foliage was also negatively affected by chewing pests and many plants ended up looking ragged, despite their attractive blooms. It should also be noted that in both sites, during the hottest days, Tara had the habit of wilting slightly, though it would recover by the following morning. Because of its poor foliar response to the reclaimed water, we would not recommend Tara for this use. While there were statistical differences in the growth rates, there were no significant differences in aesthetic performance, so if higher quality water is used, we would recommend low water use for Tara in WUCOLS Region 3.

***Ilex crenata* 'Farrowone' Sky Pointer®**

Location	Final W x H	Rec. Irr. Rate	Mean O/A Rating
UC Davis Final	-	NR	NR
South Coast REC Final	-	NR	NR

Sky Pointer® holly began declining in health and appearance at Davis during the establishment year and by spring of the second year there were not enough plants to collect data. During the treatment year in Irvine, where weather is typically cooler than Davis in summer and warmer in winter, plants began to progressively die off in July at a rate of 25% per month, and by October there was complete mortality (Photos 24a-b). For this reason, we do not recommend this plant for use in WUCOLS Regions 2 and 3.

***Lomandra longifolia* 'Katrinus Deluxe'**

Location	Final W x H	Rec. Irr. Rate	Mean O/A Rating
UC Davis Final	138 cm (54'') x 64 cm (25'')	Low	4.3
South Coast REC Final	76 cm (30'') x 60 cm (24'')	Low	2.5

We have evaluated different Lomandra cultivars in both sun and shade, and Katrinus Deluxe performed beautifully in Davis in the shade. It was less vigorous in Irvine with the use of reclaimed water. Katrinus Deluxe has long, grass-like leaves with a loose blousy appearance in the shade (Photo 25a). Its characteristically spiky golden flower stalks are held high enough to be seen easily among the bright green foliage(Photo 25b). Though not a heavy bloomer in the shade, the yellow flowers were a notable feature throughout the growing season. While Katrinus Deluxe appeared to respond positively to higher levels of water in Davis, on low water, plants still scored an average of very good overall appearance over the season, earning it our Blue Ribbon™ award for high performance on low water. For this reason we are comfortable recommending this be irrigated at the low water level in WUCOLS Region 2.

Katrinus Deluxe did not fare as well in Irvine. Plants were not very vigorous, flowered very little, and many had pale yellowed foliage which may be due to the use of reclaimed water. There was also some rabbit predation early on that may have affected growth and vigor. Their overall appearance scores were never consistently acceptable (Photo 25c). The only significant differences in the data between irrigation treatments was slightly smaller growth on the low compared to the moderate irrigation level. It would be interesting to re-evaluate this cultivar on regular water in a follow-up trial. Since no quality differences were found, we would recommend the low water category for this cultivar in WUCOLS Region 3.

***Rhododendron* 'Robleza' Autumn Bonfire®**

Location	Final W x H	Rec. Irr. Rate	Mean O/A Rating
South Coast REC Final	27 cm (11'') x 21 cm (8'')	NR	NR

Bonfire is one of the newer autumn or repeat blooming azaleas in the Encore® series. It is a dwarf azalea with vivid red flowers. Autumn Bonfire was only evaluated in Irvine where the reclaimed water proved to be detrimental to plant health. At no time did plants achieve

acceptable appearance, even at their first rating in May. By September, all but one plant on the low irrigation treatment had died, and plants on the other treatments had been showing poor foliage quality since May. For these reasons, we do not recommend using Autumn Bonfire with reclaimed water and cannot at this time make a recommendation for irrigation level in WUCOLS Region 3.

Appendix A

DATA TABLES AND GROWTH CHARTS

In all tables significant differences between treatments are indicated by ratings in the AVG column with different lower-case superscripts. In charts, significant differences between treatments in a month are indicated by different lower-case letters over the bars. If no superscripts are present, there were no significant differences between treatments.

Table 8a. *Buddleia* × 'SMNBDBT' Pugster Blue® average monthly quality ratings (scale 1-5, 1= lowest, 5 = highest) at UC Davis on 3 ETo based irrigation levels in 2020.

Category	ET_o%	Apr	May	Jun	Jul	Aug	Sep	Oct	AVG
Overall Appearance	80	4.0	4.0	4.4	5.0	4.4	4.1	4.2	4.3
	50	3.9	4.0	4.1	4.9	4.7	4.1	4.2	4.3
	20	3.8	4.0	4.4	4.8	4.3	3.4	4.1	4.1
Foliage	80	4.3	4.4	5.0	5.0	4.6	4.7	4.7	4.7
	50	4.3	4.7	4.9	4.9	5.0	4.9	4.9	4.8
	20	4.0	4.6	4.9	4.7	4.5	4.3	4.4	4.5
Flower	80	0.0	0.0	0.9	5.0	2.3	1.3	1.1	1.5
	50	0.0	0.0	0.4	4.9	2.9	1.0	1.1	1.5
	20	0.0	0.0	0.9	4.3	2.3	1.1	1.3	1.4
Pest Resistance	80	5.0	4.6	5.0	5.0	4.6	5.0	5.0	4.9
	50	5.0	4.7	4.9	4.9	5.0	5.0	5.0	4.9
	20	5.0	4.7	4.7	5.0	4.6	5.0	5.0	4.9
Disease Resistance	80	4.9	5.0	5.0	5.0	4.9	5.0	5.0	5.0
	50	4.9	5.0	5.0	5.0	5.0	5.0	5.0	5.0
	20	4.7	5.0	5.0	5.0	5.0	5.0	5.0	5.0
Vigor	80	5.0	5.0	5.0	5.0	5.0	5.0	4.6	4.9
	50	5.0	5.0	5.0	5.0	5.0	5.0	4.9	5.0
	20	5.0	5.0	5.0	4.9	5.0	4.7	4.7	4.9

Table 8b. *Buddleia* × 'SMNBDBT' Pugster Blue® average monthly quality ratings (scale 1-5, 1= lowest, 5 = highest) at South Coast REC on 3 ETo based irrigation levels in 2020.

Category	ET_o%	Apr	May	Jun	Jul	Aug	Sep	Oct	AVG
Overall Appearance	80	4.1	4.0	4.3	3.6	3.6	3.2	2.9	3.7
	50	4.0	3.8	4.5	3.5	3.5	3.4	2.6	3.6
	20	3.9	3.9	4.2	3.5	3.5	3.2	2.8	3.6
Foliage	80	5.0	4.8	4.9	3.9	4.0	3.3	2.9	4.1
	50	5.0	4.6	4.8	3.8	3.9	3.5	2.6	4.0
	20	4.8	4.8	4.7	3.7	3.7	3.3	2.5	3.9
Flower	80	0.0	0.0	3.6	2.1	1.7	1.6	1.4	1.5
	50	0.0	0.0	3.9	1.9	1.8	1.6	1.5	1.5
	20	0.0	0.0	3.6	1.6	1.5	1.6	1.5	1.4
Pest Resistance	80	4.9	4.9	4.4	3.4	3.6	4.0	3.8	4.1
	50	5.0	4.7	4.7	3.4	3.7	3.8	3.8	4.1
	20	5.0	4.9	4.4	3.4	3.7	4.1	4.1	4.2
Disease Resistance	80	5.0	4.9	5.0	5.0	5.0	5.0	3.4	4.8
	50	5.0	5.0	5.0	5.0	5.0	5.0	3.4	4.8
	20	5.0	5.0	5.0	4.9	4.9	4.9	3.4	4.7
Vigor	80	5.0	5.0	5.0	4.6	4.6	4.8	4.8	4.8
	50	5.0	4.9	5.0	5.0	5.0	5.0	5.0	5.0
	20	4.9	4.9	4.9	4.9	4.9	4.9	4.9	4.9

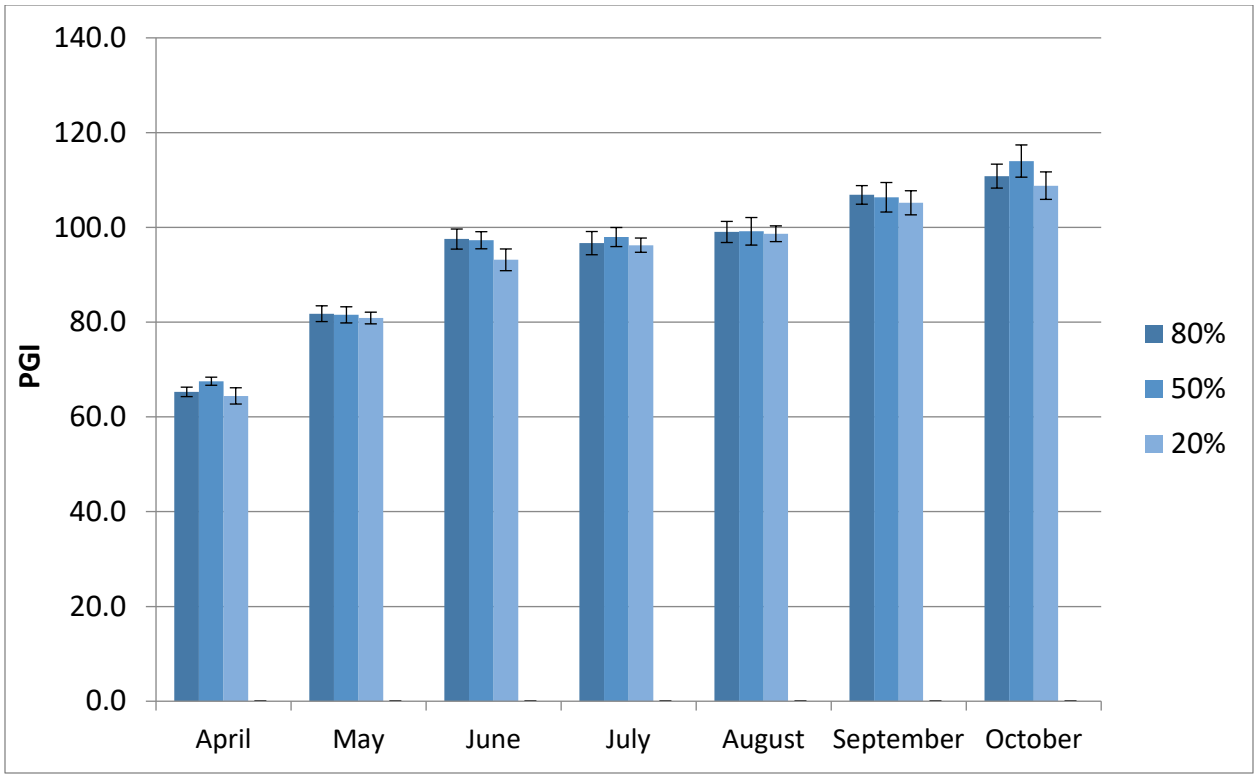


Figure 1a. *Buddleia* × 'SMNBDBT' Pugster Blue® average monthly plant growth index (PGI) at UC Davis on 3 ETo-based irrigation levels in 2020.

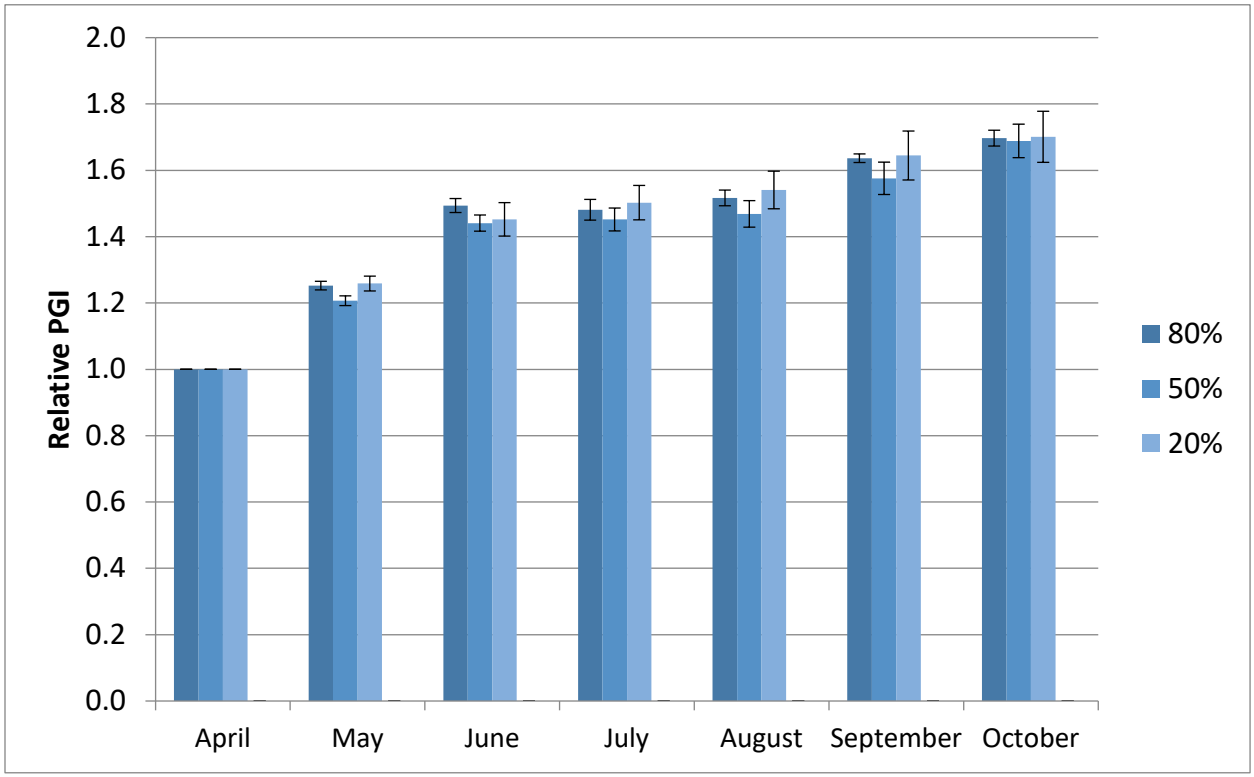


Figure 1b. *Buddleia* × 'SMNBDBT' Pugster Blue® average monthly relative plant growth index (RPGI) at UC Davis on 3 ETo-based irrigation levels in 2020.

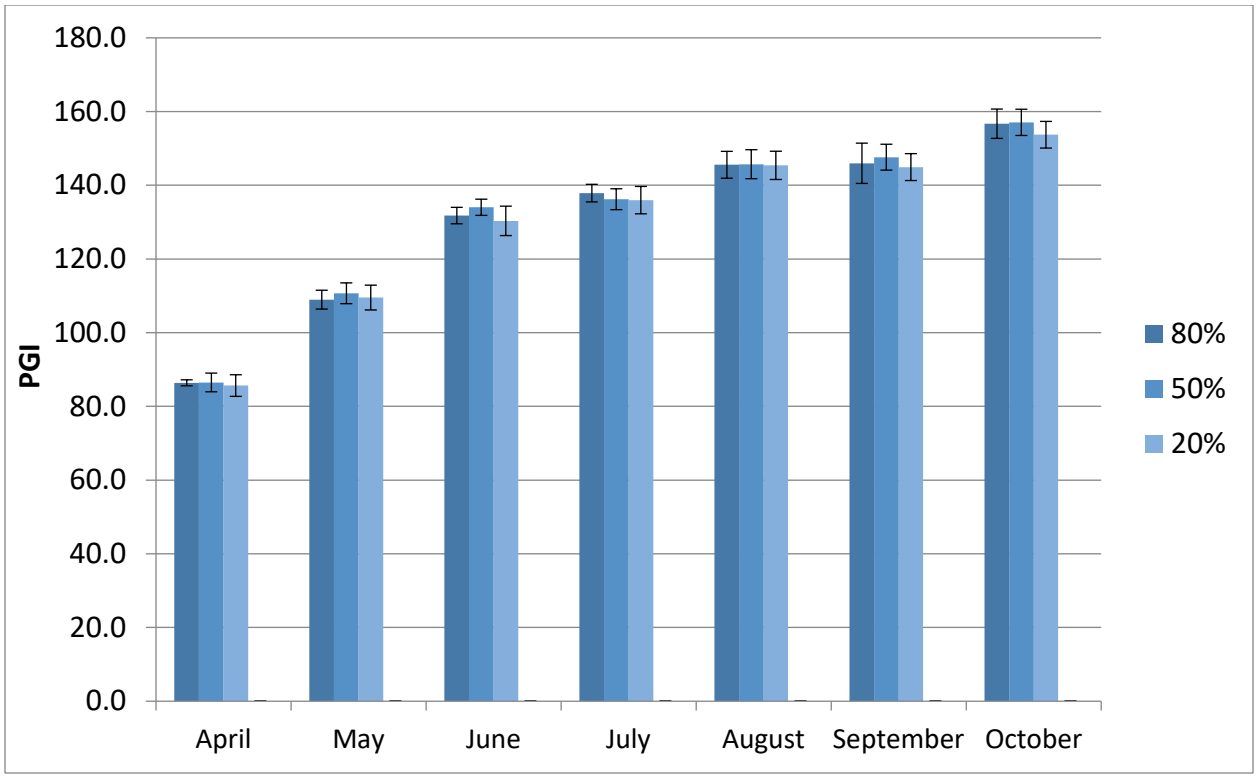


Figure 1c. *Buddleia* × 'SMNBDBT' Pugster Blue® average monthly plant growth index (PGI) at South Coast REC on 3 ETo-based irrigation levels in 2020.

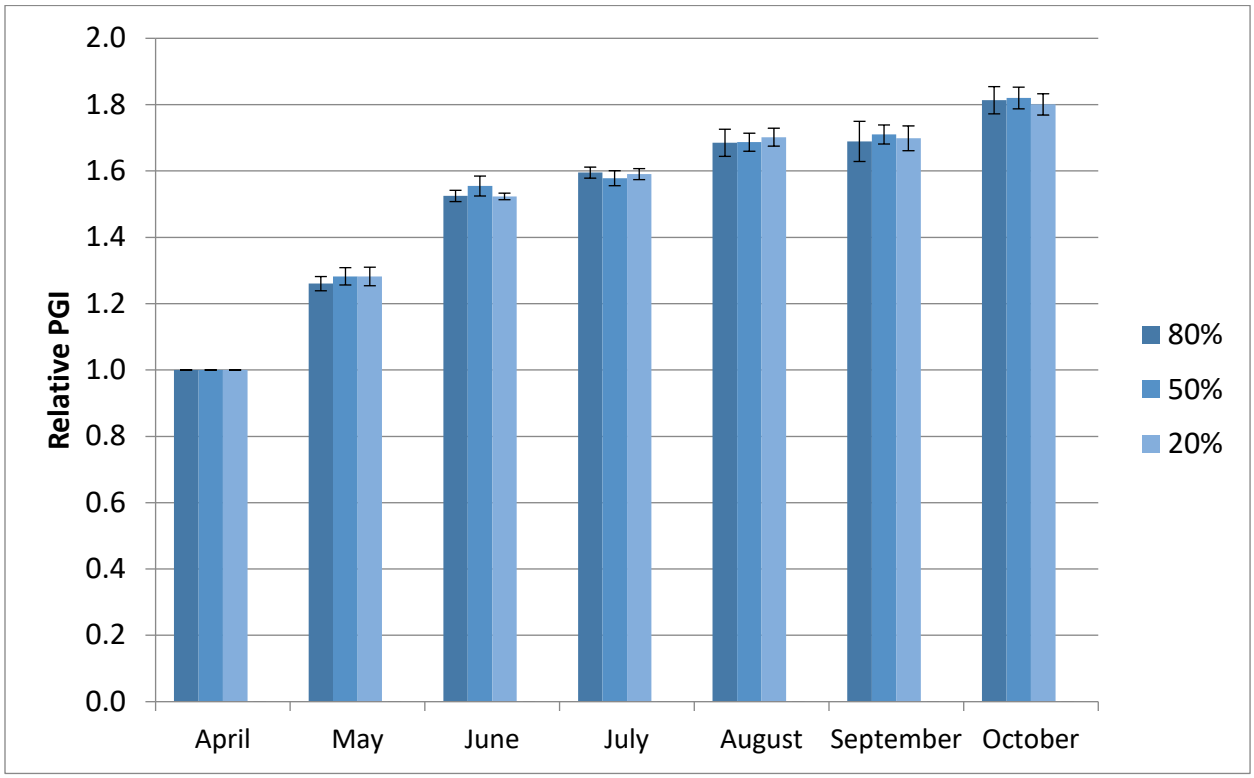


Figure 1d. *Buddleia* × 'SMNBDBT' Pugster Blue® average monthly relative plant growth index (RPGI) at South Coast REC on 3 ETo-based irrigation levels in 2020.

Table 9a. *Cotinus coggygria* 'NCCO1' Winecraft Black® average monthly quality ratings (scale 1-5, 1= lowest, 5 = highest) at UC Davis on 3 ETo-based irrigation levels in 2020.

Category	ET_o%	May	Jun	Jul	Aug	Sep	Oct	AVG
Overall Appearance	80	3.8	3.2	3.7	3.3	2.4	2.7	3.2
	50	3.9	3.9	3.6	3.4	2.9	2.8	3.4
	20	3.5	3.7	3.4	3.3	3.0	2.7	3.3
Foliage	80	4.9	5.0	4.9	4.5	3.0	2.8	4.2
	50	5.0	5.0	5.0	4.5	3.4	2.9	4.3
	20	5.0	5.0	5.0	4.4	3.4	2.9	4.3
Flower	80	0.3	0.4	0.0	0.0	0.0	0.0	0.1
	50	0.5	0.5	0.0	0.0	0.1	0.0	0.2
	20	0.3	0.7	0.0	0.0	0.1	0.0	0.2
Pest Resistance	80	5.0	5.0	5.0	5.0	4.0	3.8	4.6
	50	5.0	5.0	5.0	5.0	4.4	3.9	4.7
	20	5.0	5.0	5.0	5.0	4.6	3.9	4.7
Disease Resistance	80	5.0	5.0	5.0	5.0	5.0	5.0	5.0
	50	5.0	5.0	5.0	5.0	5.0	5.0	5.0
	20	5.0	5.0	5.0	5.0	5.0	5.0	5.0
Vigor	80	4.5	4.1	4.5	4.5	2.9	3.0	3.9
	50	5.0	4.5	4.5	4.5	3.3	3.0	4.1
	20	3.9	4.0	4.3	4.3	3.4	3.0	3.8

Table 9b. *Cotinus coggygria* 'NCCO1' Winecraft Black® average monthly quality ratings (scale 1-5, 1= lowest, 5 = highest) at South Coast REC on 3 ETo-based irrigation levels in 2020.

Category	ET_o%	May	Jun	Jul	Aug	Sep	Oct	AVG
Overall Appearance	80	3.0	3.3	3.4	3.4	3.1	2.6	3.1
	50	3.0	3.3	3.3	3.3	3.1	2.8	3.1
	20	2.4	3.3	3.3	3.3	3.1	2.8	3.1
Foliage	80	3.0	3.4	3.6	3.6	3.1	2.6	3.2
	50	2.9	3.2	3.3	3.2	3.1	2.8	3.1
	20	2.4	3.4	3.6	3.6	3.1	2.8	3.1
Flower	80	1.4	2.2	0.1	0.0	0.0	0.0	0.6
	50	1.8	3.3	0.0	0.0	0.2	0.0	0.9
	20	0.9	1.8	0.0	0.0	0.0	0.0	0.5
Pest Resistance	80	5.0	5.0	4.8	4.5	4.6	4.8	4.8
	50	5.0	5.0	5.0	5.0	5.0	5.0	5.0
	20	4.2	5.0	5.0	4.8	4.8	5.0	4.8
Disease Resistance	80	5.0	4.9	5.0	4.9	4.9	4.9	4.9
	50	5.0	5.0	5.0	5.0	5.0	5.0	5.0
	20	4.2	4.8	4.8	5.0	5.0	5.0	4.8
Vigor	80	2.9	3.7	4.2	4.3	4.0	3.2	3.7
	50	2.8	3.7	3.8	3.8	3.5	3.2	3.5
	20	2.3	3.3	3.7	3.7	3.3	3.1	3.2

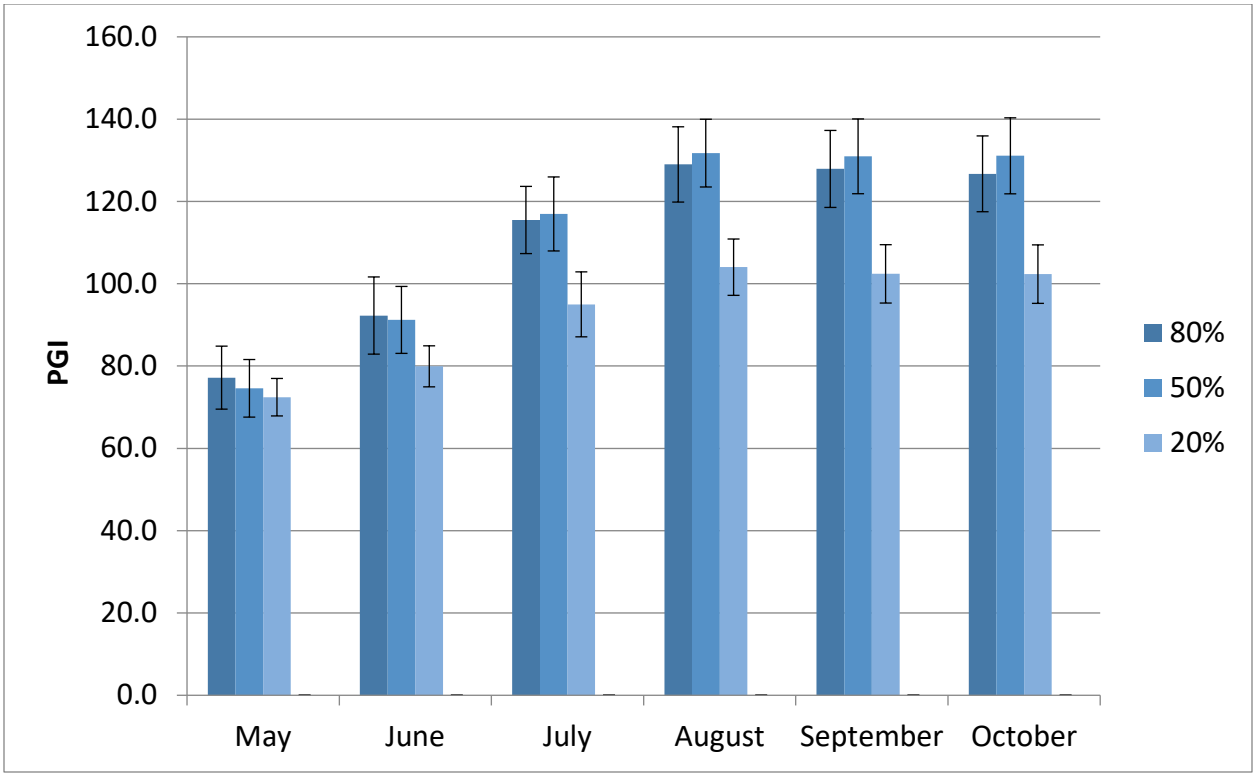


Figure 2a. *Cotinus coggygria* 'NCCO1' Winecraft Black® average monthly plant growth index (PGI) at UC Davis on 3 ETo-based irrigation levels in 2020.

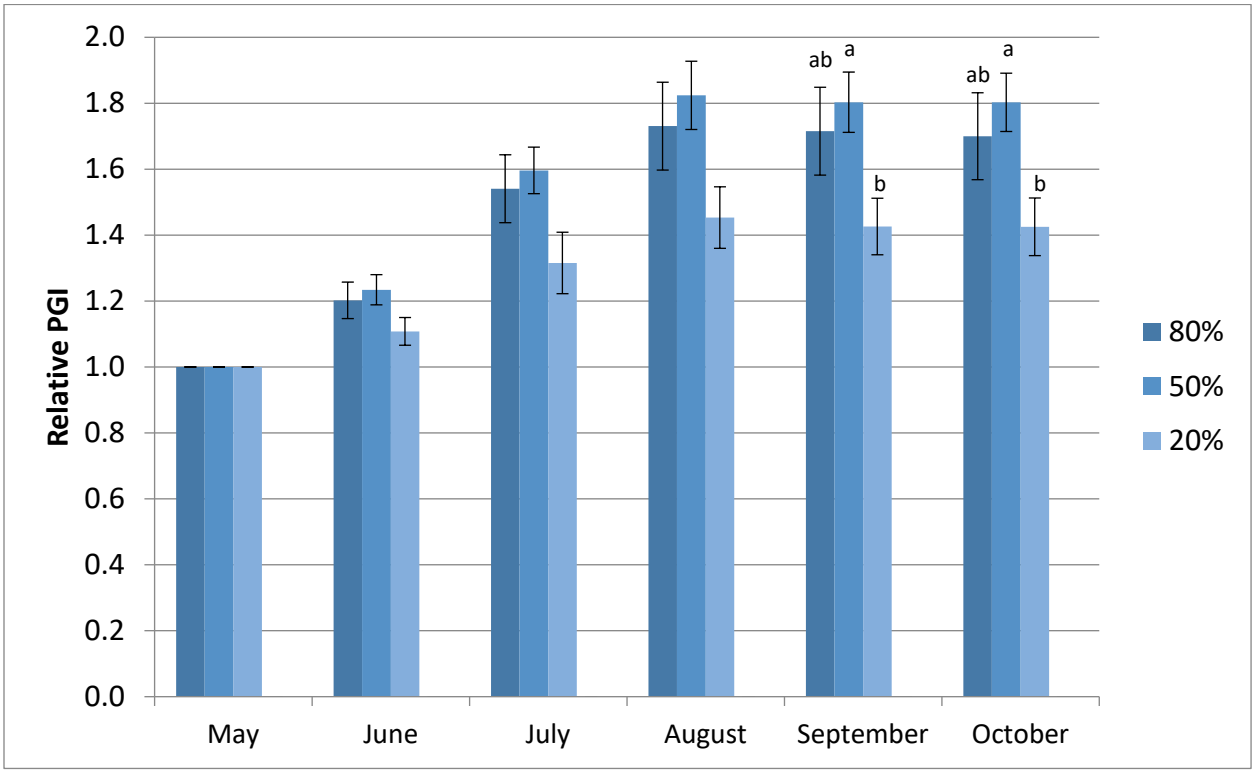


Figure 2b. *Cotinus coggygria* 'NCCO1' Winecraft Black® average monthly relative plant growth index (RPGI) at UC Davis on 3 ETo-based irrigation levels in 2020.

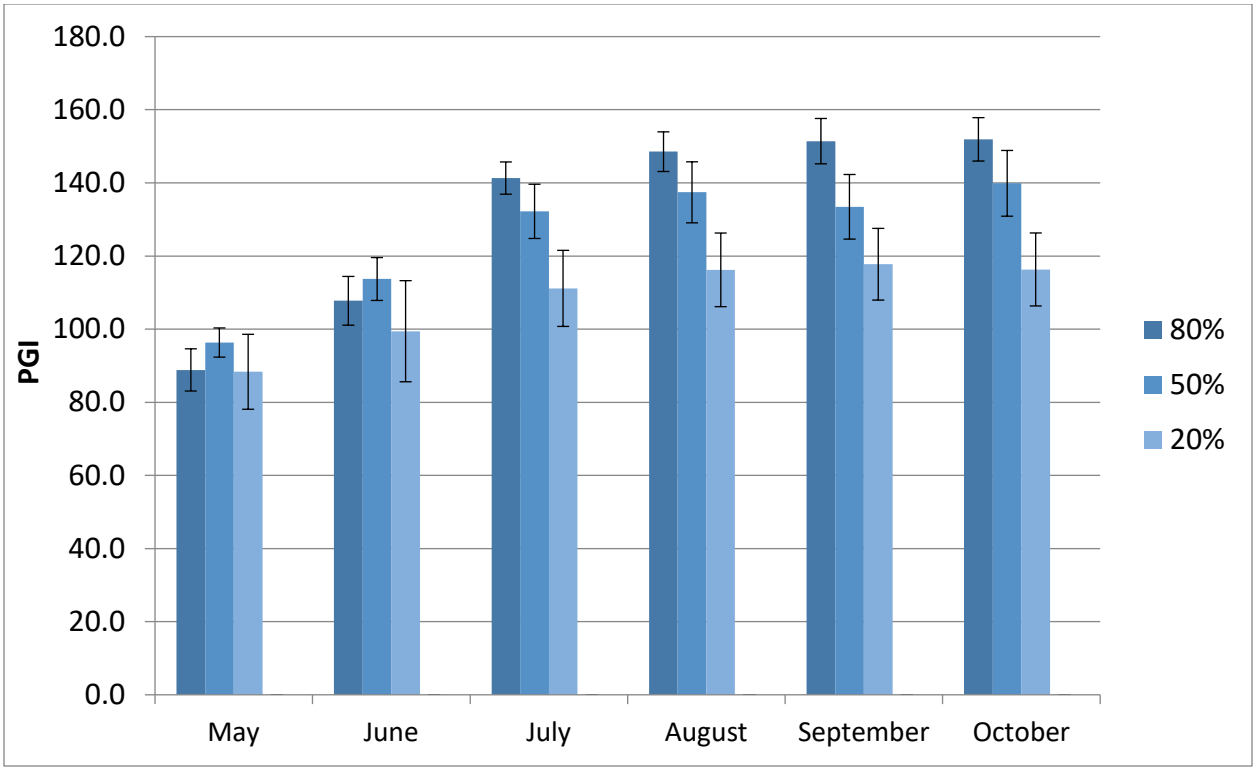


Figure 2c. *Cotinus coggygria* 'NCCO1' Winecraft Black® average monthly plant growth index (PGI) at South Coast REC on 3 ETo-based irrigation levels in 2020.

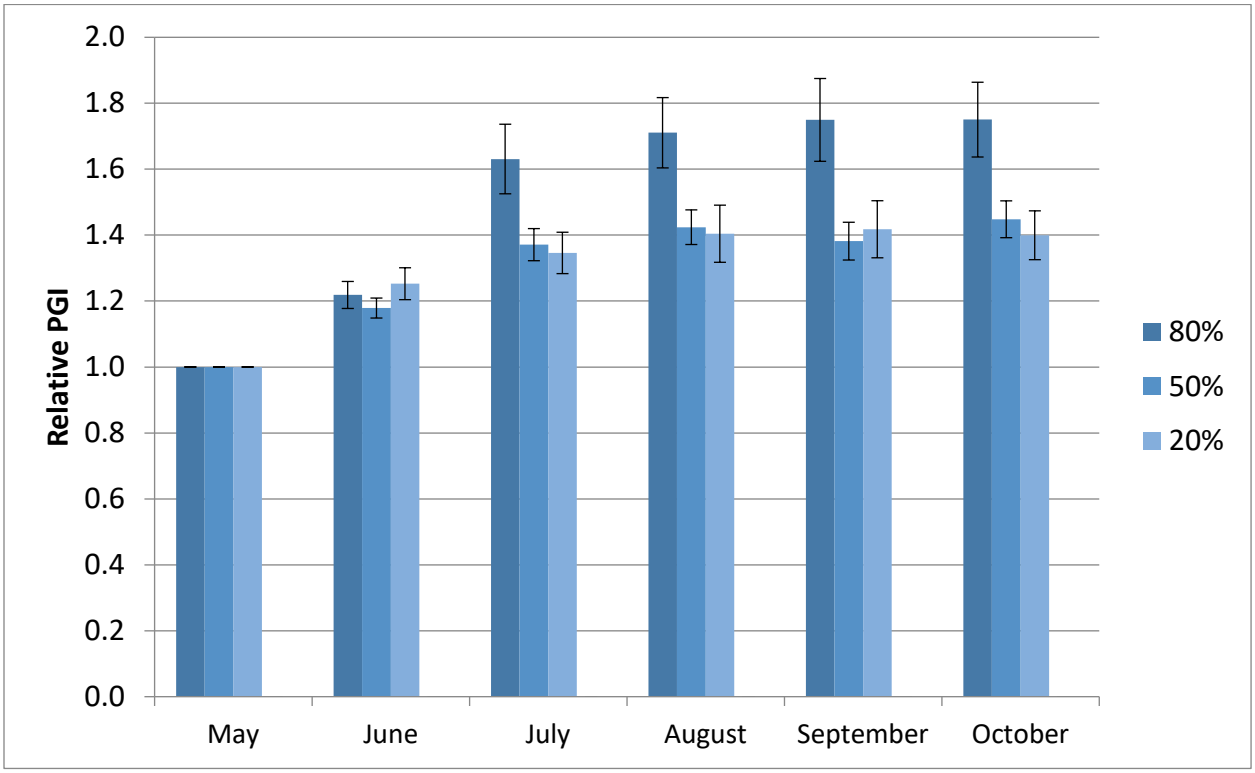


Figure 2d. *Cotinus coggygria* 'NCCO1' Winecraft Black® average monthly relative plant growth index (RPGI) at South Coast REC on 3 ETo-based irrigation levels in 2020.

Table 10a. *Eremophila glabra* 'EREM1' Grey Horizon™ average monthly quality ratings (scale 1-5, 1= lowest, 5 = highest) at UC Davis on 3 ETo-based irrigation levels in 2020.

Category	ET_o%	Apr	May	Jun	Jul	Aug	Sep	Oct	AVG
Overall Appearance	80	3.4	2.9	2.8	3.2	3.0	3.1	2.9	3.1
	50	3.6	3.1	2.9	3.4	3.2	3.2	3.1	3.2
	20	3.2	2.9	2.9	3.0	3.1	2.9	3.2	3.0
Foliage	80	3.9	3.1	2.9	3.5	3.1	3.9	3.3	3.4
	50	4.1	3.7	3.8	3.7	3.5	3.9	3.6	3.8
	20	3.5	3.2	3.4	3.4	3.8	4.0	4.0	3.6
Flower	80	0.6	0.0	0.0	0.3	0.0	0.0	0.4	0.2
	50	1.0	0.3	0.0	0.0	0.0	0.0	0.0	0.2
	20	0.4	0.0	0.0	0.0	0.0	0.0	0.2	0.1
Pest Resistance	80	5.0	5.0	5.0	4.9	5.0	5.0	5.0	5.0
	50	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0
	20	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0
Disease Resistance	80	4.8	5.0	5.0	5.0	4.1	5.0	5.0	4.8
	50	4.7	5.0	5.0	5.0	4.9	5.0	5.0	4.9
	20	4.8	5.0	5.0	5.0	5.0	5.0	5.0	5.0
Vigor	80	5.0	4.6	5.0	4.5	4.4	4.1	3.5	4.4
	50	5.0	4.6	4.9	4.6	4.6	4.3	4.1	4.6
	20	5.0	4.0	4.2	4.2	4.2	4.0	4.2	4.3

Table 10b. *Eremophila glabra* 'EREM1' Grey Horizon™ average monthly quality ratings (scale 1-5, 1= lowest, 5 = highest) at South Coast REC on 3 ETo-based irrigation levels in 2020.

Category	ET_o%	Apr	May	Jun	Jul	Aug	Sep	Oct	AVG
Overall Appearance	80	3.7	3.8	3.6	3.7	3.8	3.4	3.3	3.6
	50	3.8	3.7	3.7	3.8	3.6	3.4	3.1	3.6
	20	3.6	3.9	3.7	3.5	3.4	3.2	3.3	3.5
Foliage	80	4.0	3.8	3.9	3.9	3.9	3.7	3.7	3.8
	50	3.8	4.0	4.3	4.1	3.9	3.7	3.4	3.9
	20	3.9	4.3	4.1	3.4	3.4	3.3	3.4	3.7
Flower	80	0.0	0.2	0.3	0.5	0.5	0.2	0.0	0.2
	50	0.0	0.3	0.6	0.7	0.3	0.1	0.1	0.3
	20	0.0	0.6	0.4	0.6	0.4	0.1	0.1	0.3
Pest Resistance	80	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0
	50	5.0	5.0	5.0	4.8	4.9	4.9	4.9	4.9
	20	5.0	5.0	5.0	5.0	5.0	5.0	4.8	5.0
Disease Resistance	80	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0
	50	5.0	5.0	5.0	5.0	5.0	5.0	4.8	5.0
	20	5.0	5.0	5.0	5.0	4.9	4.9	4.6	4.9
Vigor	80	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0
	50	4.9	5.0	5.0	5.0	5.0	5.0	4.6	4.9
	20	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0

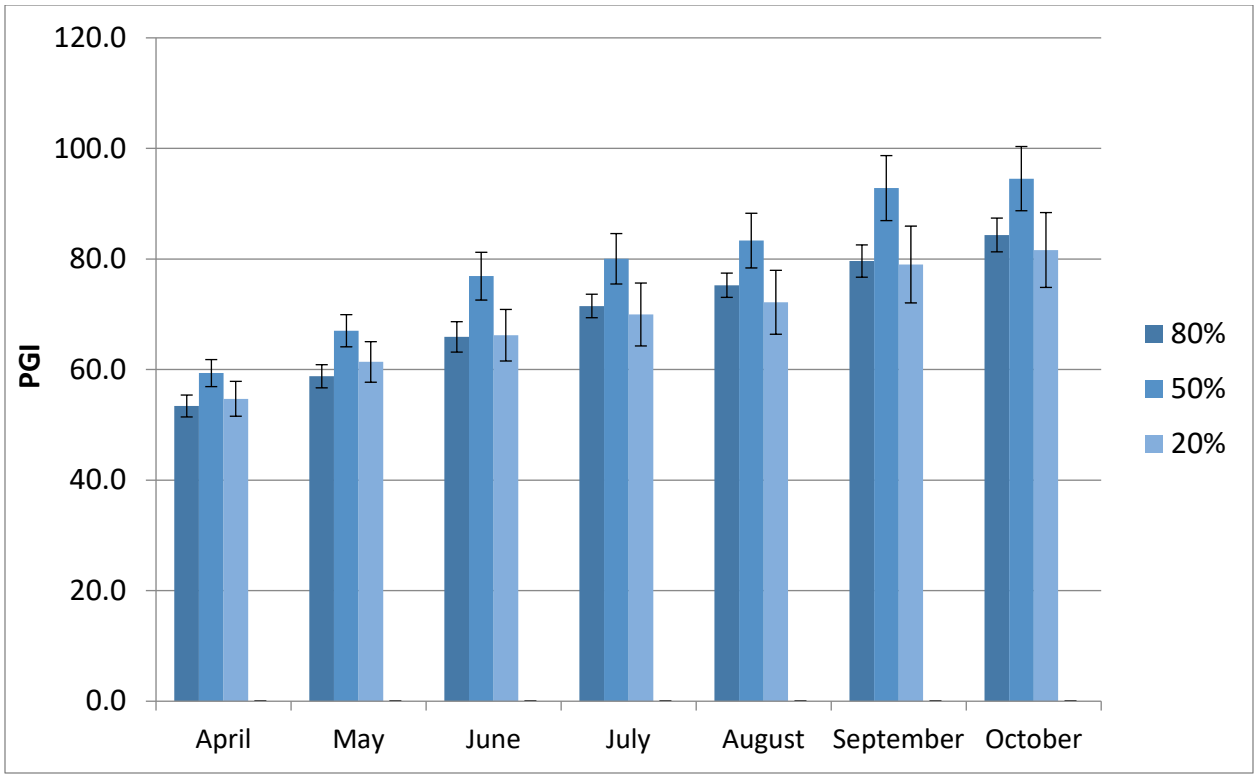


Figure 3a. *Eremophila glabra* 'EREM1' Grey Horizon™ average monthly plant growth index (PGI) at UC Davis on 3 ETo-based irrigation levels in 2020.

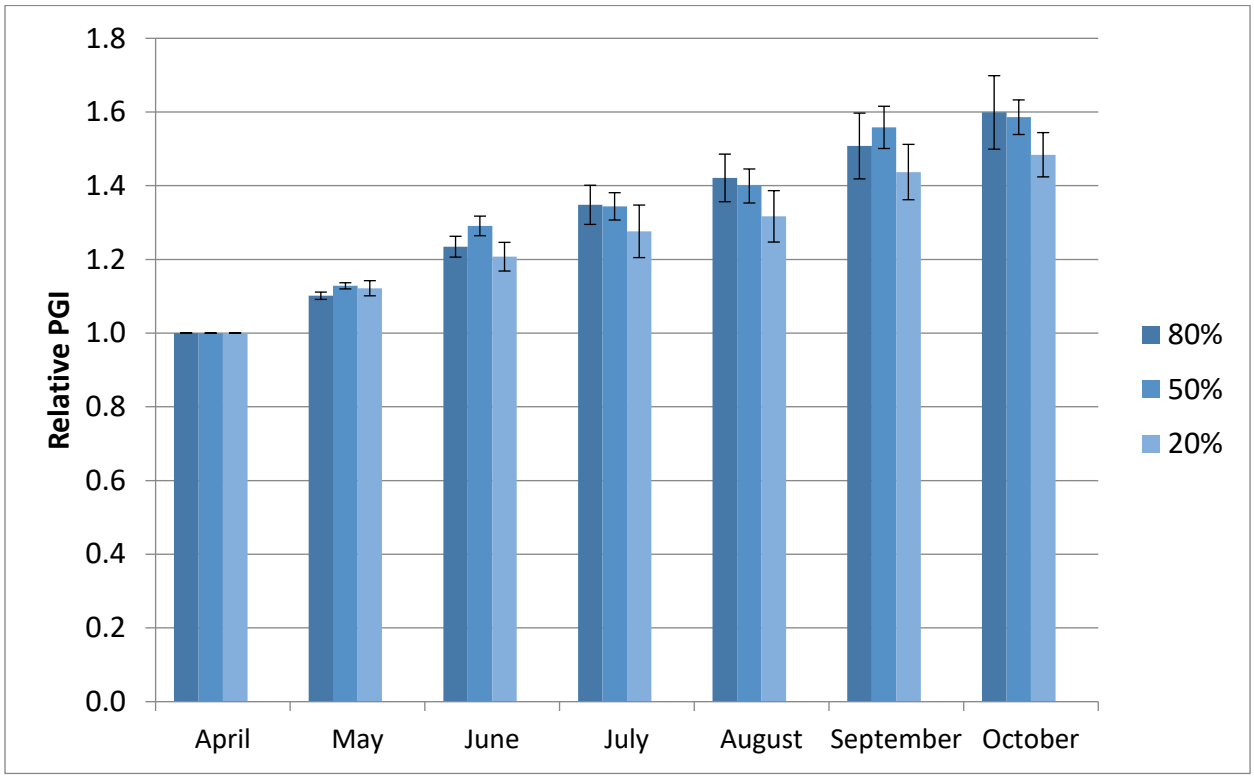


Figure 3b. *Eremophila glabra* 'EREM1' Grey Horizon™ average monthly relative plant growth index (RPGI) at UC Davis on 3 ETo-based irrigation levels in 2020.

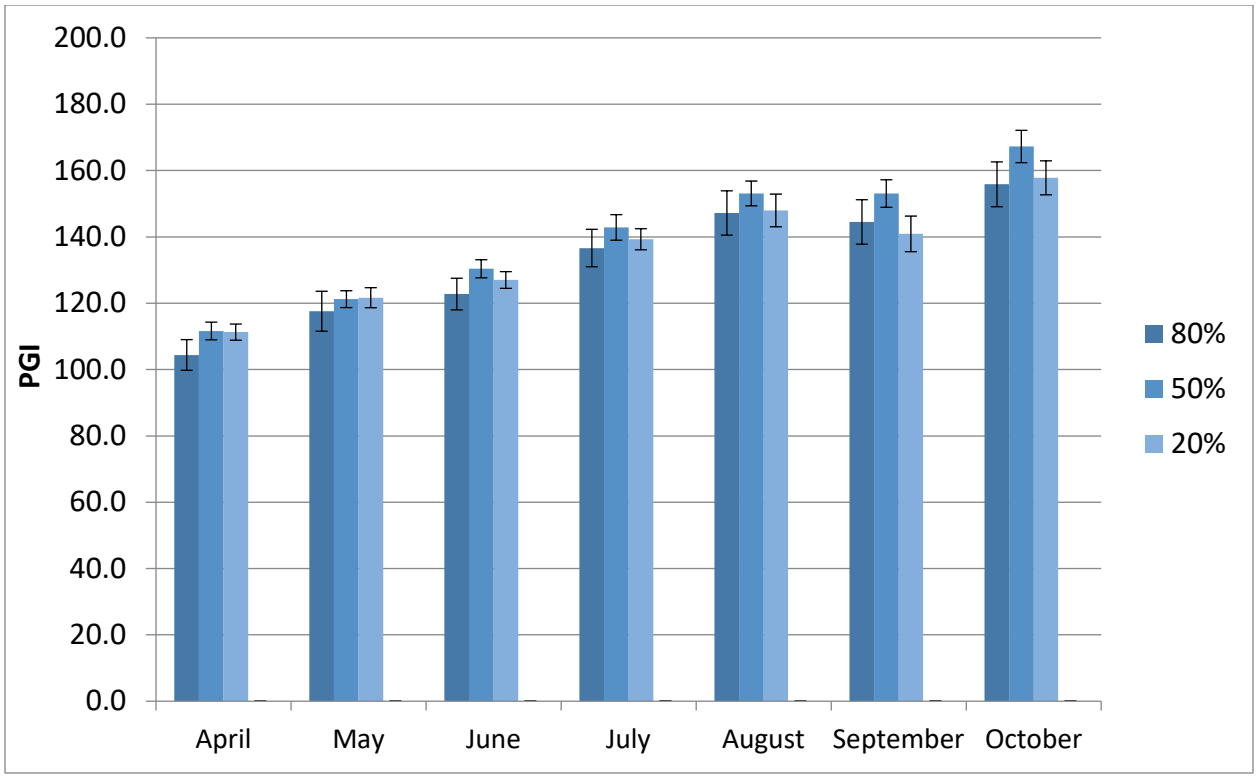


Figure 3c. *Eremophila glabra* 'EREM1' Grey Horizon™ average monthly plant growth index (PGI) at South Coast REC on 3 ETo-based irrigation levels in 2020.

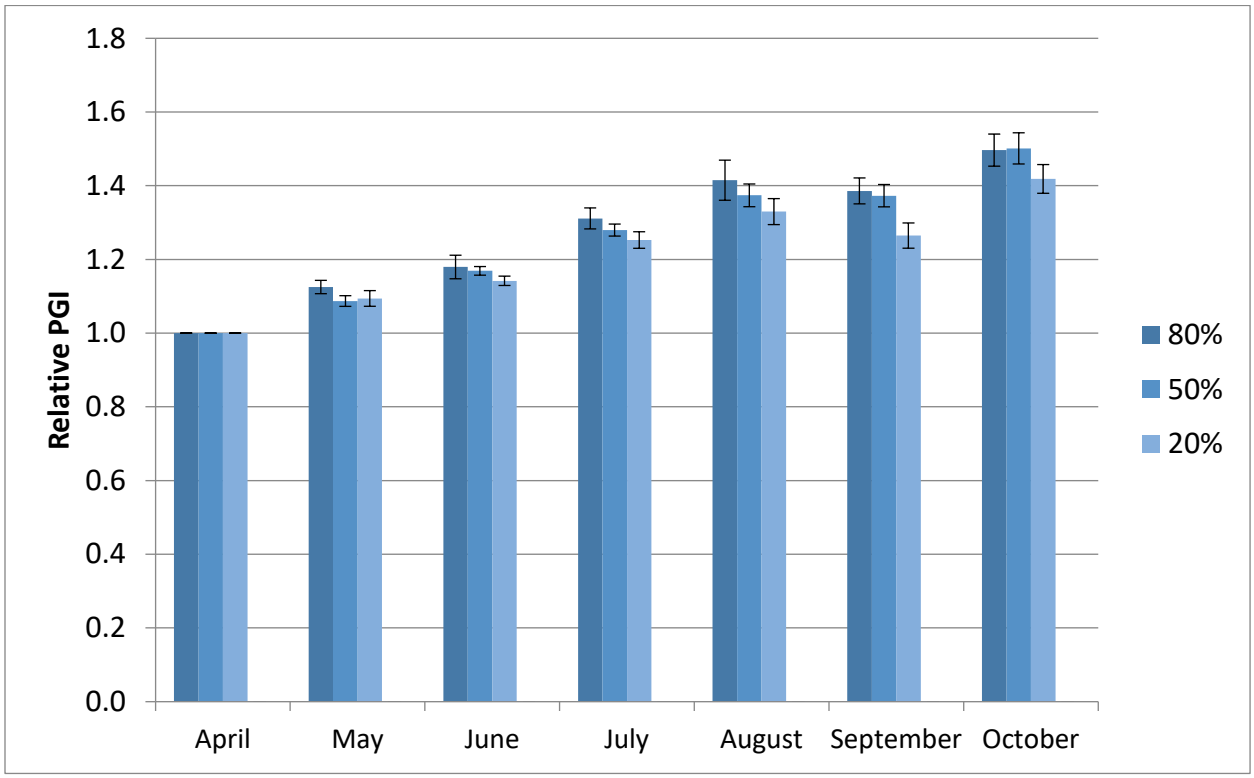


Figure 3d. *Eremophila glabra* 'EREM1' Grey Horizon™ average monthly relative plant growth index (RPGI) at South Coast REC on 3 ETo-based irrigation levels in 2020.

Table 11a. *Hamelia patens* Sierra Red™ average monthly quality ratings (scale 1-5, 1= lowest, 5 = highest) at UC Davis on 3 ETo based irrigation levels in 2020.

Category	ET_o%	Jul	Aug	Sep	Oct	AVG
Overall Appearance	80	3.8	4.2	3.9	3.3	3.8
	50	3.8	4.2	3.8	3.4	3.8
	20	3.7	4.2	3.5	3.0	3.6
Foliage	80	4.3	4.5	3.9	3.9	4.1
	50	4.2	4.2	4.0	4.0	4.1
	20	4.0	4.7	4.0	3.8	4.1
Flower	80	0.0	0.0	1.8	2.3	1.0
	50	0.0	0.0	1.8	1.8	0.9
	20	0.0	0.0	0.3	1.2	0.4
Pest Resistance	80	4.9	4.8	5.0	5.0	4.9
	50	5.0	5.0	5.0	5.0	5.0
	20	5.0	4.8	5.0	4.7	4.9
Disease Resistance	80	5.0	4.8	5.0	5.0	4.9
	50	5.0	4.2	5.0	5.0	4.8
	20	5.0	4.7	5.0	4.7	4.8
Vigor	80	4.8	4.9	4.4	4.4	4.6[a]
	50	4.8	5.0	4.2	3.8	4.5[ab]
	20	4.5	5.0	4.0	2.8	4.1[b]

Table 11b. *Hamelia patens* Sierra Red™ average monthly quality ratings (scale 1-5, 1= lowest, 5 = highest) at South Coast REC on 3 ETo-based irrigation levels in 2020.

Category	ET_o%	Apr	May	Jun	Jul	Aug	Sep	Oct	AVG
Overall Appearance	80	3.8	3.3	3.5	3.8	3.3	2.8	2.8	3.3
	50	2.9	2.7	2.9	2.9	2.9	3.0	2.9	2.9
	20	3.0	3.5	3.3	3.2	3.0	2.9	2.8	3.1
Foliage	80	4.3	3.8	4.8	4.3	3.3	2.8	3.0	3.7
	50	3.0	2.7	3.4	3.1	3.4	3.1	3.1	3.1
	20	3.4	3.5	3.9	3.7	3.2	2.9	2.9	3.4
Flower	80	0.0	0.0	0.0	2.0	3.5	3.5	3.3	1.8
	50	0.0	0.0	0.0	1.6	2.6	1.9	1.9	1.2
	20	0.0	0.0	0.0	1.4	2.7	1.9	2.2	1.2
Pest Resistance	80	5.0	5.0	4.8	4.8	4.0	3.3	3.3	4.3
	50	4.9	5.0	5.0	4.1	4.1	3.6	3.3	4.3
	20	4.8	5.0	5.0	4.7	3.7	2.9	2.5	4.1
Disease Resistance	80	5.0	5.0	5.0	5.0	2.8	2.8	2.8	4.0
	50	4.7	5.0	5.0	4.3	4.1	4.1	4.1	4.5
	20	4.8	5.0	4.9	4.7	3.2	3.2	3.2	4.1
Vigor	80	4.3	4.5	5.0	5.0	5.0	5.0	5.0	4.8
	50	3.4	3.9	3.9	3.7	4.3	4.1	4.1	3.9
	20	4.3	3.9	4.7	4.7	4.7	4.7	4.7	4.5

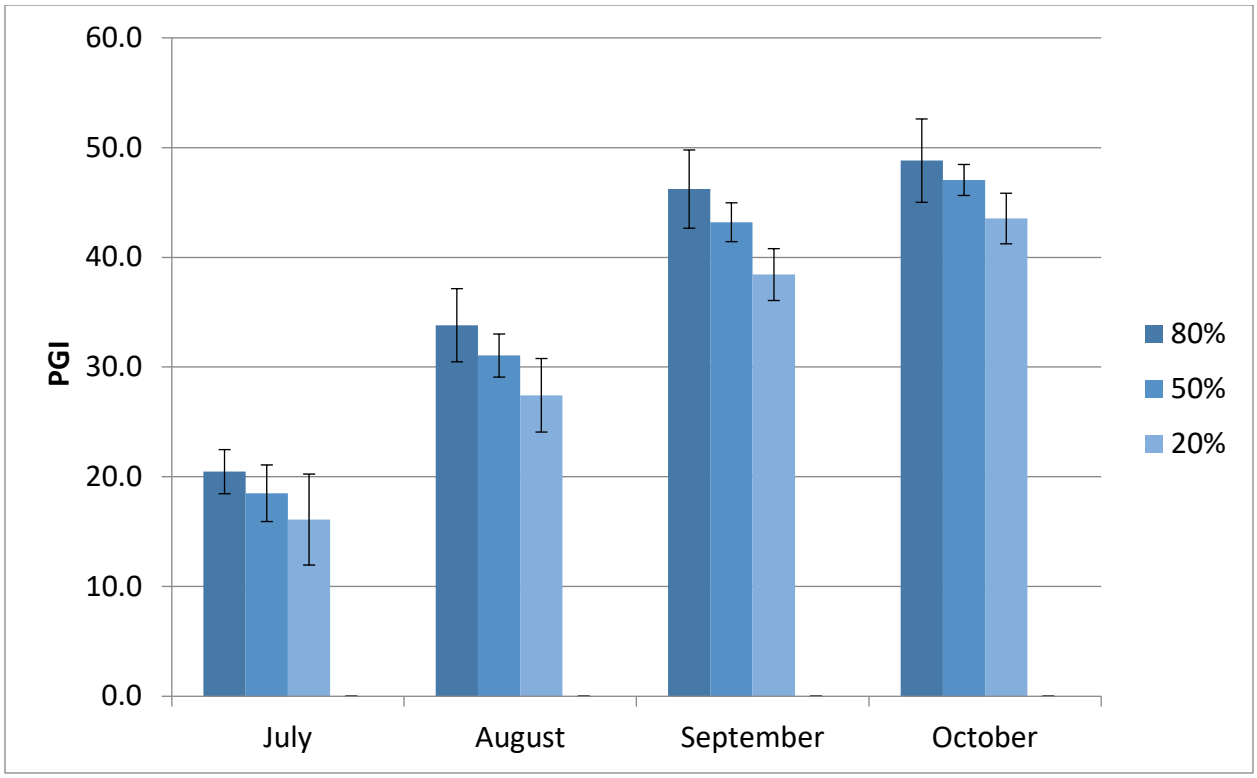


Figure 4a. *Hamelia patens* Sierra Red™ average monthly plant growth index (PGI) at UC Davis on 3 ETo-based irrigation levels in 2020.

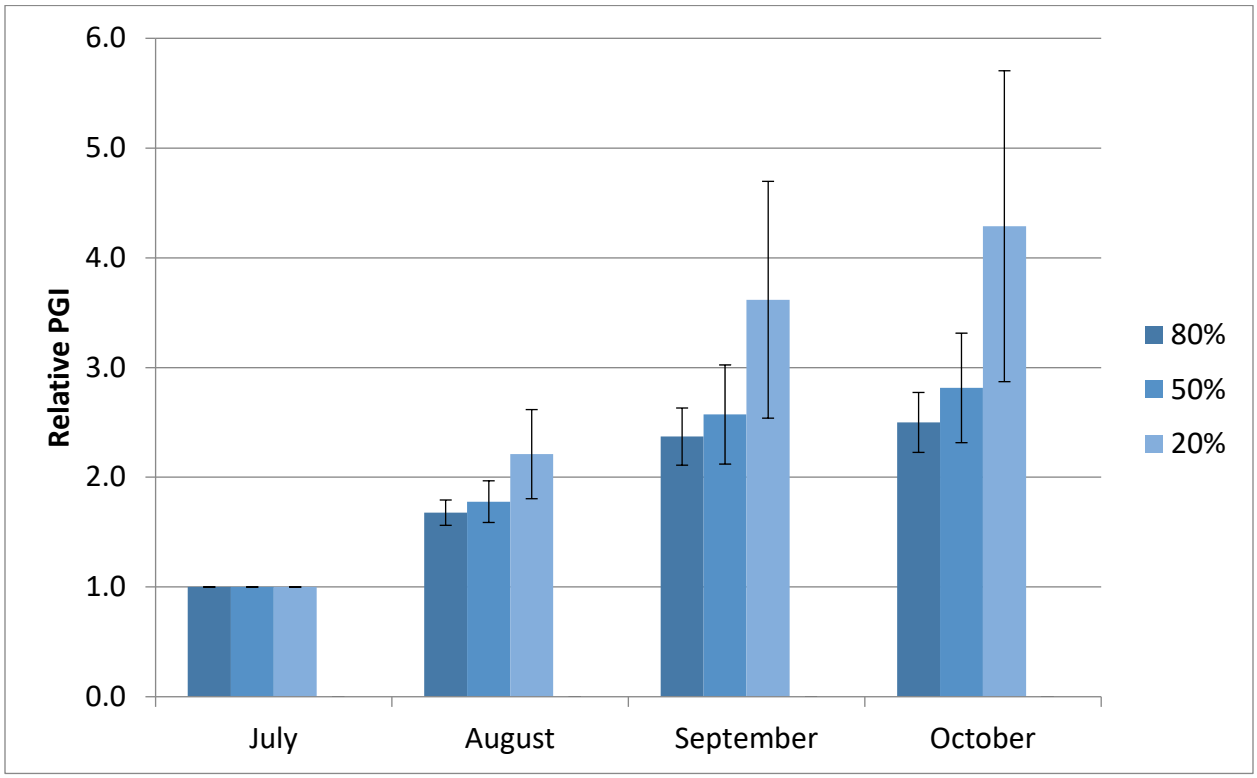


Figure 4b. *Hamelia patens* Sierra Red™ average monthly relative plant growth index (RPGI) at UC Davis on 3 ETo-based irrigation levels in 2020.

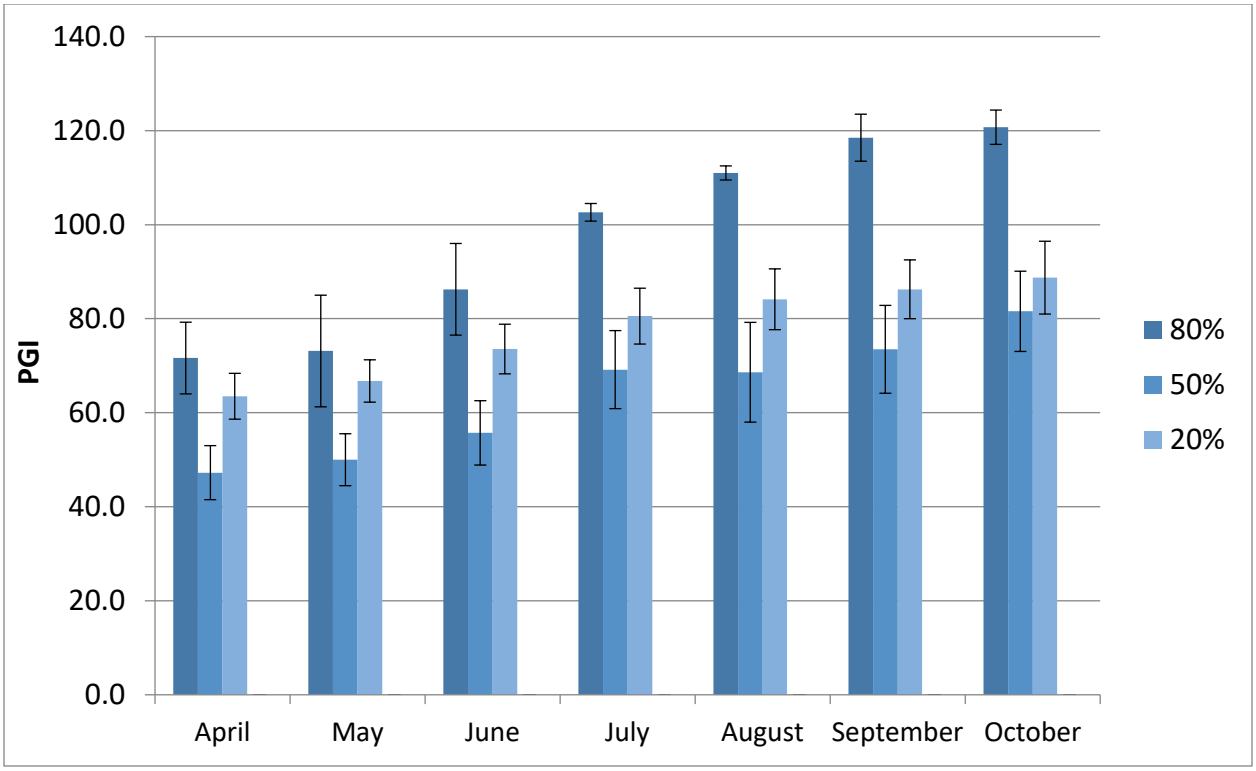


Figure 4c. *Hamelia patens* Sierra Red™ average monthly plant growth index (PGI) at South Coast REC on 3 ETo-based irrigation levels in 2020.

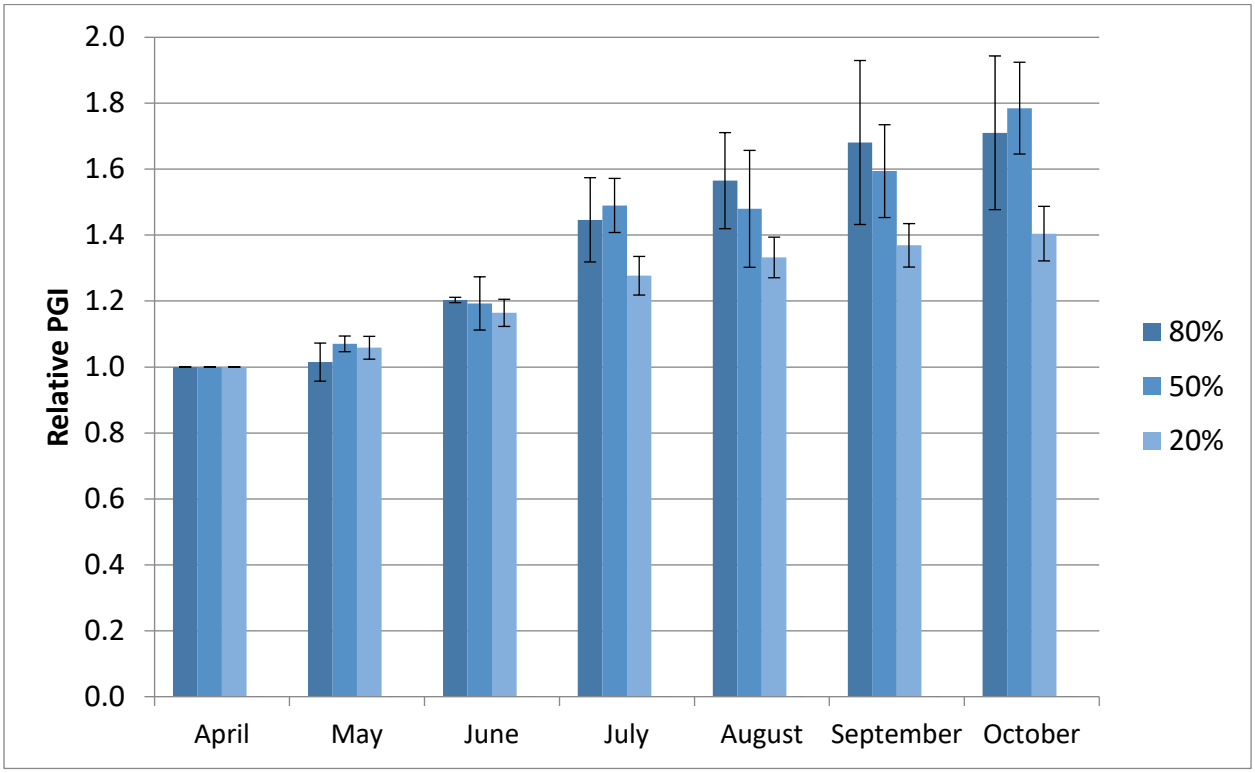


Figure 4d. *Hamelia patens* Sierra Red™ average monthly relative plant growth index (RPGI) at South Coast REC on 3 ETo-based irrigation levels in 2020.

Table 12a. *Hesperaloe parviflora* 'MSWNPERED' Sandia Glow® average monthly quality ratings (scale 1-5, 1= lowest, 5 = highest) at UC Davis on 3 ETo based irrigation levels in 2020.

Category	ET_o%	Apr	May	Jun	Jul	Aug	Sep	Oct	AVG
Overall Appearance	80	3.4	3.3	3.4	3.9	4.1	3.8	3.9	3.7
	50	3.8	3.6	3.7	4.3	4.5	4.1	4.1	4.0
	20	3.5	3.4	3.4	4.0	4.0	3.8	3.9	3.7
Foliage	80	3.6	3.3	3.1	4.0	4.1	4.3	4.4	3.8
	50	3.9	3.3	3.4	4.3	4.9	4.4	4.1	4.0
	20	3.9	3.4	3.1	4.0	4.3	4.4	4.3	3.9
Flower	80	0.0	0.6	0.6	0.8	1.3	1.5	2.4	1.0
	50	0.3	1.1	1.5	1.4	1.5	1.9	2.3	1.4
	20	0.0	0.7	0.9	1.0	1.0	1.4	1.7	1.0
Pest Resistance	80	5.0	5.0	4.8	5.0	5.0	5.0	5.0	5.0
	50	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0
	20	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0
Disease Resistance	80	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0
	50	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0
	20	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0
Vigor	80	3.4	3.9	3.8	4.4	4.5	4.1	3.9	4.0
	50	3.9	4.1	3.8	4.6	4.8	4.3	4.5	4.3
	20	3.7	3.7	3.9	4.4	4.4	4.0	4.1	4.0

Table 12b. *Hesperaloe parviflora* 'MSWNPERED' Sandia Glow® average monthly quality ratings (scale 1-5, 1= lowest, 5 = highest) at South Coast REC on 3 ETo-based irrigation levels in 2020.

Category	ET_o%	Apr	May	Jun	Jul	Aug	Sep	Oct	AVG
Overall Appearance	80	3.1	3.2	3.4	3.4	3.4	3.3	3.4	3.3
	50	3.2	3.3	3.3	3.3	3.4	3.3	3.2	3.3
	20	3.3	3.2	3.3	3.3	3.4	3.3	3.3	3.3
Foliage	80	3.4	3.4	3.5	3.5	3.6	3.4	3.5	3.5
	50	3.3	3.4	3.5	3.5	3.4	3.3	3.3	3.4
	20	3.6	3.4	3.5	3.5	3.5	3.3	3.4	3.4
Flower	80	0.9	0.4	0.6	1.0	0.9	1.1	1.4	0.9
	50	1.4	0.4	0.4	0.9	1.3	1.3	1.8	1.0
	20	1.1	0.7	0.9	1.6	2.0	2.9	2.7	1.7
Pest Resistance	80	4.9	5.0	5.0	5.0	5.0	4.9	4.8	4.9
	50	4.4	5.0	5.0	5.0	5.0	5.0	5.0	4.9
	20	4.9	4.9	5.0	5.0	5.0	4.9	4.9	4.9
Disease Resistance	80	5.0	5.0	5.0	5.0	5.0	4.6	4.6	4.9
	50	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0
	20	4.7	5.0	5.0	5.0	5.0	5.0	5.0	5.0
Vigor	80	3.0	3.3	3.9	3.8	3.8	3.7	4.1	3.6
	50	2.9	3.3	3.8	3.7	4.1	3.9	3.7	3.6
	20	3.4	3.4	3.5	3.5	3.5	3.5	3.4	3.5

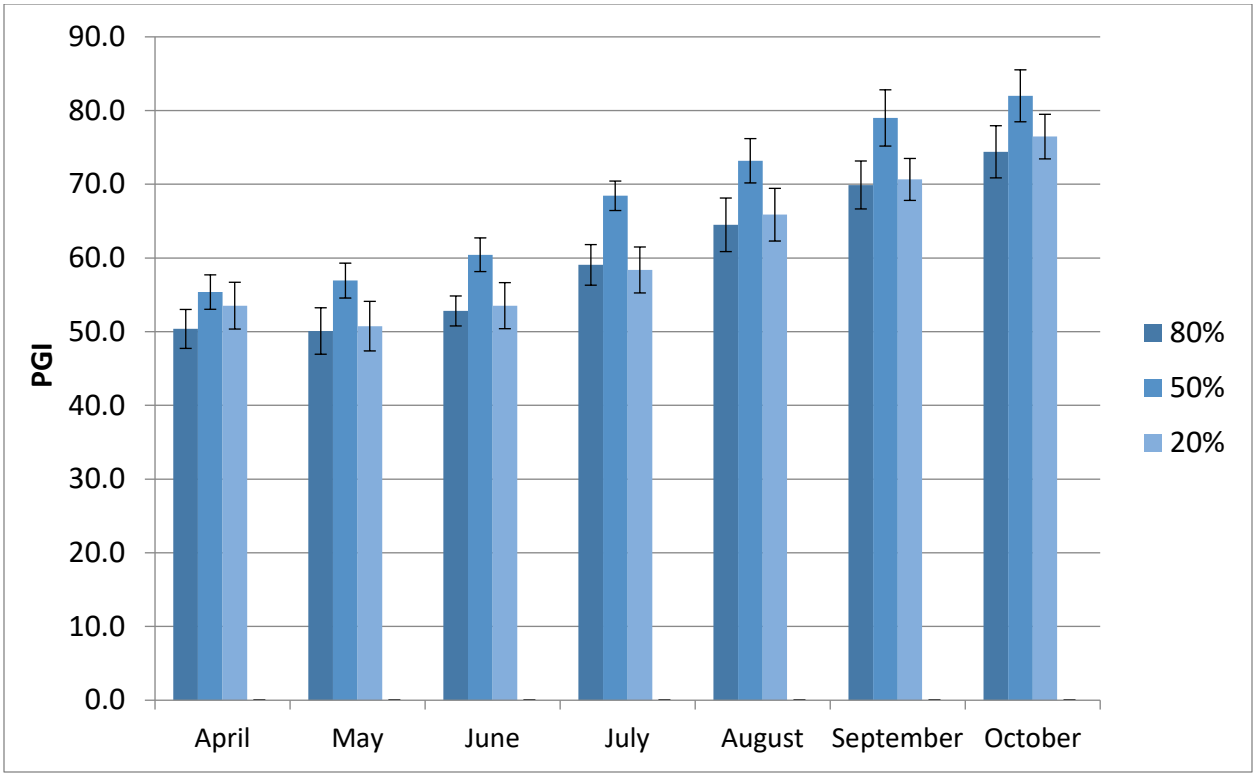


Figure 5a. *Hesperaloe parviflora* 'MSWNPERED' Sandia Glow® average monthly plant growth index (PGI) at UC Davis on 3 ETo-based irrigation levels in 2020.

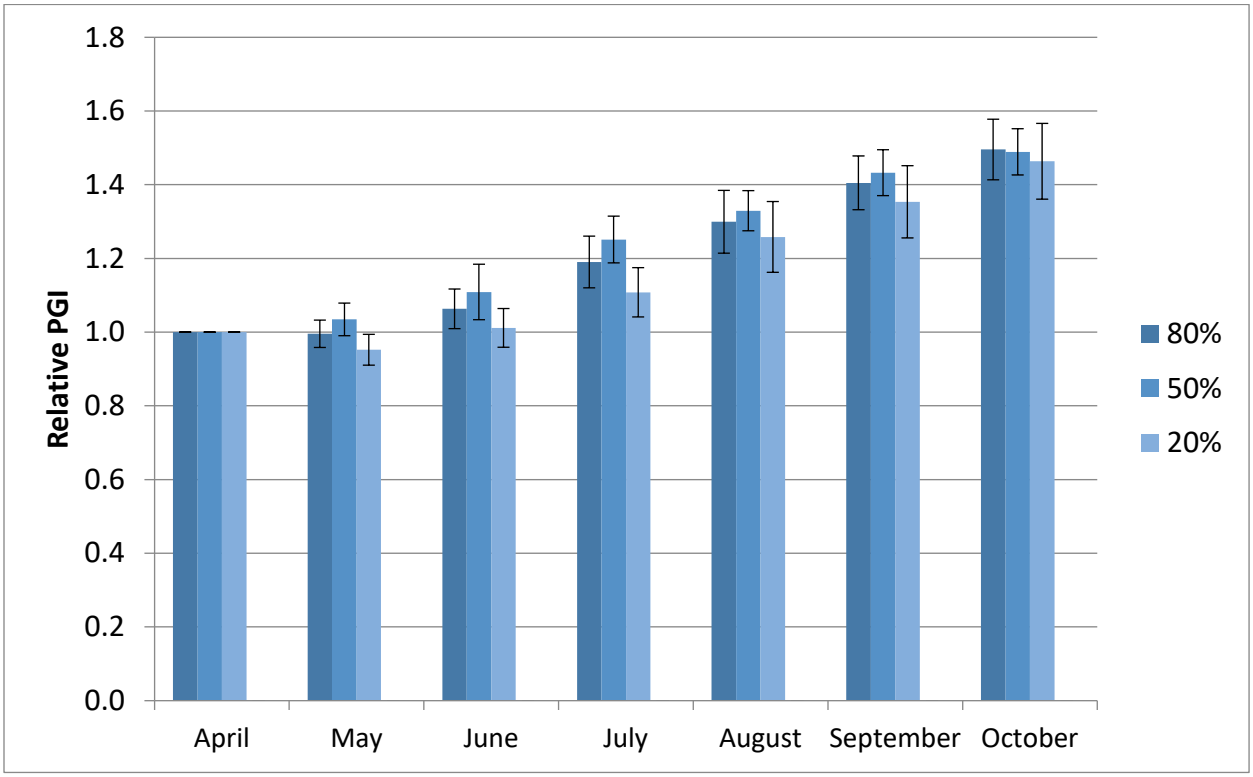


Figure 5b. *Hesperaloe parviflora* 'MSWNPERED' Sandia Glow® average monthly relative plant growth index (RPGI) at UC Davis on 3 ETo-based irrigation levels in 2020.

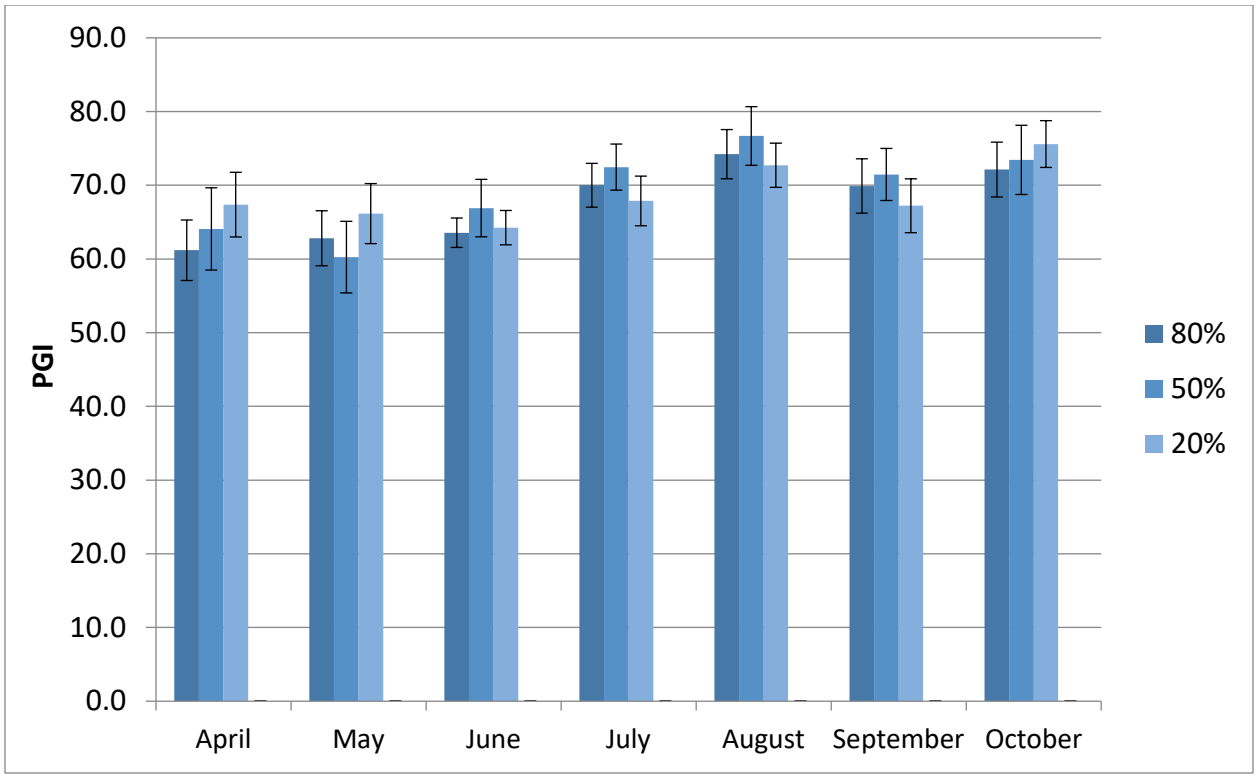


Figure 5c. *Hesperaloe parviflora* 'MSWNPERED' Sandia Glow® average monthly plant growth index (PGI) at South Coast REC on 3 ETo-based irrigation levels in 2020.

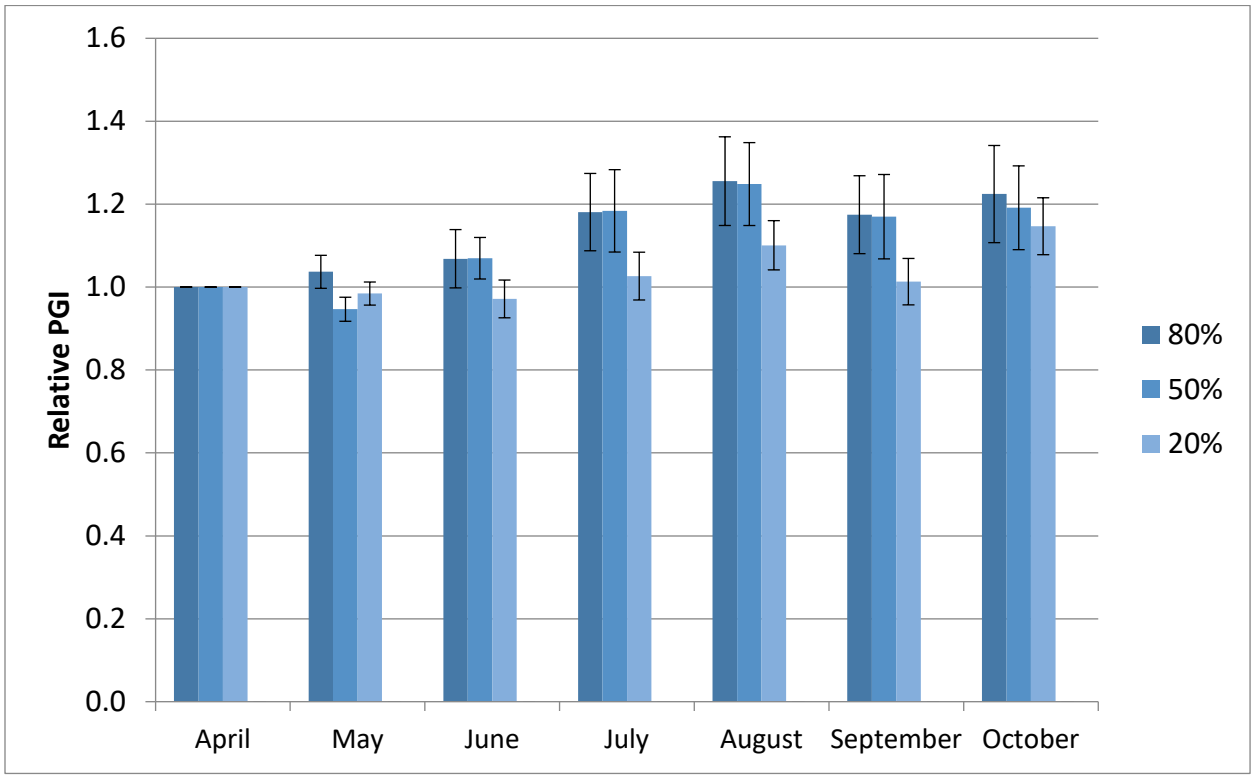


Figure 5d. *Hesperaloe parviflora* 'MSWNPERED' Sandia Glow® average monthly relative plant growth index (RPGI) at South Coast REC on 3 ETo-based irrigation levels in 2020.

Table 13a. *Hypericum kalmianum* 'Deppe' Sunny Boulevard® average monthly quality ratings (scale 1-5, 1= lowest, 5 = highest) at UC Davis on 3 ETo-based irrigation levels in 2020.

Category	ET_o%	May	Jun	Jul	Aug	Sep	Oct	AVG
Overall Appearance	80	4.0	4.9	4.6	4.0	3.7	3.3	4.1
	50	4.0	4.9	4.5	4.0	3.6	3.3	4.0
	20	4.0	4.9	4.6	4.0	3.6	3.3	4.0
Foliage	80	5.0	5.0	5.0	4.4	3.9	3.4	4.4
	50	5.0	5.0	4.9	4.4	4.0	3.5	4.5
	20	5.0	5.0	4.7	4.4	4.0	3.4	4.4
Flower	80	0.0	2.3	1.1	0.0	0.0	0.0	0.6
	50	0.0	2.8	1.1	0.0	0.0	0.0	0.6
	20	0.0	2.9	1.3	0.0	0.0	0.0	0.7
Pest Resistance	80	5.0	5.0	5.0	4.6	5.0	5.0	4.9
	50	5.0	5.0	5.0	4.5	5.0	5.0	4.9
	20	5.0	5.0	5.0	4.6	5.0	5.0	4.9
Disease Resistance	80	5.0	5.0	5.0	5.0	5.0	5.0	5.0
	50	5.0	5.0	5.0	5.0	5.0	5.0	5.0
	20	5.0	5.0	5.0	5.0	5.0	5.0	5.0
Vigor	80	5.0	5.0	5.0	5.0	3.4	3.1	4.4
	50	5.0	5.0	4.9	5.0	3.8	3.4	4.5
	20	5.0	5.0	4.9	5.0	3.3	3.1	4.4

Table 13b. *Hypericum kalmianum* 'Deppe' Sunny Boulevard® average monthly quality ratings (scale 1-5, 1= lowest, 5 = highest) at South Coast REC on 3 ETo-based irrigation levels in 2020.

Category	ET_o%	Apr	May	Jun	Jul	Aug	Sep	Oct	AVG
Overall Appearance	80	1.0	1.9	2.3	2.1	2.1	2.1	2.0	1.9
	50	1.0	1.7	2.3	1.9	1.6	1.6	1.6	1.7
	20	1.0	2.1	2.6	2.2	1.8	1.3	1.3	1.8
Foliage	80	1.0	1.9	2.3	2.1	2.1	2.1	1.9	1.9
	50	1.0	1.7	2.4	1.8	1.8	1.6	1.5	1.7
	20	1.0	2.2	2.7	2.1	1.7	1.3	1.3	1.7
Flower	80	0.0	0.0	0.0	0.3	0.1	0.1	0.1	0.1
	50	0.0	0.0	0.0	0.4	0.1	0.0	0.0	0.1
	20	0.0	0.0	0.0	0.5	0.2	0.0	0.0	0.1
Pest Resistance	80	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0
	50	4.5	5.0	5.0	5.0	4.4	4.4	4.4	4.7
	20	5.0	5.0	5.0	5.0	4.2	3.3	3.3	4.4
Disease Resistance	80	5.0	4.6	5.0	5.0	5.0	5.0	5.0	4.9
	50	4.5	5.0	5.0	5.0	4.4	4.4	4.4	4.7
	20	5.0	5.0	5.0	5.0	4.2	3.3	3.3	4.4
Vigor	80	1.0	2.2	3.6	3.5	3.6	3.6	3.5	3.0
	50	1.0	1.9	3.4	3.2	2.9	2.8	2.6	2.6
	20	1.0	2.6	3.8	3.1	2.6	2.3	2.3	2.5

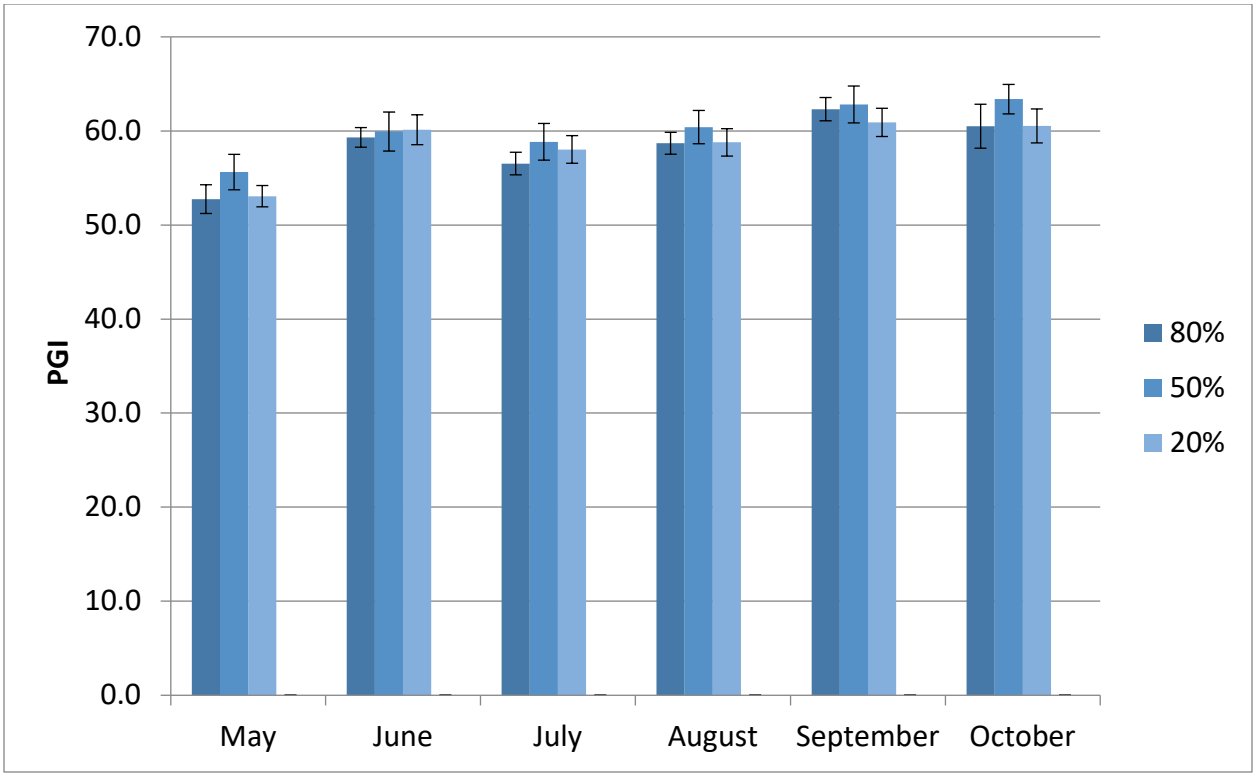


Figure 6a. *Hypericum kalmianum* 'Deppe' Sunny Boulevard® average monthly plant growth index (PGI) at UC Davis on 3 ETo-based irrigation levels in 2020.

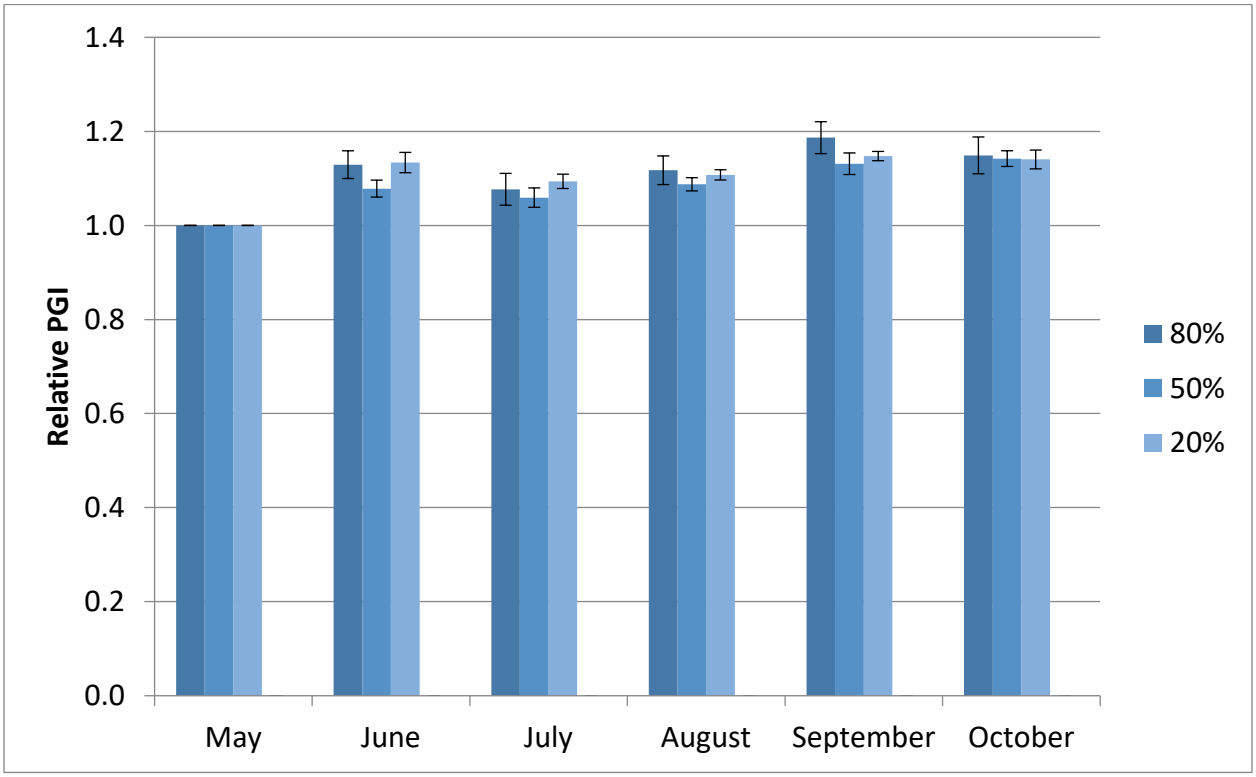


Figure 6b. *Hypericum kalmianum* 'Deppe' Sunny Boulevard® average monthly relative plant growth index (RPGI) at UC Davis on 3 ETo-based irrigation levels in 2020.

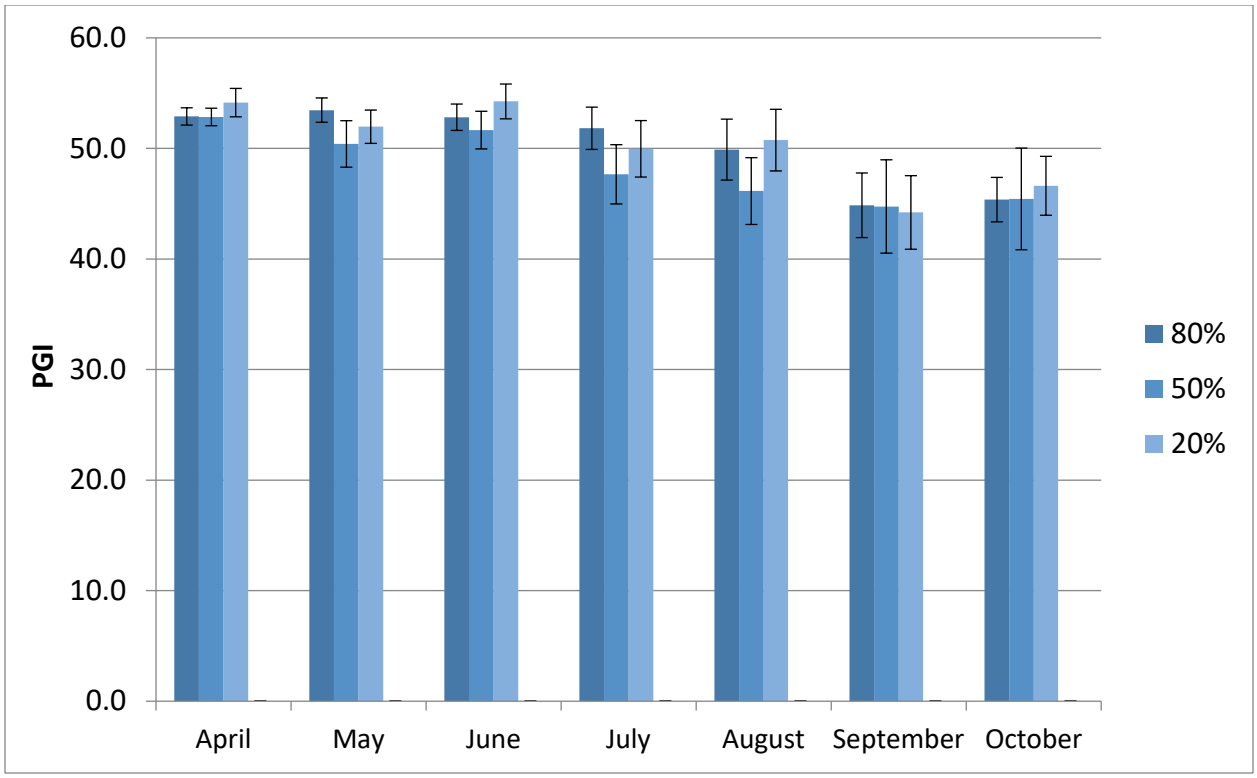


Figure 6c. *Hypericum kalmianum* 'Deppe' Sunny Boulevard® average monthly plant growth index (PGI) at South Coast REC on 3 ETo-based irrigation levels in 2020.

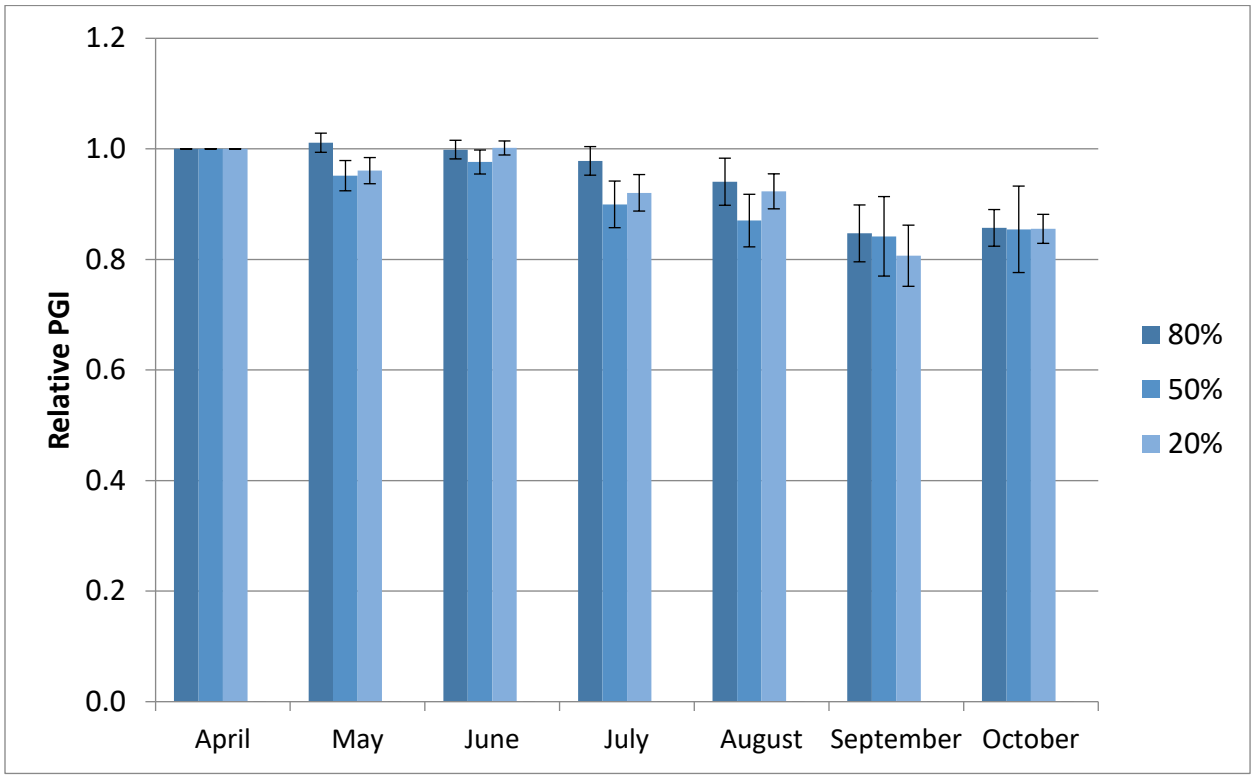


Figure 6d. *Hypericum kalmianum* 'Deppe' Sunny Boulevard® average monthly relative plant growth index (RPGI) at South Coast REC on 3 ETo-based irrigation levels in 2020.

Table 14a. *Laurus nobilis* 'MonRik' Little Ragu® average monthly quality ratings (scale 1-5, 1= lowest, 5 = highest) at UC Davis on 3 ETo-based irrigation levels in 2020.

Category	ET_o%	May	Jun	Jul	Aug	Sep	Oct	AVG
Overall Appearance	80	2.6	2.5	2.1	2.1	2.1	2.2	2.3
	50	2.6	2.4	2.1	2.3	2.1	2.4	2.3
	20	2.8	2.8	2.3	2.2	2.0	2.3	2.4
Foliage	80	3.3	2.6	2.3	2.1	2.3	2.4	2.5
	50	3.1	2.6	2.1	2.5	2.5	3.0	2.6
	20	3.0	2.7	2.3	2.3	2.3	2.7	2.6
Flower	80	0.0	0.0	0.0	0.0	0.0	0.0	0.0
	50	0.0	0.0	0.0	0.0	0.0	0.0	0.0
	20	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Pest Resistance	80	5.0	5.0	5.0	5.0	5.0	4.9	5.0
	50	5.0	5.0	5.0	5.0	5.0	5.0	5.0
	20	5.0	5.0	4.2	4.2	4.2	4.2	4.4
Disease Resistance	80	5.0	5.0	5.0	5.0	5.0	3.3	4.7
	50	5.0	5.0	5.0	5.0	5.0	3.9	4.8
	20	5.0	5.0	4.2	4.2	4.2	3.3	4.3
Vigor	80	4.6	3.1	2.9	3.4	2.7	3.0	3.3
	50	4.4	2.9	2.8	3.4	2.5	3.3	3.2
	20	4.3	3.3	2.8	3.0	2.7	2.8	3.2

Table 14b. *Laurus nobilis* 'MonRik' Little Ragu® average monthly quality ratings (scale 1-5, 1= lowest, 5 = highest) at South Coast REC on 3 ETo-based irrigation levels in 2020.

Category	ET_o%	May	Jun	Jul	Aug	Sep	Oct	AVG
Overall Appearance	80	3.6	3.5	3.5	3.4	3.4	3.3	3.4
	50	3.4	3.3	3.3	3.3	3.1	3.1	3.3
	20	3.5	3.1	3.1	3.1	3.0	3.0	3.2
Foliage	80	3.9	4.1	3.8	3.7	3.4	3.3	3.7
	50	3.5	3.4	3.4	3.4	3.1	3.1	3.3
	20	3.5	3.5	3.6	3.2	3.0	3.1	3.3
Flower	80	0.0	0.0	0.0	0.0	0.0	0.0	0.0
	50	0.0	0.0	0.0	0.0	0.0	0.0	0.0
	20	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Pest Resistance	80	5.0	5.0	4.9	4.9	5.0	5.0	5.0
	50	4.8	4.9	4.8	4.8	4.9	4.8	4.8
	20	4.9	5.0	5.0	4.7	5.0	5.0	4.9
Disease Resistance	80	5.0	4.1	4.1	4.1	3.6	3.4	4.1
	50	5.0	4.3	4.2	4.1	3.6	3.8	4.2
	20	5.0	4.0	4.0	4.1	3.6	3.6	4.1
Vigor	80	4.3	4.8	4.8	4.8	4.8	4.8	4.7
	50	4.3	4.5	4.4	4.4	4.4	4.4	4.4
	20	4.1	4.4	4.4	4.4	4.0	4.3	4.3

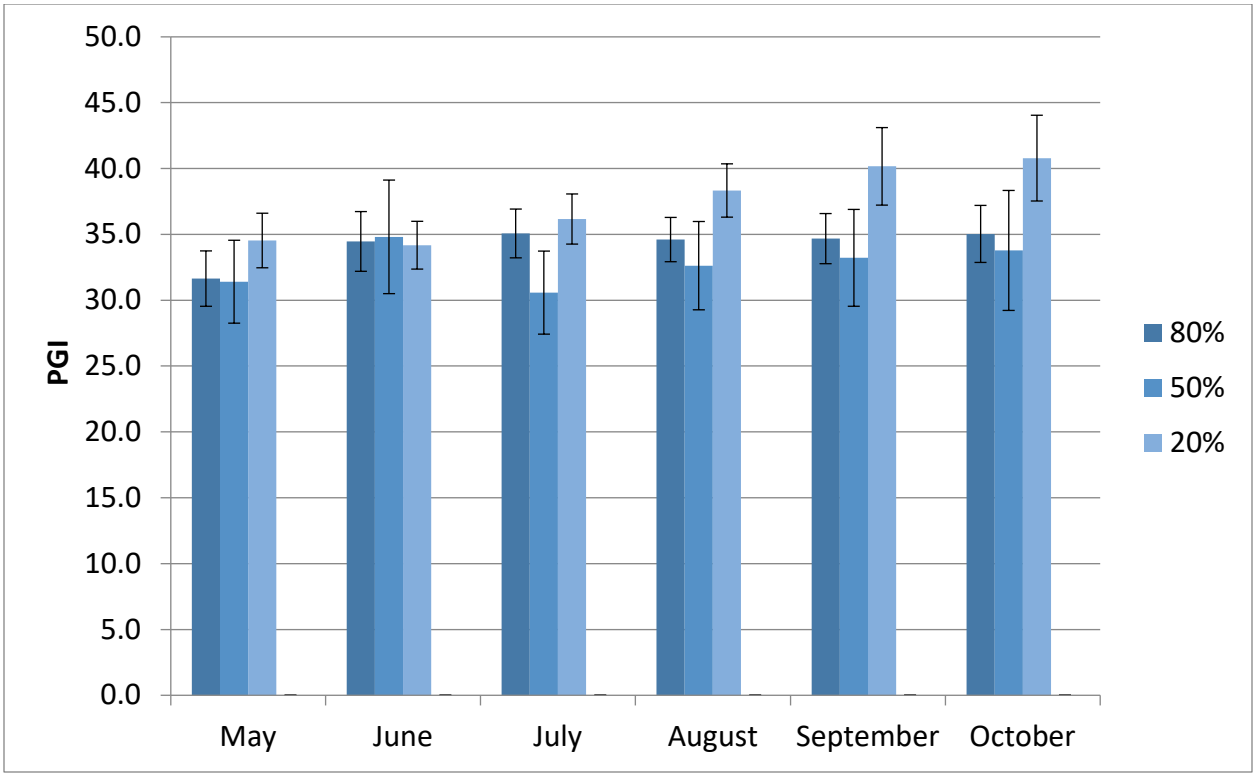


Figure 7a. *Laurus nobilis* 'MonRik' Little Ragu® average monthly plant growth index (PGI) at UC Davis on 3 ETo-based irrigation levels in 2020.

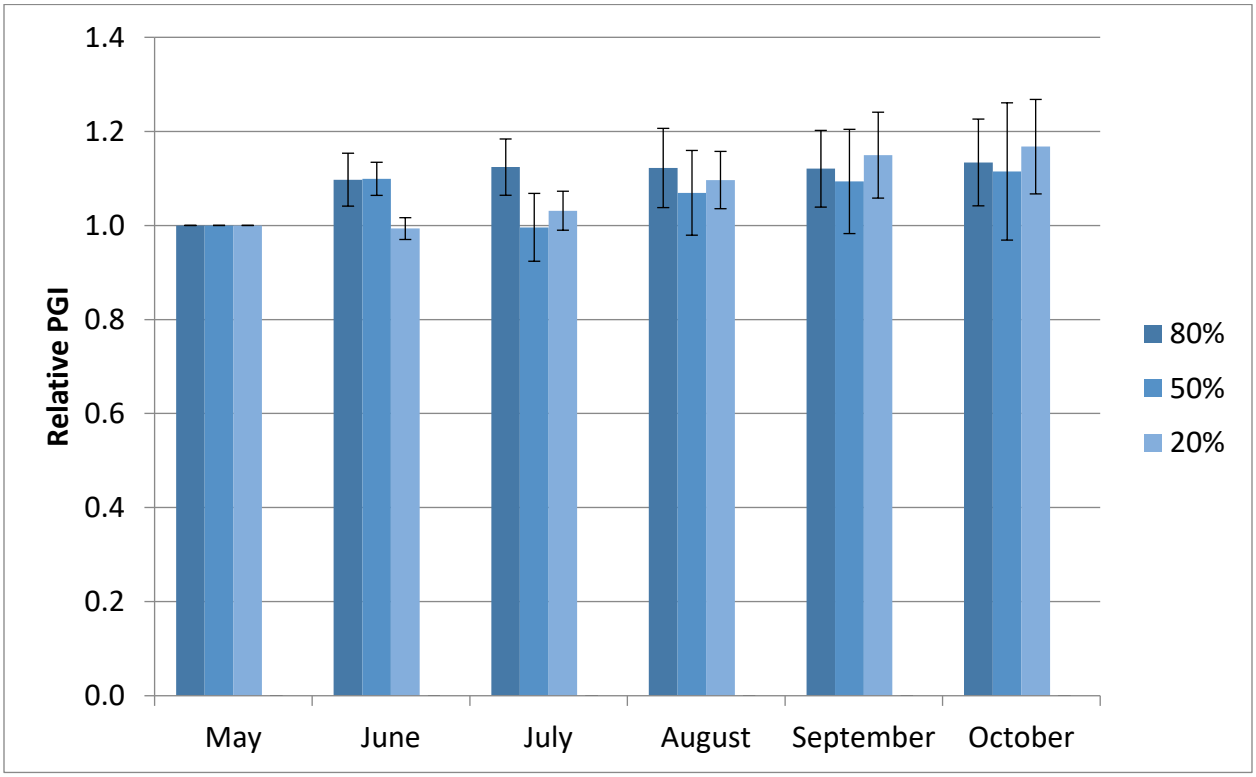


Figure 7b. *Laurus nobilis* 'MonRik' Little Ragu® average monthly relative plant growth index (RPGI) at UC Davis on 3 ETo-based irrigation levels in 2020.

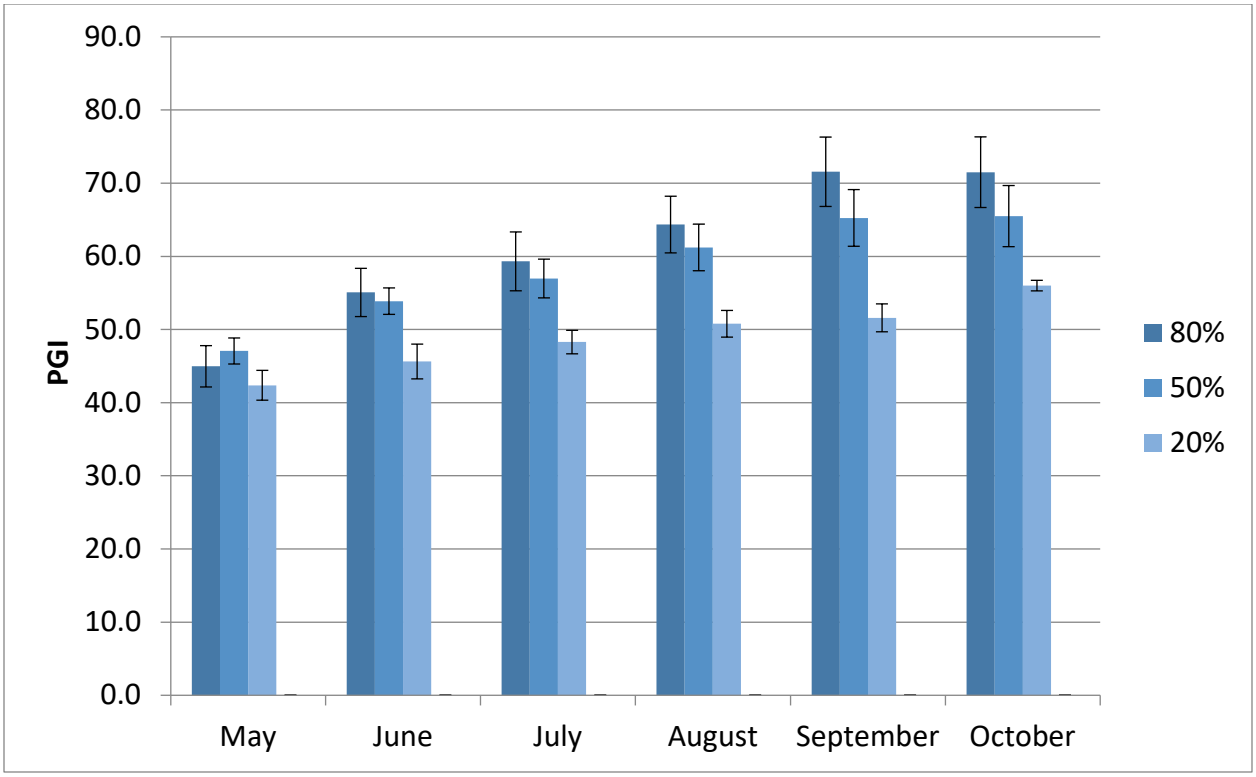


Figure 7c. *Laurus nobilis* 'MonRik' Little Ragu® average monthly plant growth index (PGI) at South Coast REC on 3 ETo-based irrigation levels in 2020.

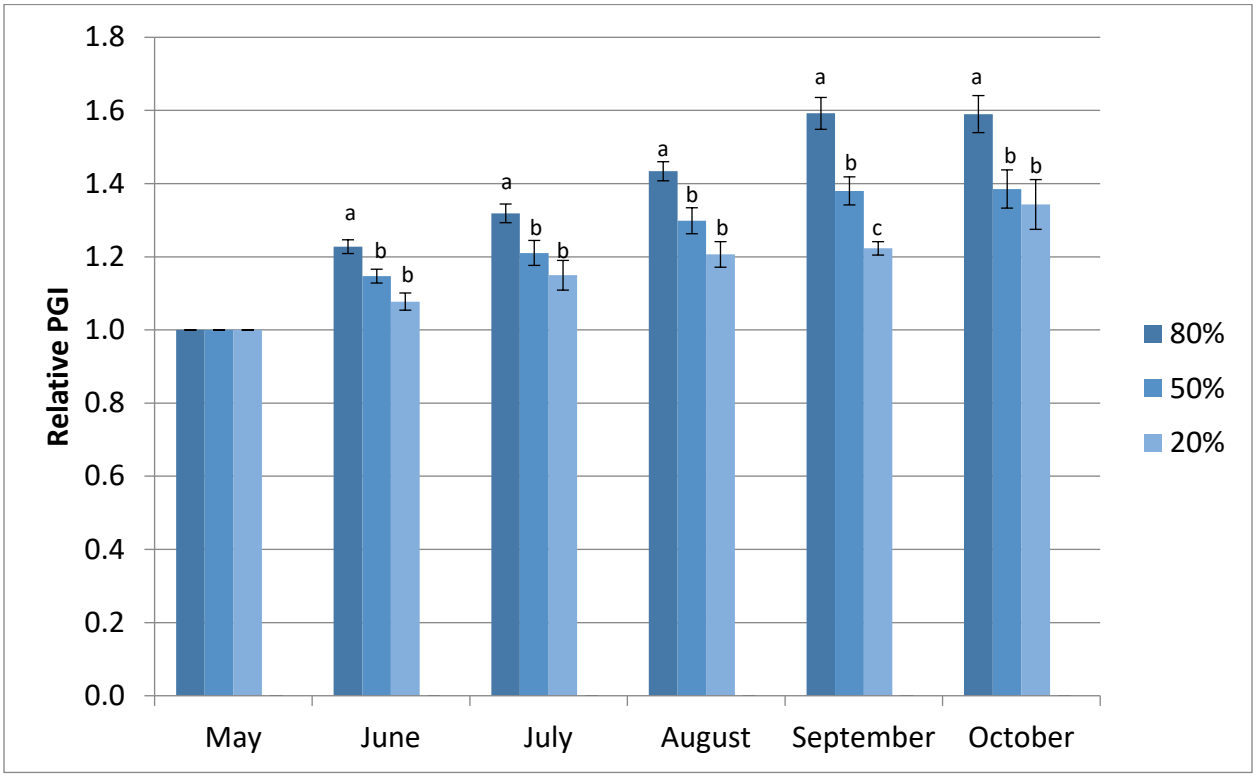


Figure 7d. *Laurus nobilis* 'MonRik' Little Ragu® average monthly relative plant growth index (RPGI) at South Coast REC on 3 ETo-based irrigation levels in 2020.

Table 15a. *Lippia* 'ECOLOPIA2' Pink Kurapia® average monthly quality ratings (scale 1-5, 1= lowest, 5 = highest) at UC Davis on 3 ETo-based irrigation levels in 2020.

Category	ET_o%	May	Jun	Jul	Aug	Sep	Oct	AVG
Overall Appearance	80	3.2	3.8	3.9	3.7	3.5	3.2	3.5
	50	4.5	4.6	4.4	3.9	4.8	3.3	4.3
	20	4.3	4.0	4.5	4.3	5.0	4.3	4.4
Foliage	80	3.8	4.7	4.3	3.8	4.0	3.5	4.0
	50	4.8	5.0	4.7	3.8	4.8	3.8	4.5
	20	5.0	4.5	4.5	4.0	5.0	5.0	4.7
Flower	80	2.8	3.3	2.7	1.5	0.8	0.8	2.0
	50	4.5	4.7	3.0	2.8	1.2	0.8	2.8
	20	4.0	4.5	4.0	3.0	1.0	1.0	2.9
Pest Resistance	80	5.0	5.0	5.0	5.0	4.2	4.2	4.7
	50	5.0	5.0	5.0	5.0	5.0	4.2	4.9
	20	5.0	5.0	5.0	5.0	5.0	5.0	5.0
Disease Resistance	80	5.0	5.0	5.0	5.0	4.2	4.2	4.7
	50	5.0	5.0	5.0	5.0	5.0	4.2	4.9
	20	5.0	5.0	5.0	5.0	5.0	5.0	5.0
Vigor	80	3.8	4.3	4.5	4.2	3.2	3.3	3.9
	50	5.0	4.8	5.0	4.2	4.8	3.5	4.6
	20	5.0	4.5	5.0	5.0	4.5	4.0	4.7

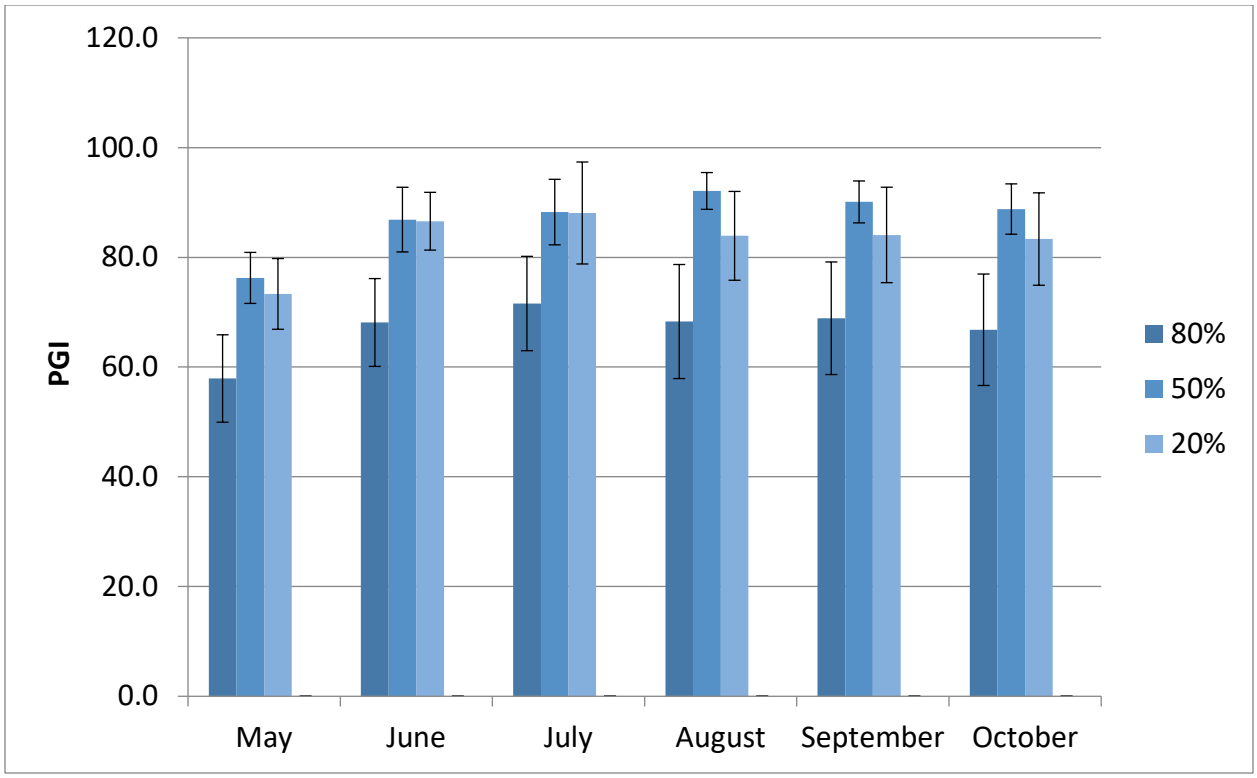


Figure 8a. *Lippia* 'ECOLOPIA2' Pink Kurapia® average monthly plant growth index (PGI) at UC Davis on 3 ETo-based irrigation levels in 2020.

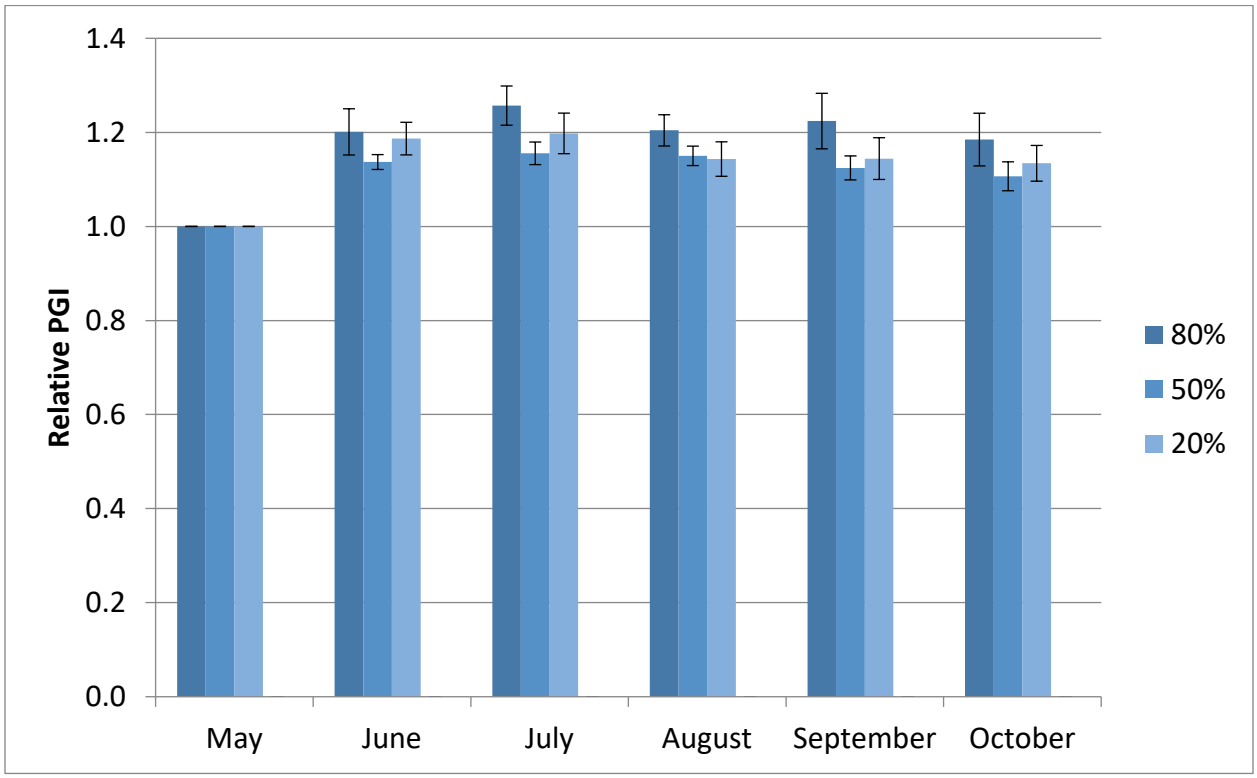


Figure 8b. *Lippia* 'ECOLOPIA2' Pink Kurapia® average monthly relative plant growth index (RPGI) at UC Davis on 3 ETo-based irrigation levels in 2020.

Table 16a. ×*Pyracomeles* 'NCXP1' Juke Box® average monthly quality ratings (scale 1-5, 1= lowest, 5 = highest) at UC Davis on 3 ETo-based irrigation levels in 2020.

Category	ET_o%	Apr	May	Jun	Jul	Aug	Sep	Oct	AVG
Overall Appearance	80	4.0	4.0	3.5	4.0	3.9	4.1	4.4	4.0
	50	4.1	4.0	4.1	4.0	3.9	4.0	4.4	4.1
	20	4.1	4.0	4.0	3.4	3.9	4.1	4.1	4.0
Foliage	80	4.9	4.9	4.4	5.0	3.9	4.5	4.9	4.6
	50	5.0	5.0	5.0	4.9	4.0	4.3	4.9	4.7
	20	5.0	5.0	5.0	4.1	4.0	4.7	4.6	4.6
Flower	80	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
	50	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
	20	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Pest Resistance	80	5.0	5.0	4.4	5.0	3.9	5.0	5.0	4.8
	50	5.0	5.0	5.0	5.0	4.1	5.0	5.0	4.9
	20	5.0	5.0	5.0	4.1	4.1	5.0	5.0	4.8
Disease Resistance	80	5.0	5.0	4.4	5.0	4.9	5.0	5.0	4.9
	50	5.0	5.0	5.0	5.0	4.8	5.0	5.0	5.0
	20	5.0	5.0	5.0	4.3	5.0	5.0	5.0	4.9
Vigor	80	5.0	5.0	4.4	5.0	5.0	4.3	4.3	4.7
	50	5.0	5.0	5.0	5.0	5.0	4.0	4.1	4.7
	20	5.0	5.0	5.0	4.3	5.0	4.0	4.0	4.6

Table 16b. ×*Pyracomeles* 'NCXP1' Juke Box® average monthly quality ratings (scale 1-5, 1= lowest, 5 = highest) at South Coast REC on 3 ETo-based irrigation levels in 2020.

Category	ET_o%	Apr	May	Jun	Jul	Aug	Sep	Oct	AVG
Overall Appearance	80	3.9	4.0	3.6	3.2	3.1	2.7	2.6	3.3
	50	3.8	3.6	3.4	3.3	3.1	2.8	2.8	3.3
	20	3.8	3.9	3.7	3.3	3.1	2.8	2.8	3.3
Foliage	80	4.9	4.9	4.9	3.4	3.1	2.7	2.6	3.8
	50	4.4	4.2	5.0	3.3	3.1	2.8	2.9	3.7
	20	4.8	4.8	5.0	3.4	3.1	2.8	2.8	3.8
Flower	80	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
	50	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
	20	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Pest Resistance	80	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0
	50	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0
	20	5.0	5.0	5.0	4.7	4.7	4.5	4.5	4.8
Disease Resistance	80	5.0	5.0	5.0	5.0	5.0	4.7	4.6	4.9
	50	5.0	5.0	5.0	5.0	4.8	4.8	4.6	4.9
	20	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0
Vigor	80	4.9	5.0	5.0	5.0	5.0	4.9	4.9	5.0
	50	5.0	4.9	5.0	5.0	5.0	5.0	5.0	5.0
	20	4.9	5.0	5.0	4.8	4.8	4.5	4.5	4.8

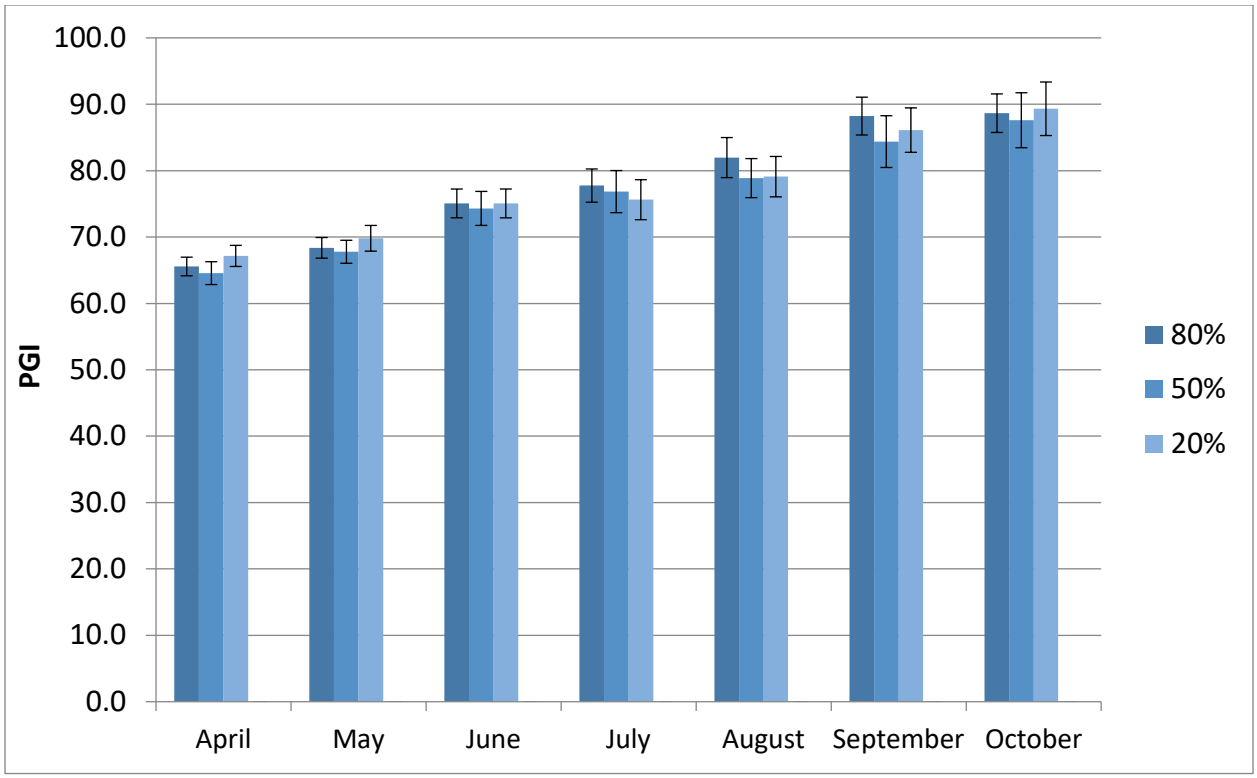


Figure 9a. *×Pyracomeles* 'NCXP1' Juke Box® average monthly plant growth index (PGI) at UC Davis on 3 ETo-based irrigation levels in 2020.

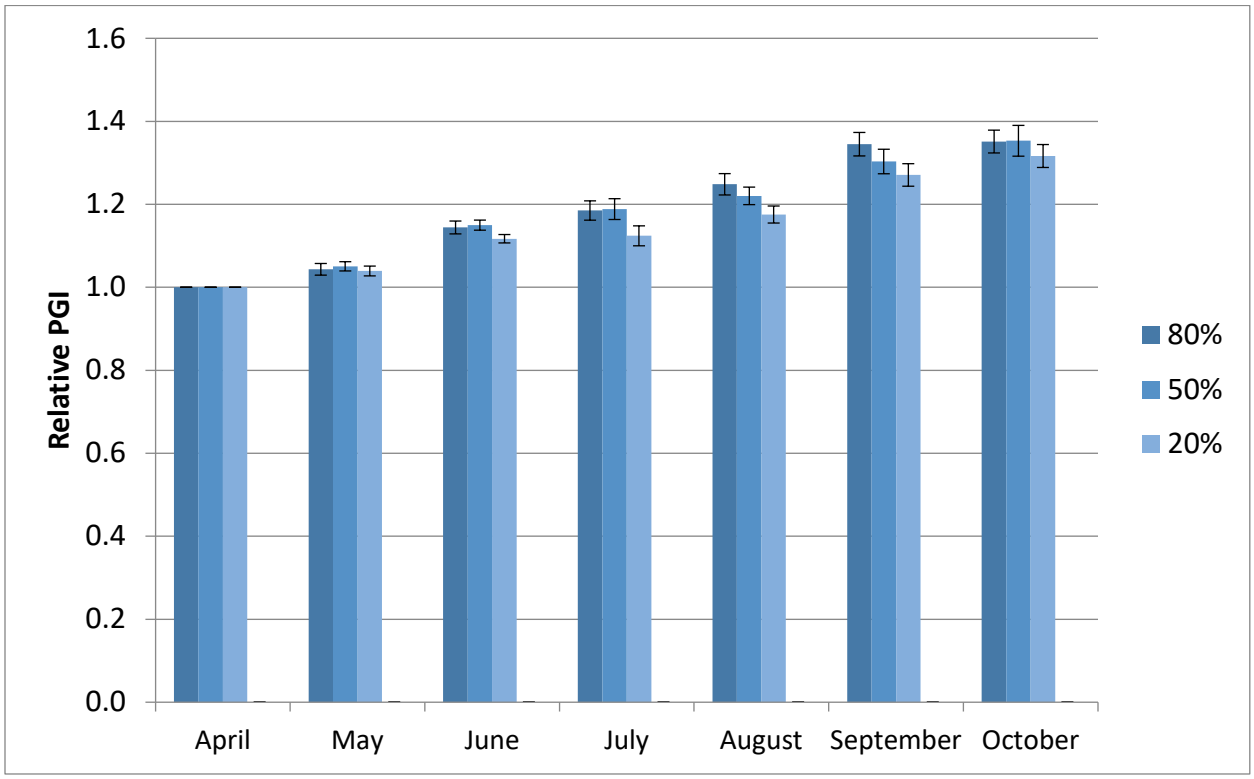


Figure 9b. *×Pyracomeles* 'NCXP1' Juke Box® average monthly relative plant growth index (RPGI) at UC Davis on 3 ETo-based irrigation levels in 2020.

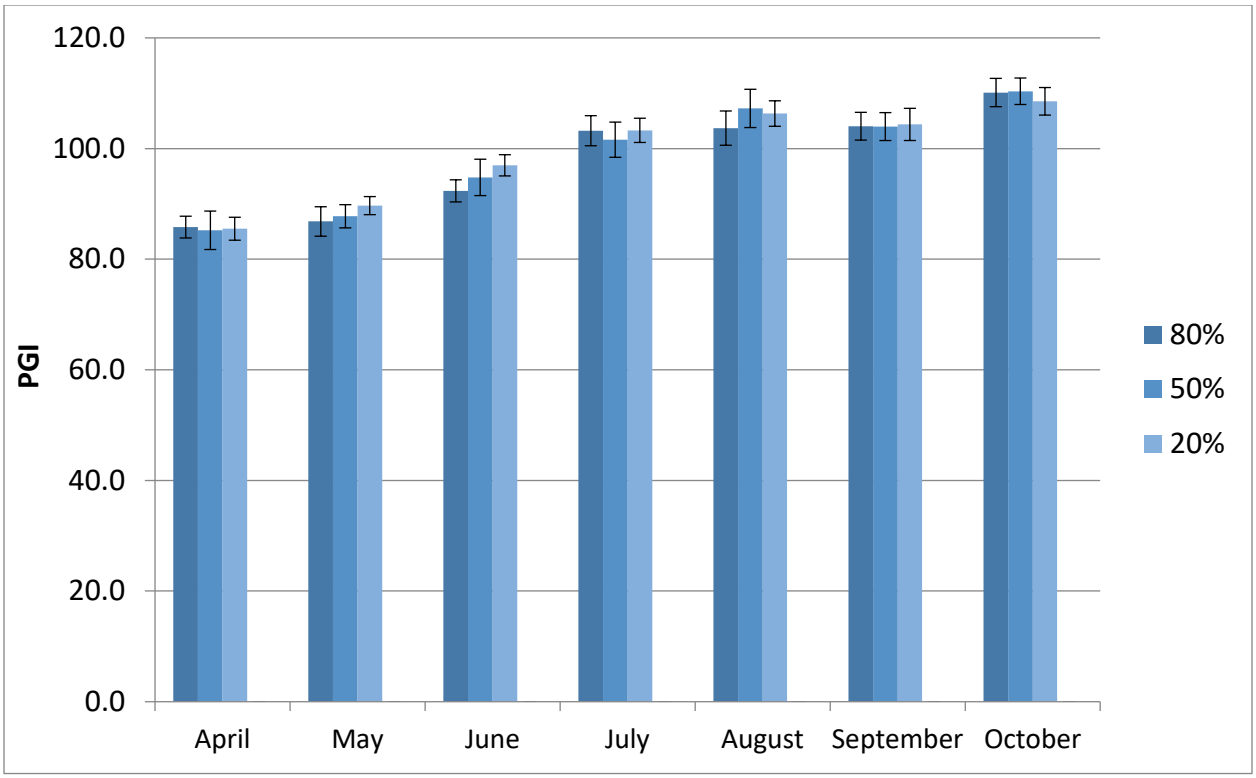


Figure 9c. *×Pyracomeles* 'NCXP1' Juke Box® average monthly plant growth index (PGI) at South Coast REC on 3 ETo-based irrigation levels in 2020.

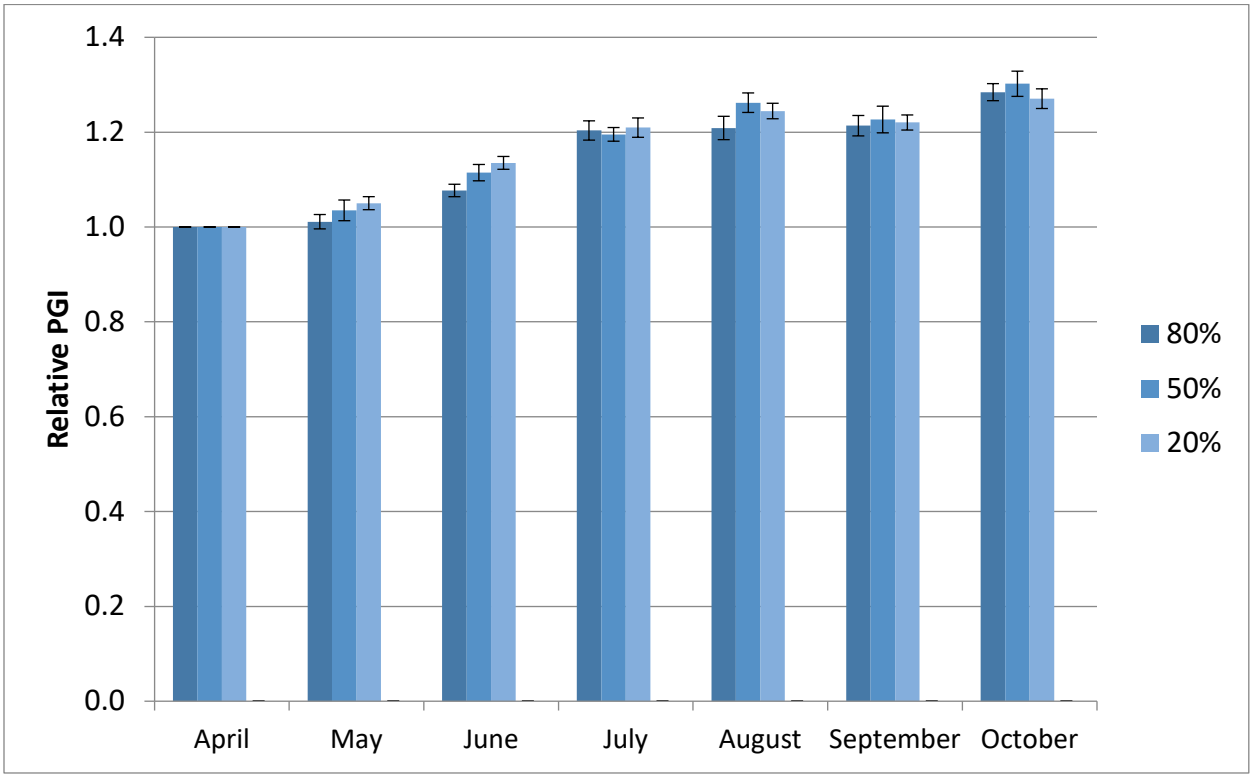


Figure 9d. *×Pyracomeles* 'NCXP1' Juke Box® average monthly relative plant growth index (RPGI) at South Coast REC on 3 ETo based irrigation levels in 2020.

Table 17a. *Rhagodia spinescens* 'SAB01' Aussie Flat Bush™ average monthly quality ratings (scale 1-5, 1= lowest, 5 = highest) at UC Davis on 3 ETo-based irrigation levels in 2020.

Category	ET_o%	Apr	May	Jun	Jul	Aug	Sep	Oct	AVG
Overall Appearance	80	4.0	4.0	3.9	3.8	3.9	4.3	4.4	4.0
	50	4.1	4.0	3.6	3.7	3.9	4.4	4.3	4.0
	20	3.9	4.0	4.0	3.9	3.7	4.2	4.1	4.0
Foliage	80	5.0	4.9	4.8	4.1	4.5	4.4	4.4	4.6
	50	5.0	4.9	4.1	4.1	4.3	4.3	4.6	4.5
	20	5.0	5.0	4.9	4.9	4.6	4.3	4.4	4.7
Flower	80	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
	50	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
	20	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Pest Resistance	80	5.0	5.0	5.0	5.0	4.9	5.0	5.0	5.0
	50	5.0	5.0	4.3	5.0	5.0	5.0	5.0	4.9
	20	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0
Disease Resistance	80	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0
	50	5.0	5.0	4.3	5.0	5.0	5.0	5.0	4.9
	20	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0
Vigor	80	5.0	5.0	5.0	5.0	5.0	4.8	4.5	4.9
	50	5.0	5.0	4.3	5.0	5.0	4.7	4.9	4.8
	20	4.9	5.0	5.0	5.0	4.9	4.7	4.6	4.9

Table 17b. *Rhagodia spinescens* 'SAB01' Aussie Flat Bush™ average monthly quality ratings (scale 1-5, 1= lowest, 5 = highest) at South Coast REC on 3 ETo-based irrigation levels in 2020.

Category	ET_o%	Apr	May	Jun	Jul	Aug	Sep	Oct	AVG
Overall Appearance	80	3.9	3.6	3.6	3.6	3.6	3.6	3.6	3.6
	50	4.0	3.4	3.7	3.6	3.7	3.6	3.5	3.6
	20	3.9	3.6	3.6	3.6	3.7	3.7	3.7	3.7
Foliage	80	4.6	3.6	3.9	3.8	3.9	3.9	4.0	4.0
	50	4.6	3.8	3.9	3.8	3.8	3.6	3.6	3.9
	20	4.4	3.6	4.1	3.9	4.1	4.0	4.0	4.0
Flower	80	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
	50	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
	20	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Pest Resistance	80	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0
	50	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0
	20	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0
Disease Resistance	80	4.9	5.0	5.0	5.0	5.0	5.0	5.0	5.0
	50	4.9	5.0	5.0	5.0	5.0	5.0	5.0	5.0
	20	4.7	5.0	5.0	4.7	5.0	5.0	5.0	4.9
Vigor	80	4.9	5.0	5.0	5.0	5.0	5.0	5.0	5.0
	50	5.0	4.8	5.0	5.0	5.0	5.0	5.0	5.0
	20	4.9	5.0	5.0	5.0	5.0	5.0	5.0	5.0

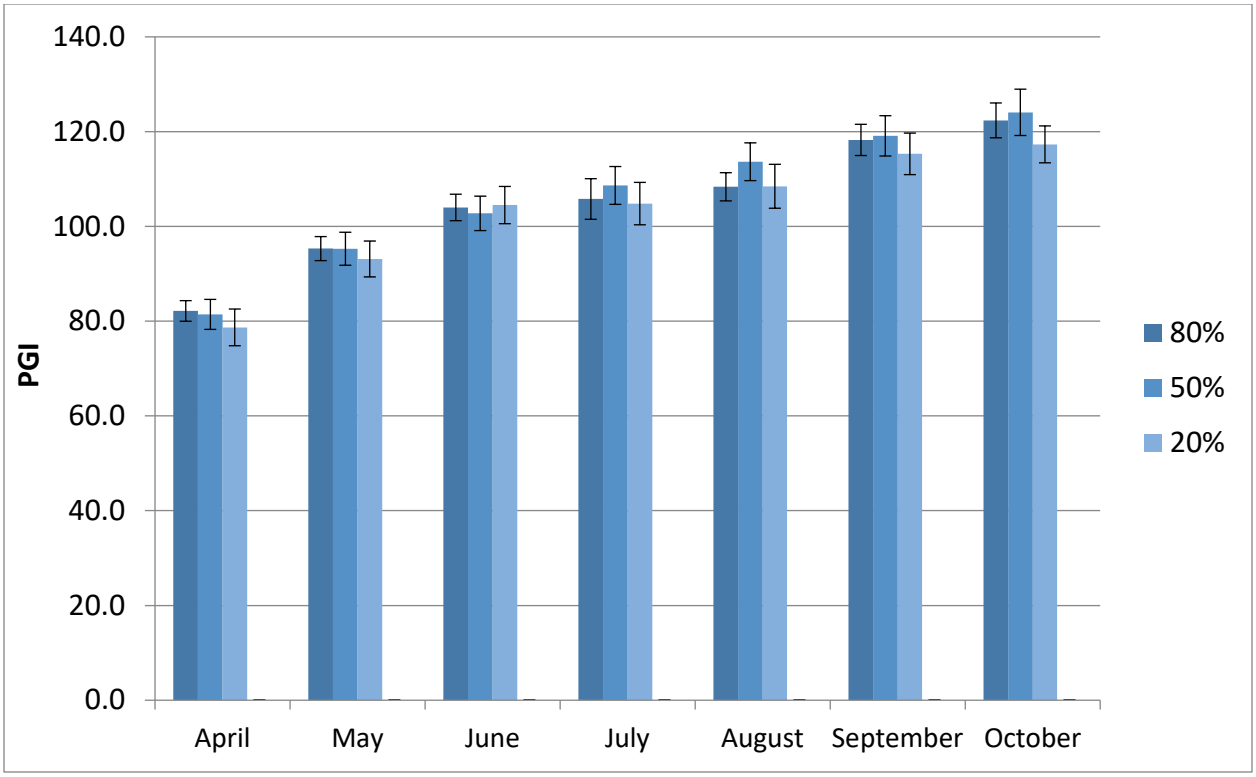


Figure 10a. *Rhagodia spinescens* 'SAB01' Aussie Flat Bush™ average monthly plant growth index (PGI) at UC Davis on 3 ETo-based irrigation levels in 2020.

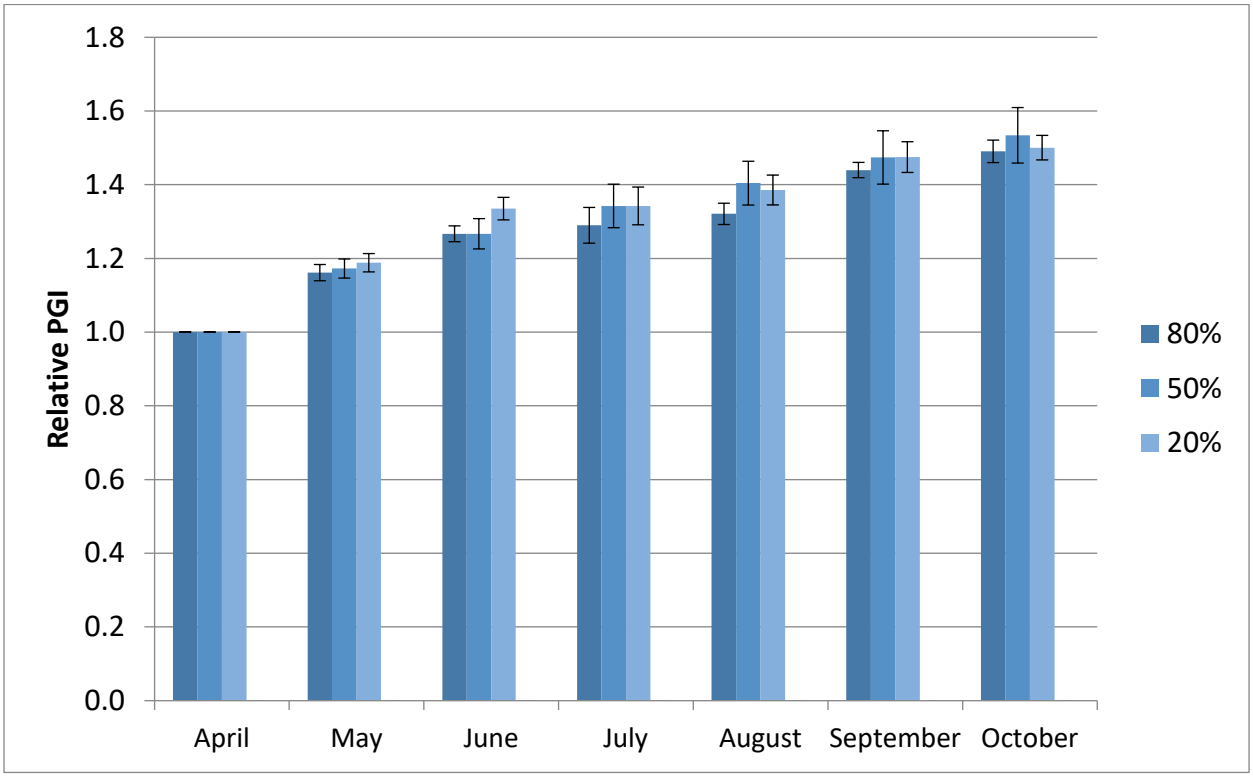


Figure 10b. *Rhagodia spinescens* 'SAB01' Aussie Flat Bush™ average monthly relative plant growth index (RPGI) at UC Davis on 3 ETo-based irrigation levels in 2020.

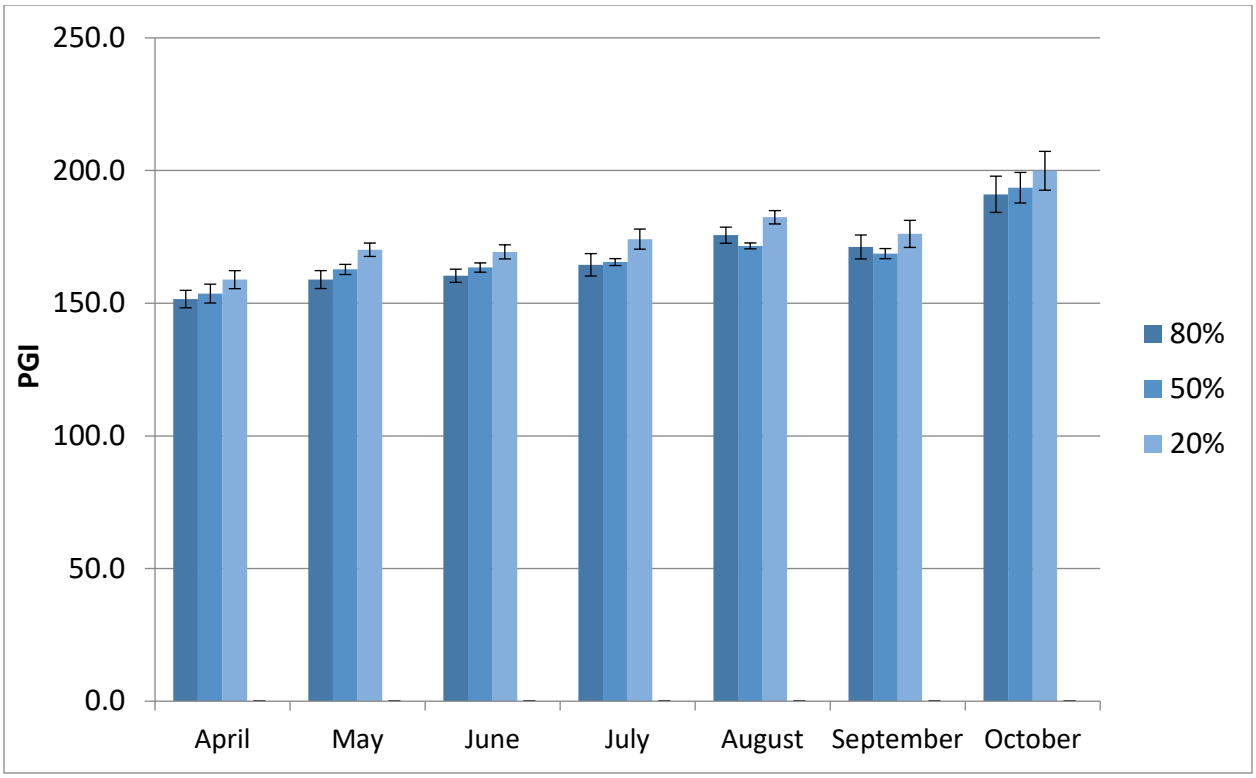


Figure 10c. *Rhagodia spinescens* 'SAB01' Aussie Flat Bush™ average monthly plant growth index (PGI) at South Coast REC on 3 ETo-based irrigation levels in 2020.

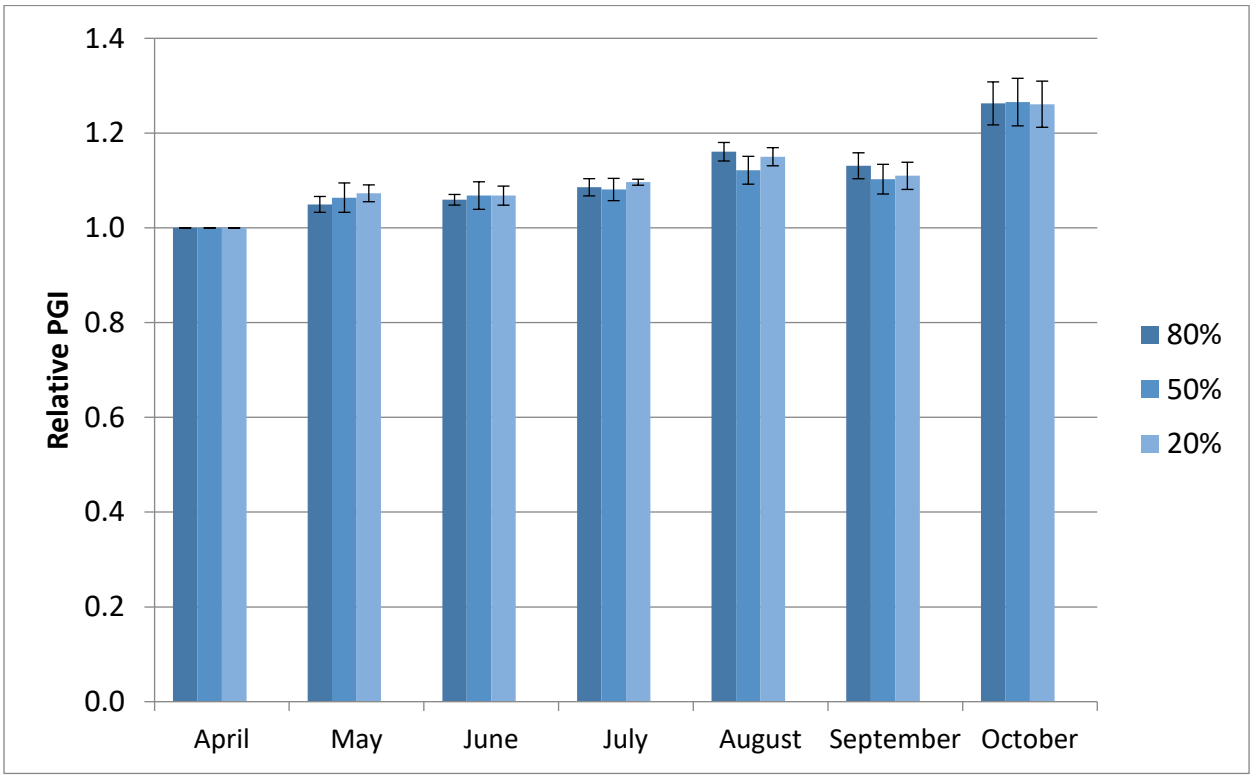


Figure 10d. *Rhagodia spinescens* 'SAB01' Aussie Flat Bush™ average monthly relative plant growth index (RPGI) at South Coast REC on 3 ETo-based irrigation levels in 2020.

Table 18a. *Rhaphiolepis indica* 'Parhap' Oriental Pearl average monthly quality ratings (scale 1-5, 1= lowest, 5 = highest) at UC Davis on 3 ETo-based irrigation levels in 2020.

Category	ET_o%	Apr	May	Jun	Jul	Aug	Sep	Oct	AVG
Overall Appearance	80	3.6	3.7	3.8	4.0	4.0	4.4	4.2	4.0
	50	3.4	3.4	3.9	3.9	3.9	4.1	4.1	3.8
	20	4.2	3.6	3.7	3.7	4.0	3.6	3.8	3.8
Foliage	80	3.4	4.3	4.6	4.9	5.0	5.0	5.0	4.6
	50	3.6	4.4	4.7	4.3	4.9	4.9	4.9	4.5
	20	3.9	4.1	4.4	4.6	5.0	4.7	4.7	4.5
Flower	80	1.3	0.3	0.0	0.0	0.0	0.0	0.0	0.2
	50	0.7	0.6	0.0	0.0	0.0	0.0	0.0	0.2
	20	2.7	0.6	0.0	0.0	0.0	0.0	0.0	0.5
Pest Resistance	80	5.0	4.4	5.0	5.0	5.0	4.9	5.0	4.9
	50	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0
	20	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0
Disease Resistance	80	3.7	4.9	4.7	5.0	5.0	5.0	5.0	4.8
	50	3.9	5.0	5.0	5.0	5.0	5.0	5.0	4.8
	20	4.1	5.0	4.6	5.0	5.0	5.0	5.0	4.8
Vigor	80	3.9	3.9	3.3	5.0	5.0	4.4	5.0	4.3
	50	4.0	4.3	3.7	5.0	5.0	4.7	4.9	4.5
	20	4.3	4.1	3.7	4.9	4.9	4.3	4.4	4.4

Table 18b. *Rhaphiolepis indica* 'Parhap' Oriental Pearl average monthly quality ratings (scale 1-5, 1= lowest, 5 = highest) at South Coast REC on 3 ETo-based irrigation levels in 2020.

Category	ET_o%	Apr	May	Jun	Jul	Aug	Sep	Oct	AVG
Overall Appearance	80	4.8	3.0	3.7	3.7	3.6	3.1	3.1	3.6
	50	4.1	3.4	3.6	3.6	3.6	3.1	3.1	3.5
	20	4.8	3.2	3.6	3.5	3.4	3.1	3.1	3.5
Foliage	80	4.8	4.1	4.4	4.3	4.1	3.1	3.1	4.0
	50	5.0	4.6	4.5	4.5	4.1	3.2	3.1	4.2
	20	4.9	4.4	4.7	4.4	4.0	3.3	3.2	4.1
Flower	80	3.1	0.0	0.0	0.0	0.4	0.0	0.0	0.5
	50	4.3	0.0	0.0	0.0	0.0	0.0	0.0	0.6
	20	3.6	0.1	0.1	0.0	0.0	0.0	0.0	0.6
Pest Resistance	80	5.0	5.0	5.0	5.0	4.9	4.9	4.9	5.0
	50	5.0	4.9	5.0	5.0	5.0	5.0	5.0	5.0
	20	5.0	5.0	4.9	4.9	4.9	4.9	4.9	4.9
Disease Resistance	80	4.9	5.0	5.0	4.9	4.9	4.9	4.8	4.9
	50	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0
	20	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0
Vigor	80	5.0	3.3	4.4	4.4	4.4	4.3	4.4	4.3
	50	5.0	4.1	3.9	3.9	4.0	3.7	3.7	4.1
	20	5.0	3.6	4.1	3.9	3.9	3.7	3.7	4.0

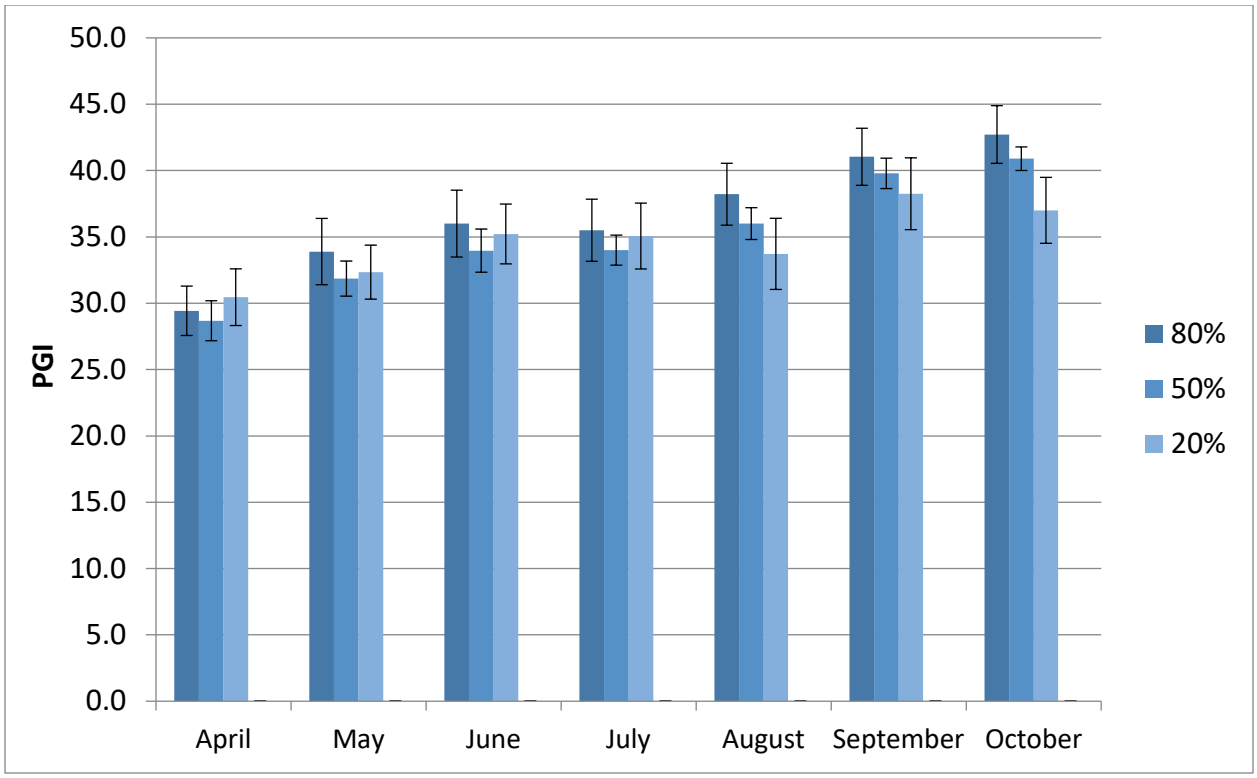


Figure 11a. *Rhaphiolepis indica* 'Parhap' Oriental Pearl average monthly plant growth index (PGI) at UC Davis on 3 ETo-based irrigation levels in 2020.

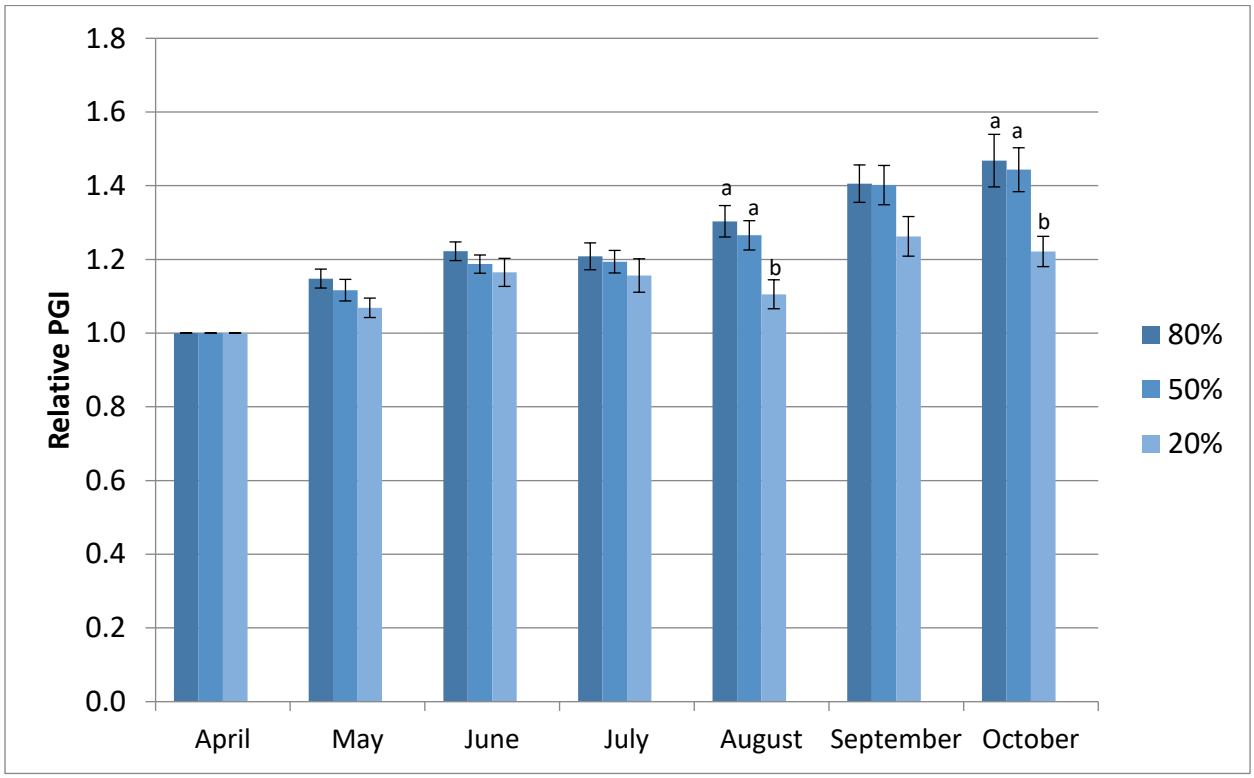


Figure 11b. *Rhaphiolepis indica* 'Parhap' Oriental Pearl average monthly relative plant growth index (RPGI) at UC Davis on 3 ETo-based irrigation levels in 2020.

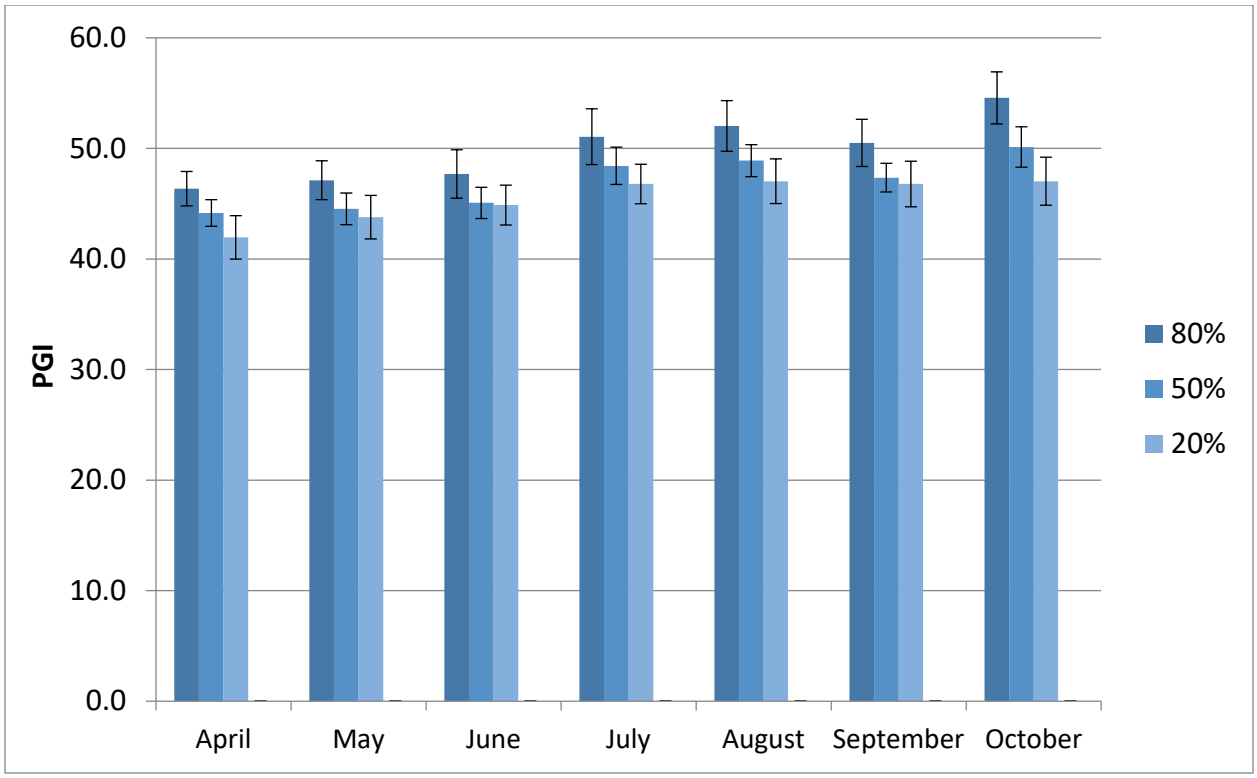


Figure 11c. *Rhaphiolepis indica* 'Parhap' Oriental Pearl average monthly plant growth index (PGI) at South Coast REC on 3 ETo-based irrigation levels in 2020.

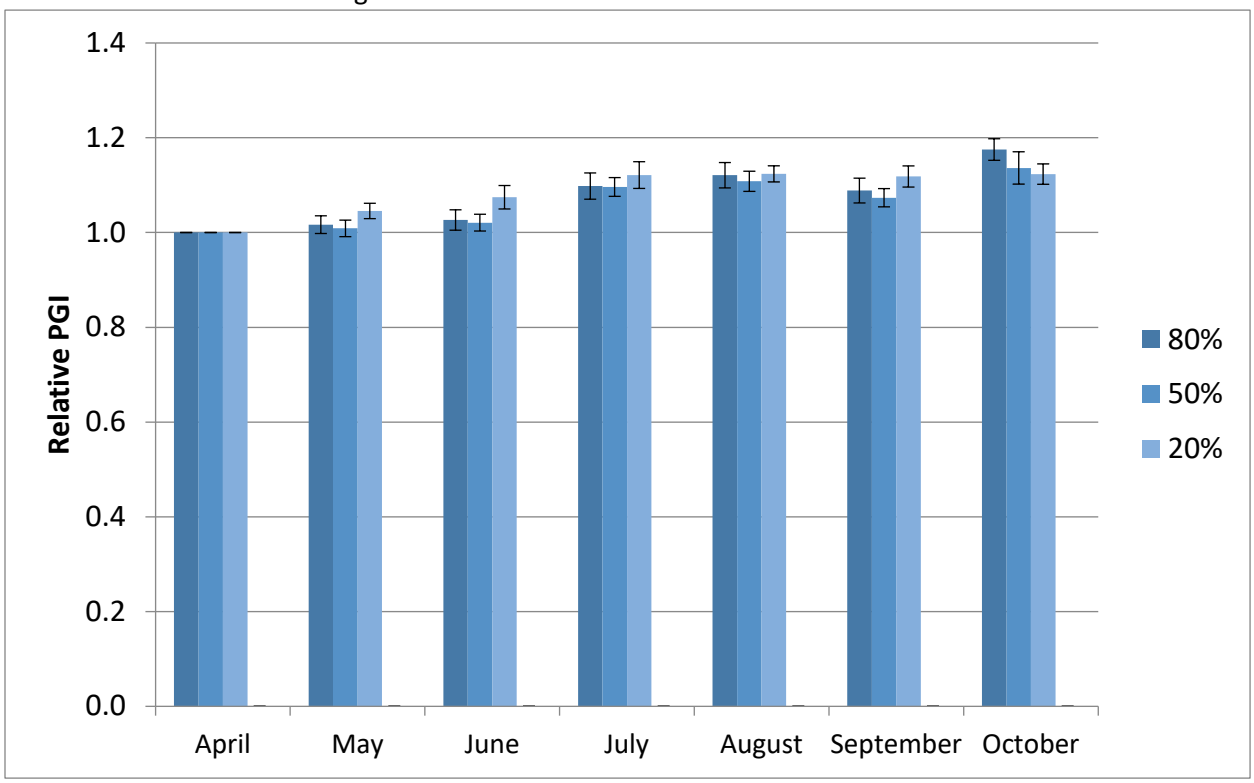


Figure 11d. *Rhaphiolepis indica* 'Parhap' Oriental Pearl average monthly relative plant growth index (RPGI) at South Coast REC on 3 ETo-based irrigation levels in 2020.

Table 19a. *Rhaphiolepis indica* 'sPg-3-003' Redbird™ average monthly quality ratings (scale 1-5, 1= lowest, 5 = highest) at UC Davis on 3 ETo-based irrigation levels in 2020.

Category	ET_o%	May	Jun	Jul	Aug	Sep	Oct	AVG
Overall Appearance	80	3.0	3.4	3.0	2.6	2.8	2.5	2.9
	50	2.8	3.2	2.8	3.4	2.4	3.1	2.9
	20	2.9	2.9	2.8	2.4	2.6	2.7	2.7
Foliage	80	3.4	4.1	4.4	3.4	4.0	3.1	3.7
	50	3.6	3.8	4.5	4.6	4.1	4.1	4.1
	20	3.7	3.9	4.7	4.0	3.7	3.7	4.0
Flower	80	0.0	0.0	0.3	0.3	0.3	0.0	0.1
	50	0.0	0.0	0.4	0.5	0.3	0.1	0.2
	20	0.0	0.0	0.4	0.1	0.4	0.1	0.2
Pest Resistance	80	5.0	5.0	5.0	4.4	4.4	3.8	4.6
	50	5.0	5.0	5.0	5.0	4.3	5.0	4.9
	20	5.0	5.0	5.0	4.3	4.3	4.3	4.6
Disease Resistance	80	5.0	5.0	5.0	4.4	4.4	3.8	4.6
	50	5.0	5.0	5.0	5.0	4.4	5.0	4.9
	20	5.0	5.0	5.0	4.3	4.3	4.3	4.6
Vigor	80	4.4	3.6	4.1	3.6	3.6	3.1	3.8
	50	4.4	3.8	4.0	4.0	3.1	3.9	3.9
	20	4.3	3.9	3.6	3.7	3.6	3.4	3.7

Table 19b. *Rhaphiolepis indica* 'sPg-3-003' Redbird™ average monthly quality ratings (scale 1-5, 1= lowest, 5 = highest) at South Coast REC on 3 ETo-based irrigation levels in 2020.

Category	ET_o%	May	Jun	Jul	Aug	Sep	Oct	AVG
Overall Appearance	80	2.8	2.9	2.9	2.7	2.3	2.4	2.6
	50	2.9	3.0	3.2	3.0	3.0	2.9	3.0
	20	3.0	2.8	2.7	2.9	2.8	3.0	2.9
Foliage	80	2.8	2.9	3.0	2.7	2.3	2.4	2.7
	50	2.9	3.4	3.5	3.3	3.2	3.1	3.2
	20	3.0	3.4	3.6	3.6	3.1	3.0	3.3
Flower	80	0.0	0.0	0.1	0.1	0.0	0.0	0.0
	50	0.0	0.0	0.6	0.1	0.0	0.0	0.1
	20	0.0	0.2	0.4	0.4	0.0	0.2	0.2
Pest Resistance	80	5.0	5.0	4.8	4.8	4.4	4.4	4.7
	50	5.0	5.0	4.9	4.9	4.6	4.9	4.9
	20	4.4	5.0	4.9	4.9	4.9	5.0	4.9
Disease Resistance	80	5.0	5.0	5.0	5.0	4.3	4.3	4.8
	50	5.0	5.0	5.0	5.0	4.9	4.6	4.9
	20	4.4	5.0	5.0	4.9	4.9	4.9	4.9
Vigor	80	3.3	3.1	3.3	3.2	3.0	3.1	3.1
	50	3.5	3.7	3.8	3.7	3.6	3.6	3.7
	20	3.3	3.1	2.9	2.9	3.1	3.1	3.1

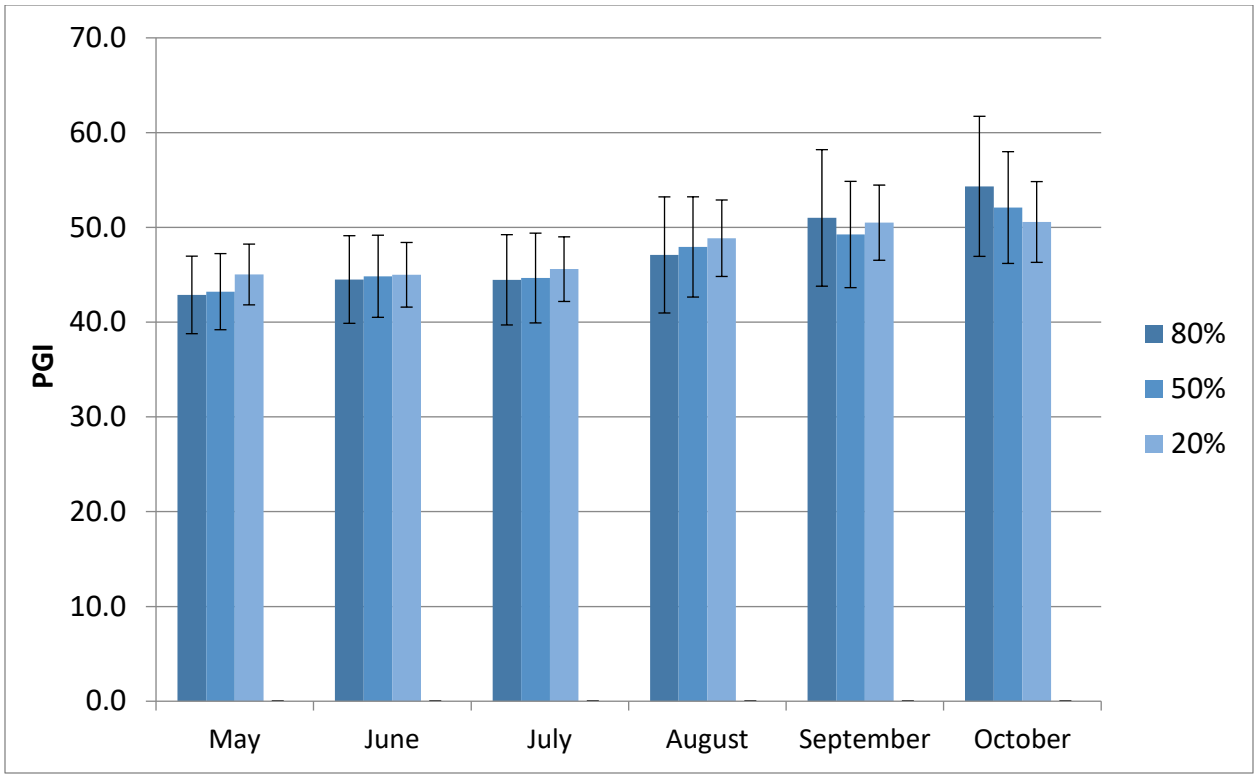


Figure 12a. *Rhaphiolepis indica* 'sPg-3-003' Redbird™ average monthly plant growth index (PGI) at UC Davis on 3 ETo-based irrigation levels in 2020.

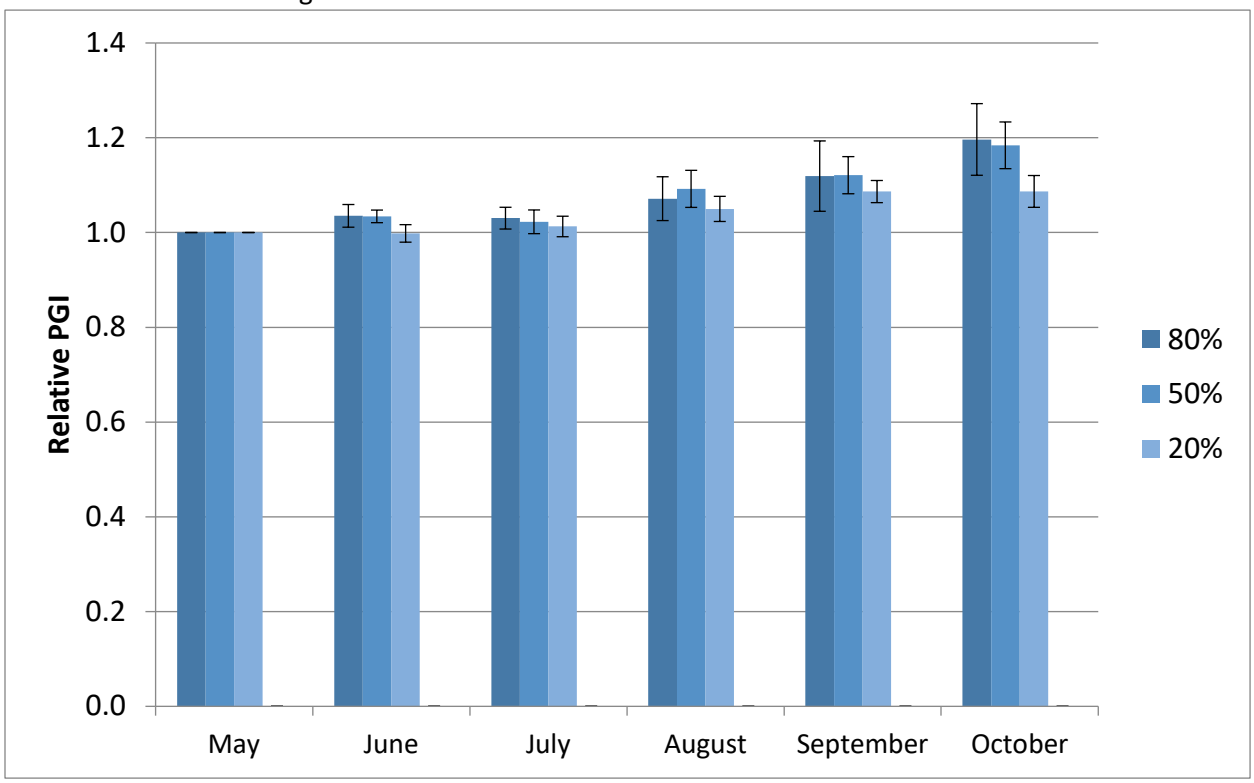


Figure 12b. *Rhaphiolepis indica* 'sPg-3-003' Redbird™ average monthly relative plant growth index (RPGI) at UC Davis on 3 ETo-based irrigation levels in 2020.

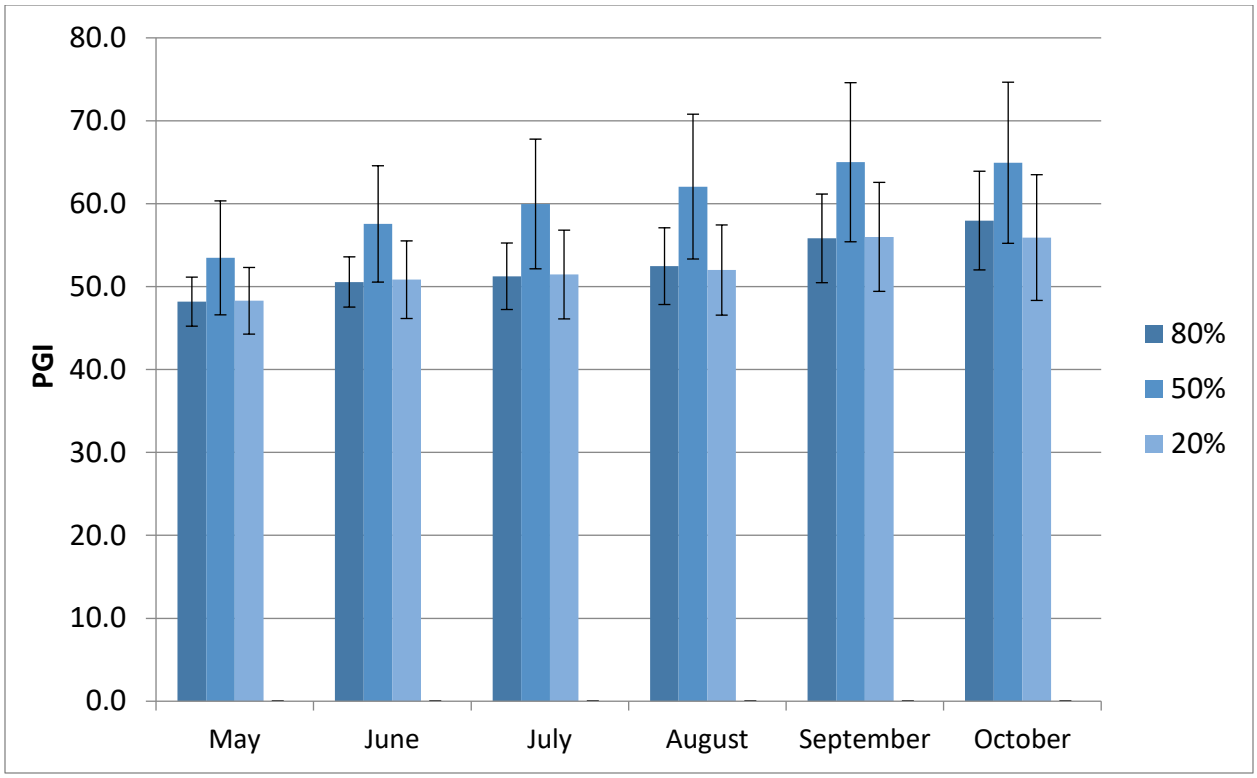


Figure 12c. *Rhaphiolepis indica* 'sPg-3-003' Redbird™ average monthly plant growth index (PGI) at South Coast REC on 3 ETo-based irrigation levels in 2020.

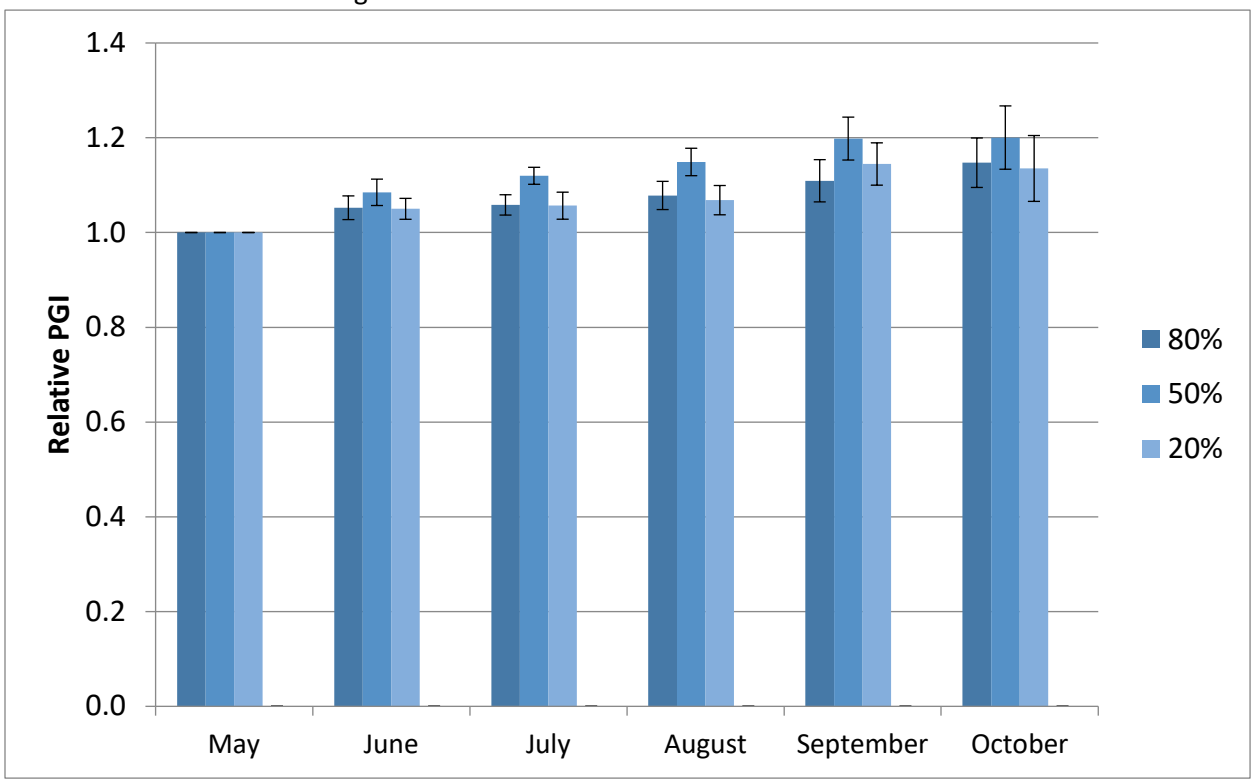


Figure 12d. *Rhaphiolepis indica* 'sPg-3-003' Redbird™ average monthly relative plant growth index (RPGI) at South Coast REC on 3 ETo-based irrigation levels in 2020.

Table 20a. *Rosa* 'Baillim' Chi™ average monthly quality ratings (scale 1-5, 1= lowest, 5 = highest) at UC Davis on 3 ETo-based irrigation levels in 2020.

Category	ET_o%	Apr	May	Jun	Jul	Aug	Sep	Oct	AVG
Overall Appearance	80	3.9	4.5	4.2	4.5	4.4	2.9	2.9	3.9
	50	3.9	4.7	4.3	4.5	4.3	3.2	2.9	4.0
	20	3.7	4.7	4.1	4.7	4.4	3.1	2.8	3.9
Foliage	80	4.6	4.4	3.9	4.0	3.4	3.1	2.9	3.8
	50	4.5	4.9	4.0	4.0	3.5	2.9	3.3	3.9
	20	4.7	4.4	4.1	4.3	3.6	3.1	2.9	3.9
Flower	80	0.1	4.6	1.9	3.0	2.4	1.0	1.0	2.0
	50	0.0	4.4	2.3	3.1	1.9	1.1	0.9	1.9
	20	0.0	4.4	1.9	3.4	2.1	1.0	1.0	2.0
Pest Resistance	80	4.9	4.7	4.4	3.9	3.4	4.7	3.1	4.2[ab]
	50	4.8	4.9	4.3	4.0	3.4	4.6	3.0	4.1[b]
	20	4.9	5.0	4.9	4.3	3.7	4.7	3.0	4.3[a]
Disease Resistance	80	4.7	4.6	4.4	5.0	5.0	5.0	3.1	4.6
	50	4.9	5.0	4.3	5.0	5.0	5.0	3.0	4.6
	20	5.0	4.4	4.1	5.0	5.0	5.0	3.0	4.5
Vigor	80	5.0	5.0	5.0	4.7	4.7	3.9	3.1	4.5
	50	5.0	5.0	5.0	4.8	4.9	4.1	3.4	4.6
	20	5.0	5.0	5.0	4.9	4.9	3.7	3.0	4.5

Table 20b. *Rosa* 'Baillim' Chi™ average monthly quality ratings (scale 1-5, 1= lowest, 5 = highest) at South Coast REC on 3 ETo-based irrigation levels in 2020.

Category	ET_o%	Apr	May	Jun	Jul	Aug	Sep	Oct	AVG
Overall Appearance	80	4.1	4.4	3.4	3.3	3.2	2.4	2.5	3.3
	50	4.1	4.4	3.4	3.4	3.4	2.7	2.8	3.5
	20	4.0	4.5	3.4	3.3	3.1	2.4	2.6	3.3
Foliage	80	4.8	4.5	4.1	3.6	3.3	2.4	2.8	3.7
	50	4.6	4.4	4.1	3.9	3.6	2.9	3.2	3.8
	20	4.6	4.4	4.1	3.6	3.3	2.4	2.6	3.6
Flower	80	0.3	3.8	1.9	1.9	1.4	1.1	1.2	1.6
	50	0.3	3.8	1.6	1.6	1.1	1.0	1.3	1.5
	20	0.1	3.8	2.0	1.9	1.4	0.7	0.9	1.5
Pest Resistance	80	4.9	4.9	4.5	3.9	3.9	3.8	3.6	4.2
	50	4.9	5.0	4.6	4.0	4.1	3.5	3.6	4.2
	20	4.9	4.9	4.6	4.5	4.5	3.6	3.8	4.4
Disease Resistance	80	4.7	4.3	4.1	3.5	3.3	2.8	2.9	3.7
	50	4.6	4.4	4.1	4.0	3.6	3.1	3.3	3.9
	20	4.4	4.6	4.1	3.3	3.0	2.4	2.5	3.5
Vigor	80	5.0	4.6	4.8	4.6	4.6	4.8	4.7	4.7
	50	4.9	4.9	4.6	4.6	4.6	4.2	4.2	4.6
	20	4.9	4.6	4.9	4.6	4.6	4.4	4.4	4.6

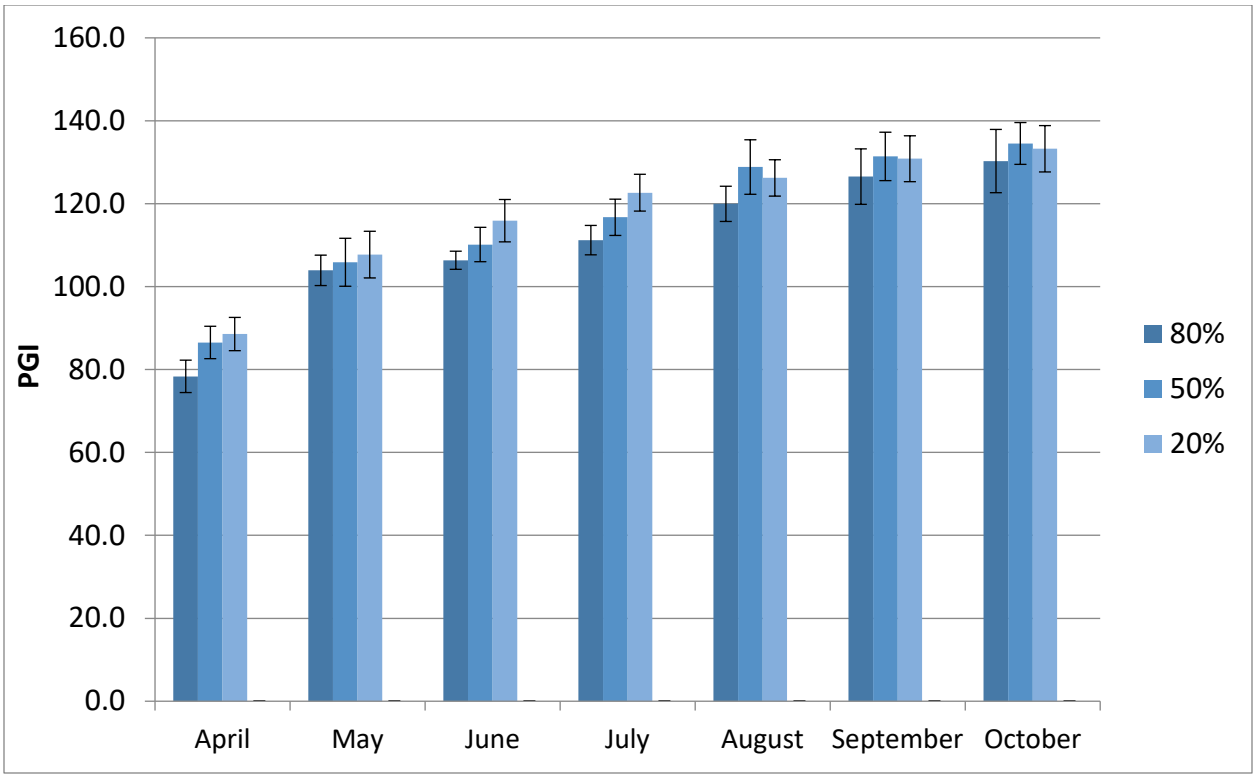


Figure 13a. *Rosa* 'Baillim' Chi™ average monthly plant growth index (PGI) at UC Davis on 3 ETo-based irrigation levels in 2020.

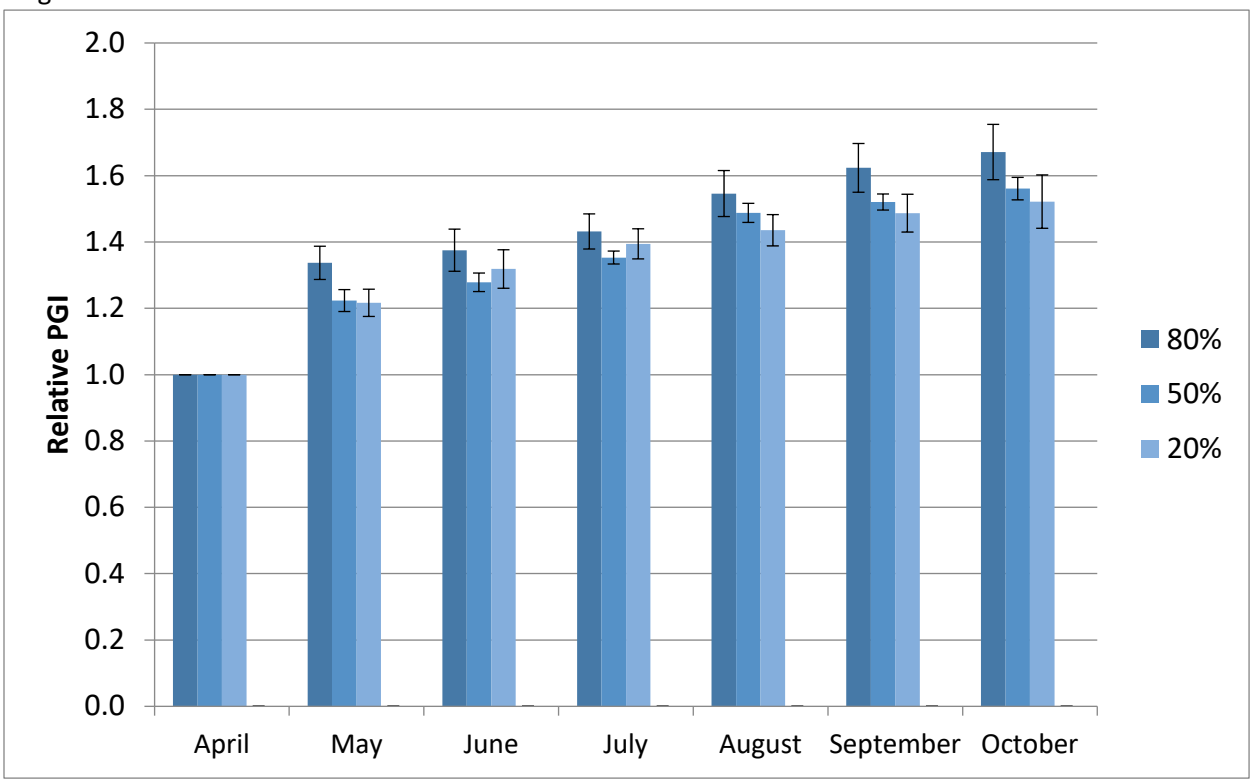


Figure 13b. *Rosa* 'Baillim' Chi™ average monthly relative plant growth index (RPGI) at UC Davis on 3 ETo-based irrigation levels in 2020.

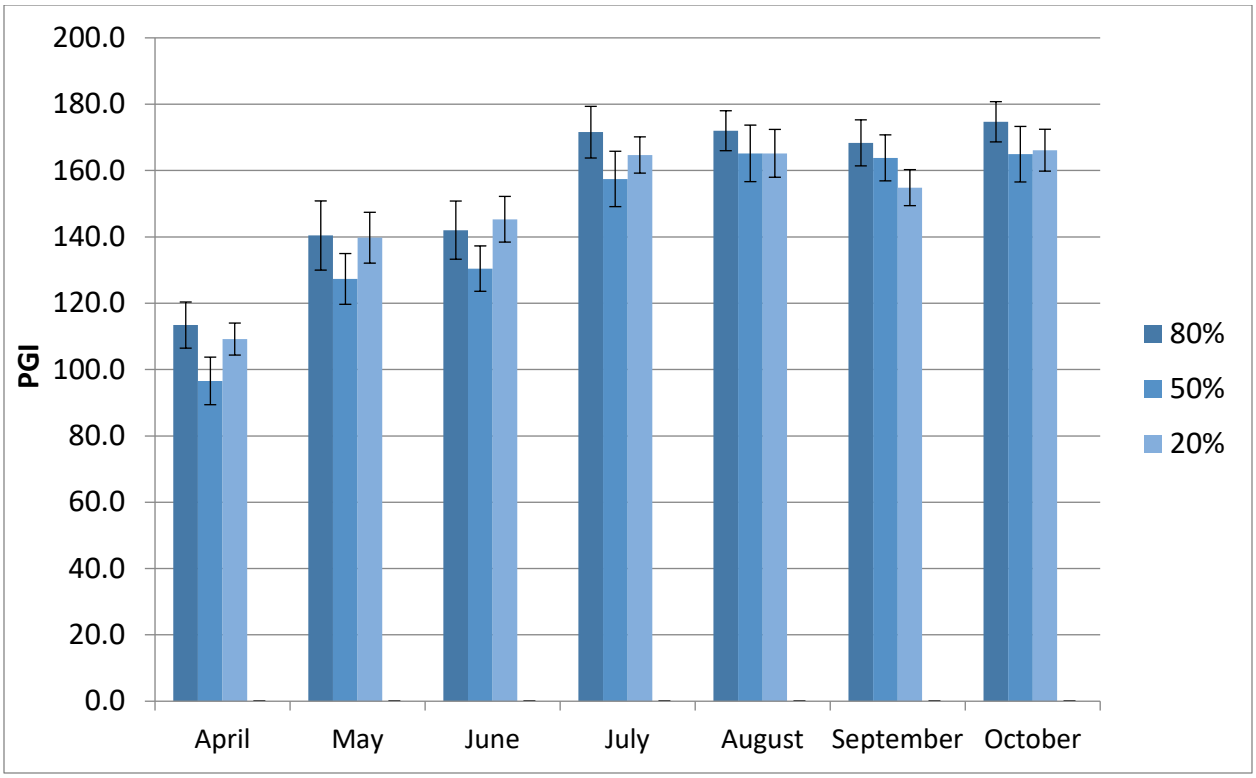


Figure 13c. *Rosa* 'Baillim' Chi™ average monthly plant growth index (PGI) at South Coast REC on 3 ETo-based irrigation levels in 2020.

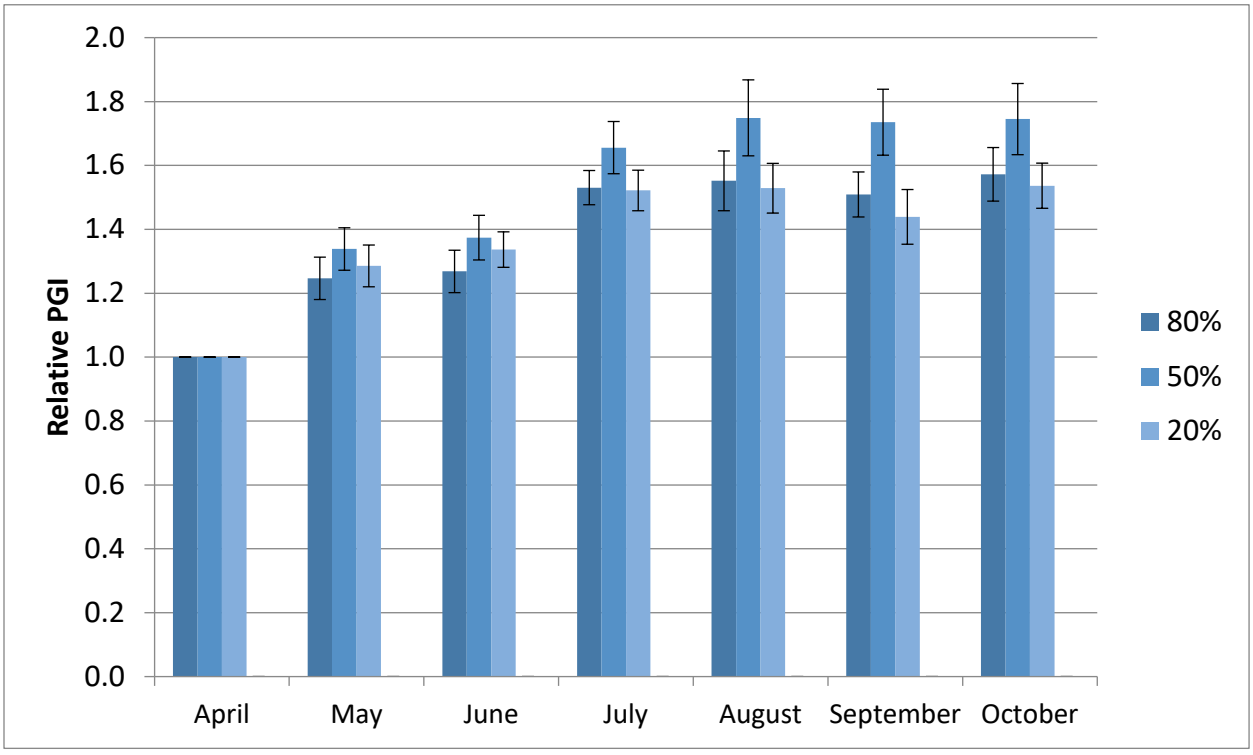


Figure 13d. *Rosa* 'Baillim' Chi™ average monthly relative plant growth index (RPGI) at South Coast REC on 3 ETo-based irrigation levels in 2020.

Table 21a. *Rosa* 'KORfizzlem' Lemon Fizz Kolorscape® average monthly quality ratings (scale 1-5, 1= lowest, 5 = highest) at UC Davis on 3 ETo-based irrigation levels in 2020.

Category	ET_o%	Apr	May	Jun	Jul	Aug	Sep	Oct	AVG
Overall Appearance	80	4.3	4.1	3.8	3.8	3.6	2.9	2.9	3.6
	50	4.4	4.3	3.8	3.5	3.6	3.1	3.0	3.7
	20	4.5	4.3	3.8	3.4	3.3	3.0	2.9	3.6
Foliage	80	3.3	4.4	3.9	3.8	3.4	3.1	3.1	3.6
	50	3.5	4.0	4.2	3.8	3.7	3.3	3.0	3.6
	20	3.0	4.5	3.8	3.5	3.3	3.2	3.0	3.5
Flower	80	2.3	1.0	0.1	0.5	0.5	0.1	0.4	0.7
	50	3.0	2.2	0.3	0.3	0.5	0.0	0.2	0.9
	20	3.3	1.3	0.3	0.2	0.7	0.2	0.2	0.9
Pest Resistance	80	4.8	4.8	4.6	4.4	4.0	5.0	3.3	4.4
	50	4.8	4.3	5.0	4.5	4.2	5.0	3.3	4.5
	20	4.5	4.8	5.0	4.2	4.0	5.0	3.2	4.4
Disease Resistance	80	3.3	4.4	4.1	5.0	4.9	5.0	3.3	4.3
	50	3.5	4.8	4.2	4.5	5.0	5.0	3.3	4.3
	20	2.7	4.5	4.2	5.0	5.0	5.0	3.2	4.2
Vigor	80	4.0	5.0	3.8	4.1	4.0	3.0	3.1	3.9
	50	4.0	5.0	3.7	3.8	4.3	3.2	3.2	3.9
	20	4.0	5.0	3.8	4.0	3.7	3.2	3.2	3.8

Table 21b. *Rosa* 'KORfizzlem' Lemon Fizz Kolorscape® average monthly quality ratings (scale 1-5, 1= lowest, 5 = highest) at South Coast REC on 3 ETo-based irrigation levels in 2020.

Category	ET_o%	Apr	May	Jun	Jul	Aug	Sep	Oct	AVG
Overall Appearance	80	3.9	3.2	3.1	3.1	3.1	2.9	2.9	3.2
	50	3.1	3.4	3.1	3.0	3.0	2.9	3.0	3.1
	20	3.4	3.0	3.1	2.9	2.9	2.6	2.6	2.9
Foliage	80	4.6	3.7	3.3	3.1	3.1	2.9	3.1	3.4
	50	4.1	3.4	3.3	3.2	3.2	3.0	3.1	3.3
	20	3.5	3.3	3.6	3.1	3.0	2.6	2.9	3.1
Flower	80	1.7	0.4	1.2	1.1	0.9	0.9	0.9	1.0[a]
	50	1.8	0.3	1.0	1.1	1.0	0.8	0.8	0.9[a]
	20	0.8	0.3	0.9	0.9	0.3	0.3	0.4	0.6[b]
Pest Resistance	80	4.8	5.0	4.6	4.3	4.1	3.4	3.4	4.2
	50	4.8	5.0	4.8	4.6	4.5	3.9	3.8	4.5
	20	4.1	4.3	4.9	4.8	4.6	4.2	4.1	4.4
Disease Resistance	80	3.9	4.6	3.9	3.9	3.8	3.3	3.1	3.8
	50	3.6	4.3	4.1	3.6	3.8	3.8	3.5	3.8
	20	3.4	4.1	4.6	3.4	3.3	2.9	3.0	3.5
Vigor	80	3.9	3.8	3.5	3.4	3.4	3.4	3.5	3.6
	50	3.8	3.9	3.3	3.3	3.3	3.4	3.4	3.5
	20	3.4	3.6	3.4	3.4	3.4	3.4	3.4	3.4

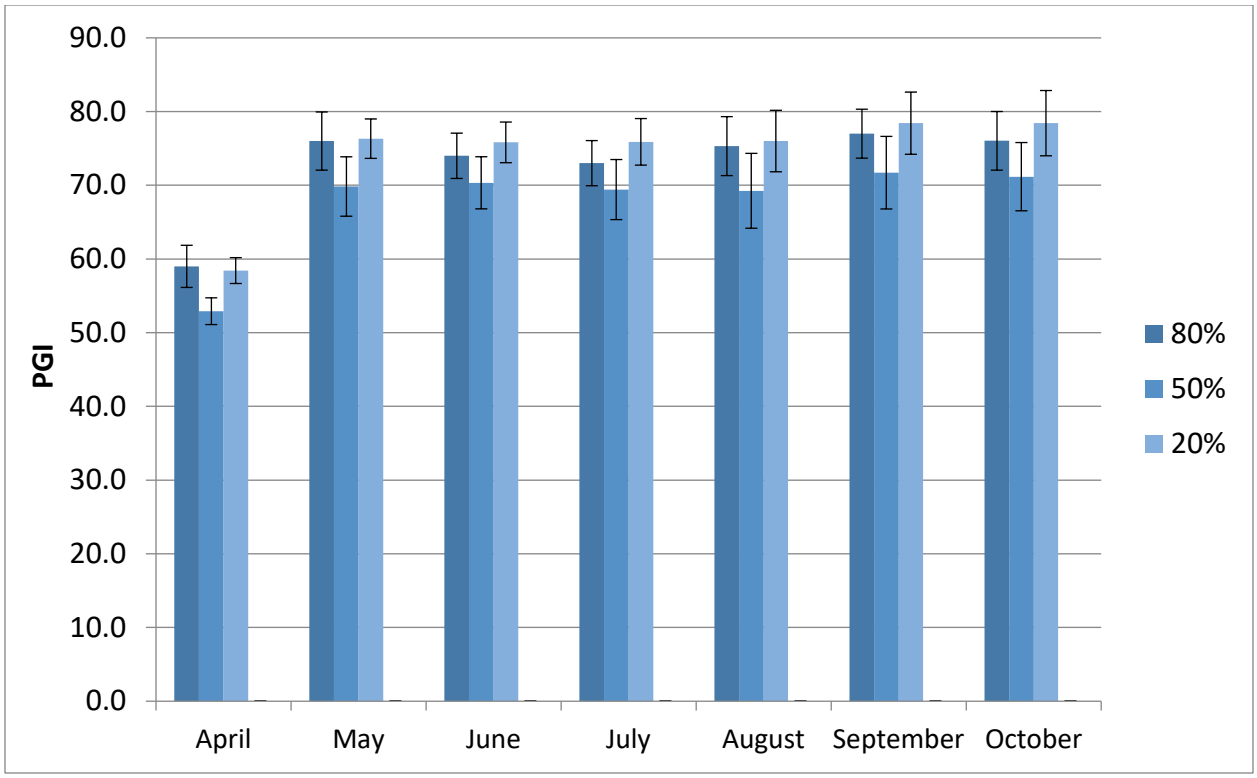


Figure 14a. *Rosa* 'KORfizzlem' Lemon Fizz Kolorscape® average monthly plant growth index (PGI) at UC Davis on 3 ETo-based irrigation levels in 2020.

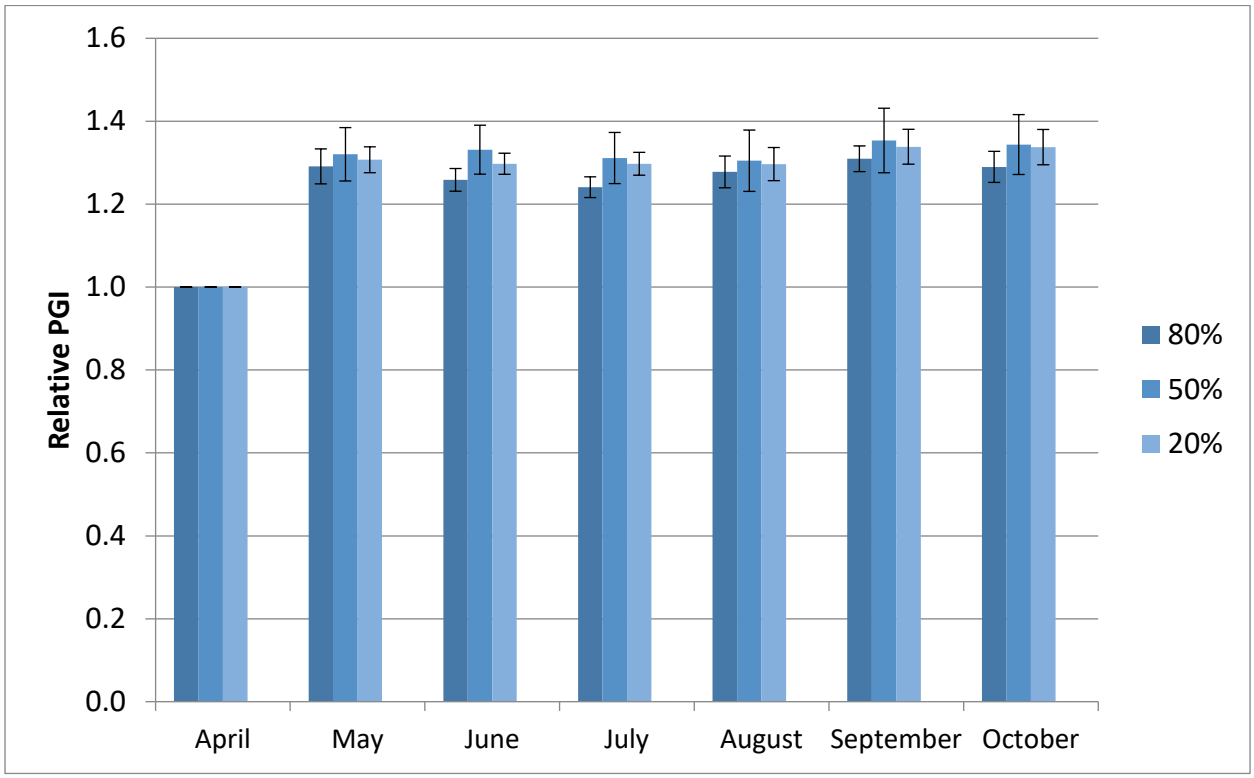


Figure 14b. *Rosa* 'KORfizzlem' Lemon Fizz Kolorscape® average monthly relative plant growth index (RPGI) at UC Davis on 3 ETo-based irrigation levels in 2020.

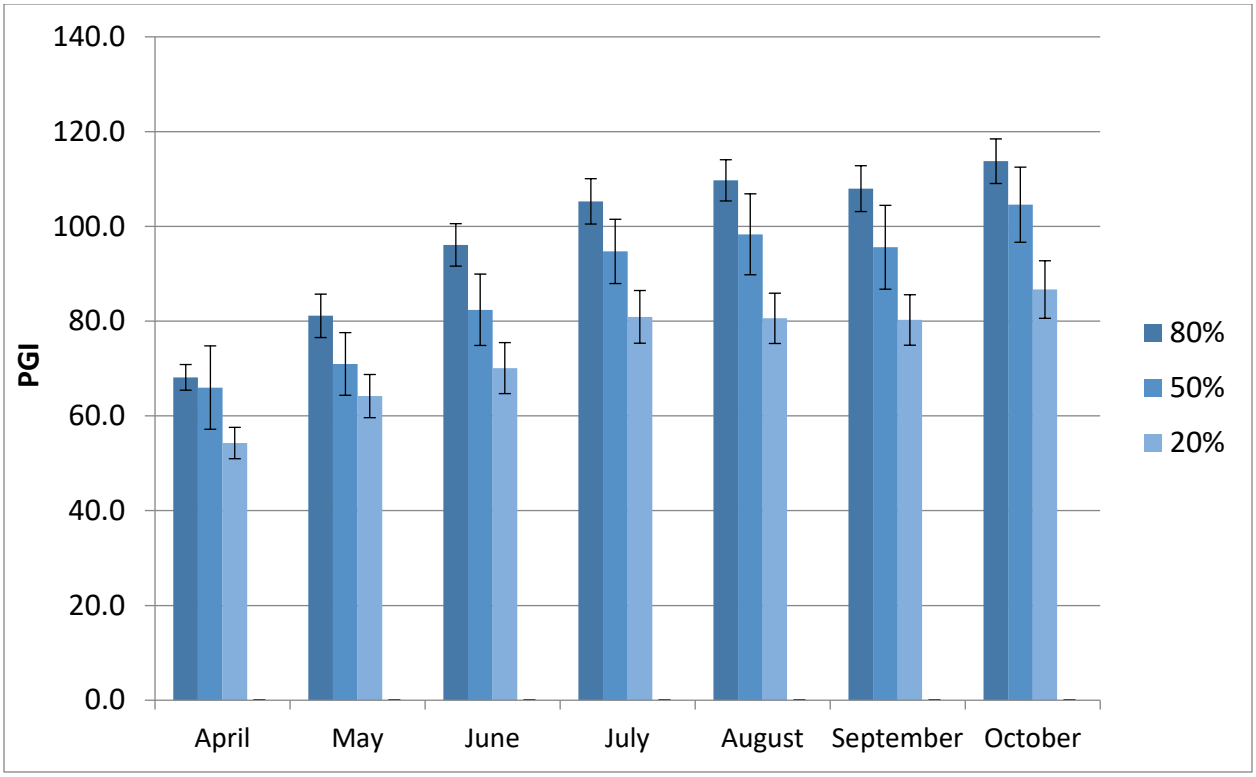


Figure 14c. *Rosa* 'KORfizzlem' Lemon Fizz Kolorscape® average monthly plant growth index (PGI) at South Coast REC on 3 ETo-based irrigation levels in 2020.

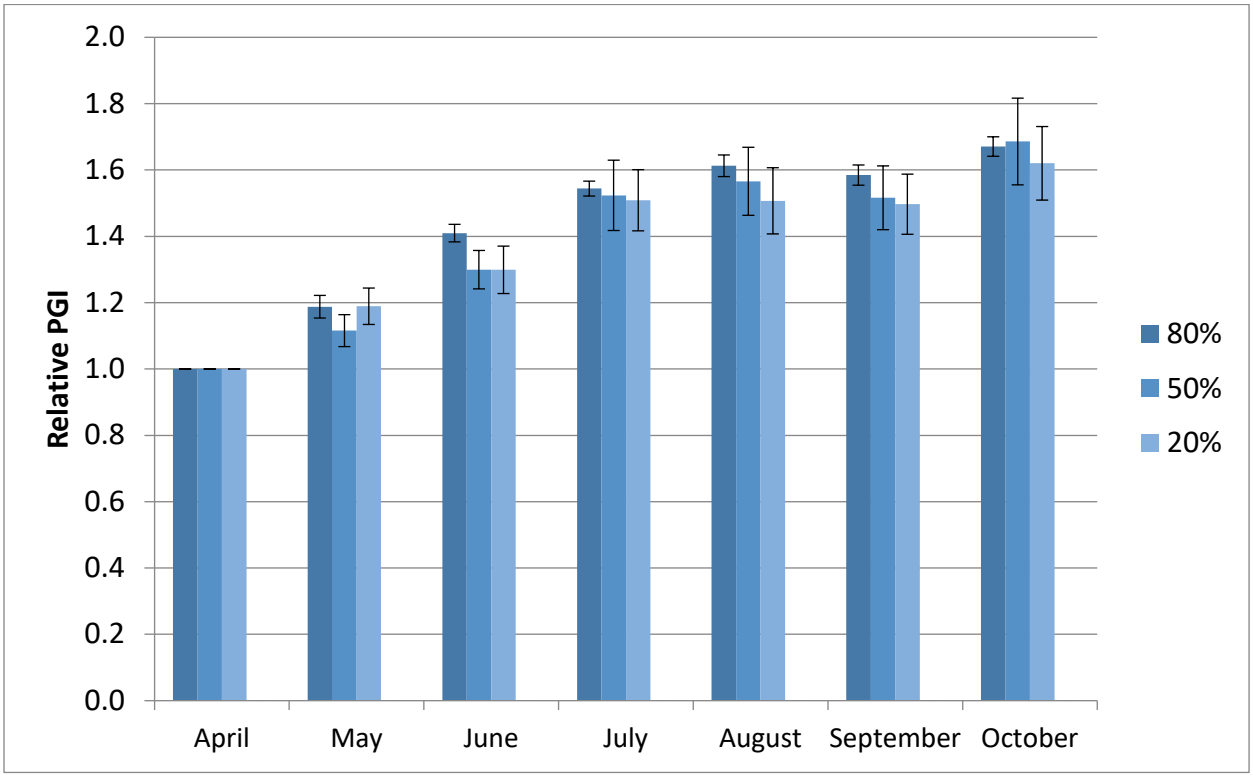


Figure 14d. *Rosa* 'KORfizzlem' Lemon Fizz Kolorscape® average monthly relative plant growth index (RPGI) at South Coast REC on 3 ETo-based irrigation levels in 2020.

Table 22a. *Rosa* 'Meiggili' Peach Drift® average monthly quality ratings (scale 1-5, 1= lowest, 5 = highest) at UC Davis on 3 ETo-based irrigation levels in 2020.

Category	ET_o%	Apr	May	Jun	Jul	Aug	Sep	Oct	AVG
Overall Appearance	80	4.0	4.8	4.0	3.8	4.1	3.3	3.2	3.9
	50	3.8	4.1	3.9	3.9	4.1	3.1	3.0	3.7
	20	3.9	4.5	3.9	4.1	4.1	3.3	3.0	3.8
Foliage	80	4.0	3.5	3.4	3.0	2.4	3.0	3.0	3.2
	50	3.6	3.1	3.3	2.8	2.6	3.0	3.0	3.1
	20	4.0	3.2	3.4	2.7	2.4	3.4	2.9	3.2
Flower	80	0.4	4.6	1.6	1.4	3.0	1.0	1.1	1.9
	50	0.4	4.1	2.0	1.6	2.4	1.0	1.1	1.8
	20	0.6	4.1	1.6	2.4	2.7	0.9	1.3	1.9
Pest Resistance	80	4.8	4.9	4.6	3.8	3.1	4.5	3.1	4.1
	50	5.0	5.0	4.5	4.0	3.3	4.5	3.0	4.2
	20	4.7	5.0	4.1	3.7	3.6	4.3	3.0	4.1
Disease Resistance	80	4.0	3.5	3.4	3.8	3.1	5.0	3.1	3.7
	50	3.6	3.1	3.4	3.4	3.6	5.0	3.0	3.6
	20	4.0	3.0	3.6	3.6	3.3	5.0	3.0	3.6
Vigor	80	5.0	5.0	4.6	4.5	4.5	3.6	3.6	4.4
	50	5.0	5.0	4.9	4.5	4.6	3.6	3.4	4.4
	20	5.0	5.0	4.3	4.6	4.7	3.9	3.4	4.4

Table 22b. *Rosa* 'Meiggili' Peach Drift® average monthly quality ratings (scale 1-5, 1= lowest, 5 = highest) at South Coast REC on 3 ETo-based irrigation levels in 2020.

Category	ET_o%	Apr	May	Jun	Jul	Aug	Sep	Oct	AVG
Overall Appearance	80	3.4	3.1	3.4	3.2	2.8	2.5	2.6	3.0
	50	2.9	3.1	3.2	2.9	2.6	2.3	2.5	2.8
	20	3.7	2.7	3.4	3.1	2.7	2.4	2.6	3.0
Foliage	80	4.4	3.4	3.3	2.9	2.8	2.5	2.7	3.1
	50	3.7	3.4	3.3	2.8	2.7	2.3	2.6	3.0
	20	4.3	3.1	3.5	3.1	2.9	2.5	2.6	3.2
Flower	80	1.8	3.6	2.1	2.4	1.3	1.4	1.7	2.0[a]
	50	1.4	2.9	2.1	2.5	1.6	1.3	1.3	1.9[ab]
	20	1.2	3.6	1.6	1.8	1.1	1.1	1.6	1.7[b]
Pest Resistance	80	4.4	4.9	4.8	4.3	3.9	3.6	3.6	4.2
	50	4.2	5.0	4.6	4.4	4.2	3.9	3.8	4.3
	20	4.1	5.0	4.9	4.5	4.5	4.1	4.1	4.5
Disease Resistance	80	3.3	3.1	3.4	3.1	2.8	2.6	2.7	3.0
	50	3.4	3.2	3.8	2.9	2.3	2.3	2.4	2.9
	20	3.5	3.1	4.0	3.6	2.9	2.6	2.7	3.2
Vigor	80	4.2	3.8	4.2	4.1	3.9	3.6	3.6	3.9
	50	3.9	3.8	3.9	3.9	4.0	3.9	3.9	3.9
	20	4.2	3.8	3.9	3.9	3.7	3.6	3.6	3.8

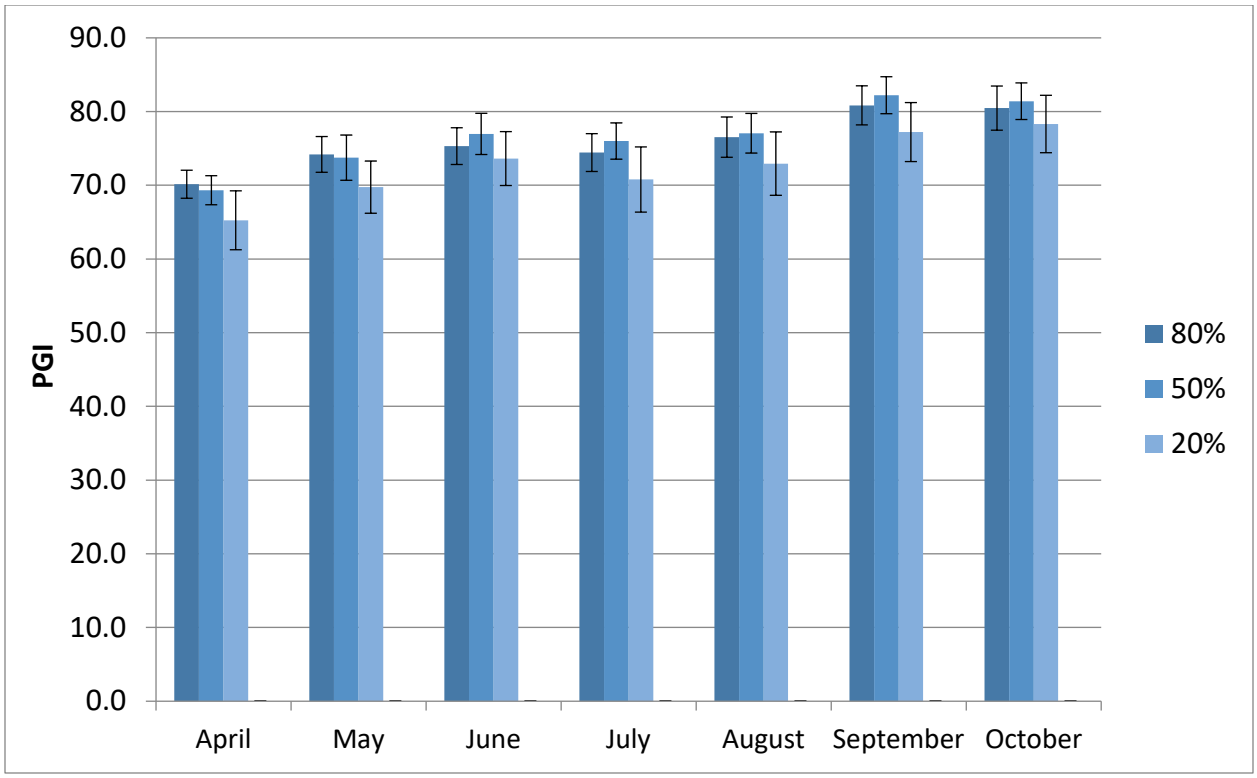


Figure 15a. *Rosa* 'Meiggili' Peach Drift® average monthly plant growth index (PGI) at UC Davis on 3 ETo-based irrigation levels in 2020.

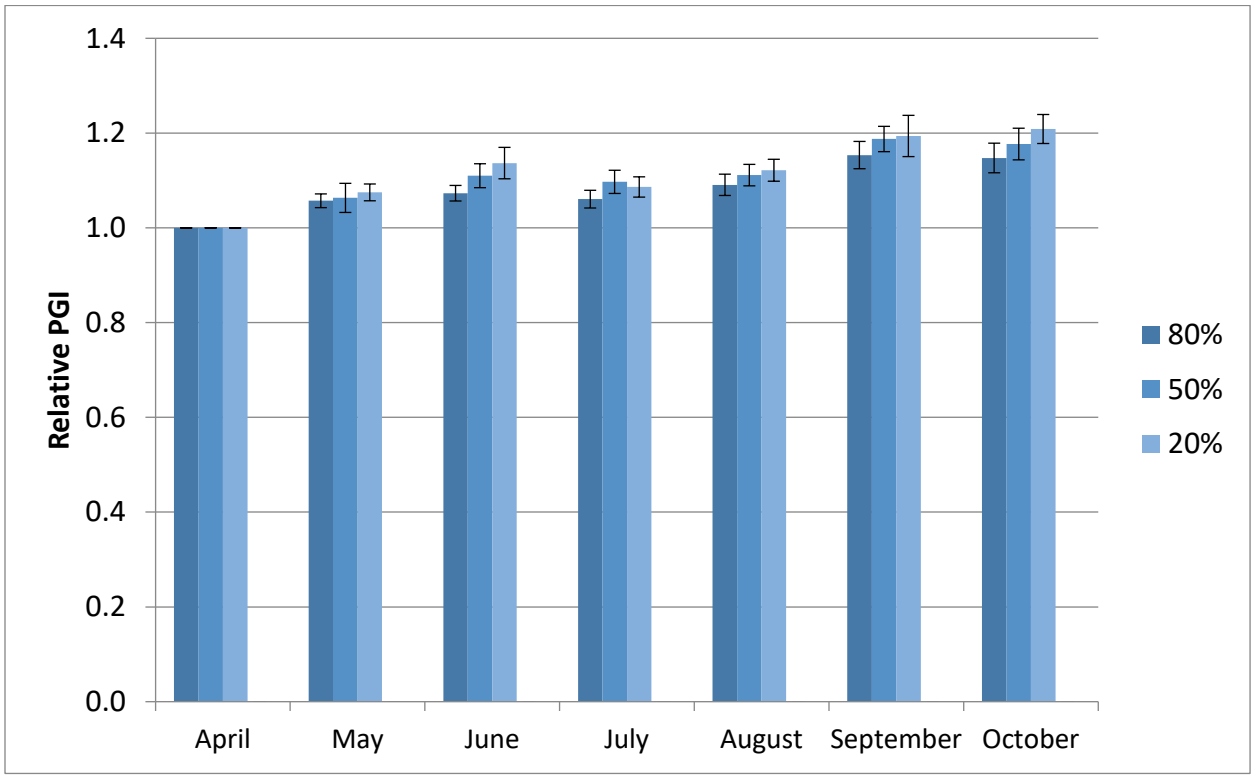


Figure 15b. *Rosa* 'Meiggili' Peach Drift® average monthly relative plant growth index (RPGI) at UC Davis on 3 ETo-based irrigation levels in 2020.

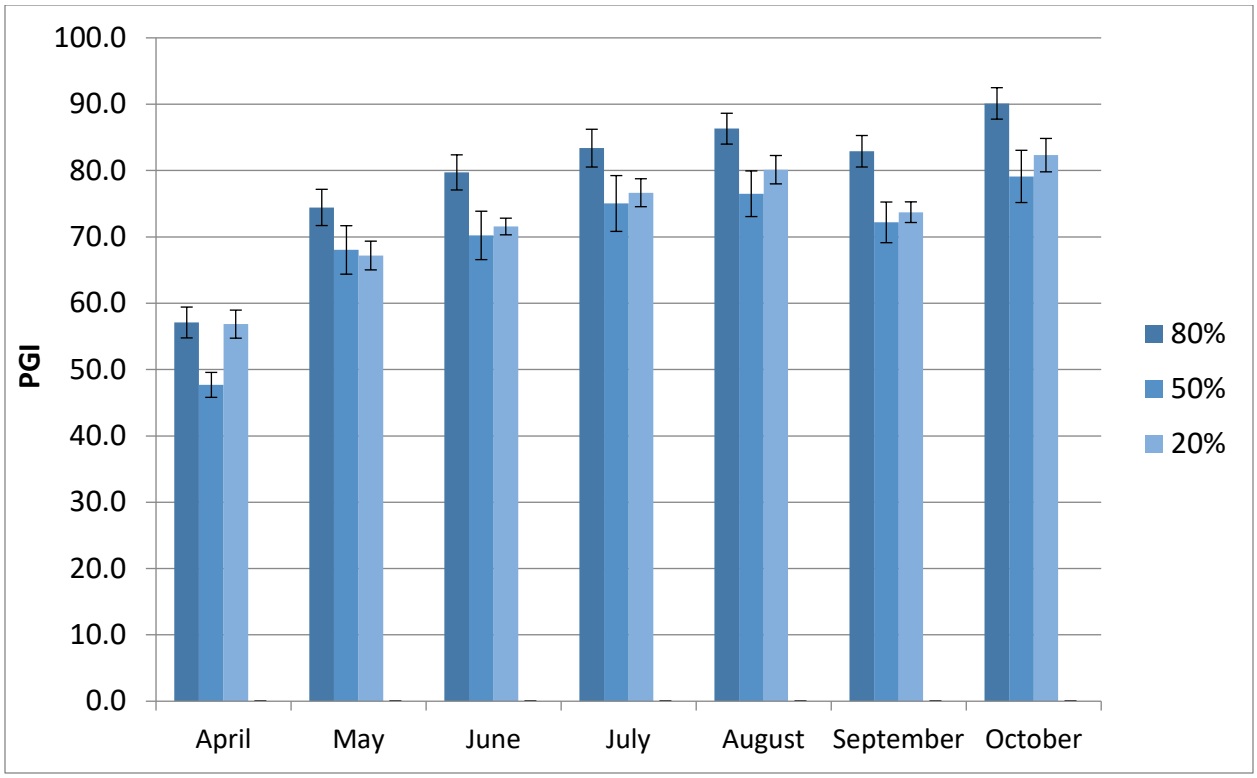


Figure 15c. *Rosa* 'Meiggili' Peach Drift® average monthly plant growth index (PGI) at South Coast REC on 3 ETo-based irrigation levels in 2020.

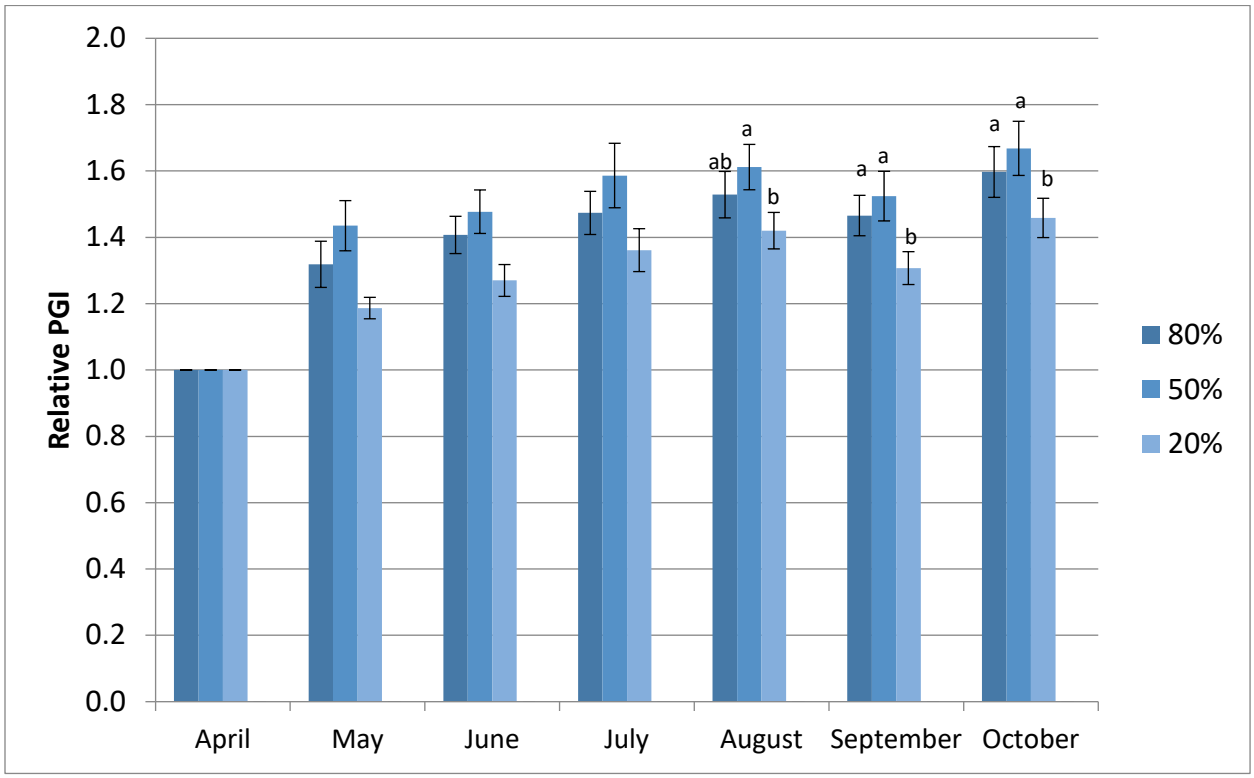


Figure 15d. *Rosa* 'Meiggili' Peach Drift® average monthly relative plant growth index (RPGI) at South Coast REC on 3 ETo-based irrigation levels in 2020.

Table 23a. *Rosa* 'Meimirrote' Apricot Drift® average monthly quality ratings (scale 1-5, 1= lowest, 5 = highest) at UC Davis on 3 ETo-based irrigation levels in 2020.

Category	ET_o%	Apr	May	Jun	Jul	Aug	Sep	Oct	AVG
Overall Appearance	80	4.0	4.3	4.6	4.4	4.3	3.3	3.1	4.0
	50	4.0	4.3	4.3	4.4	4.4	3.1	3.1	3.9
	20	4.0	4.4	4.3	4.3	4.1	3.1	3.0	3.9
Foliage	80	4.5	3.9	4.8	4.5	4.2	3.5	3.0	4.0
	50	4.4	4.1	4.8	4.4	4.3	3.4	3.1	4.1
	20	4.6	4.0	4.6	4.4	4.0	3.1	3.0	4.0
Flower	80	0.1	2.0	2.1	2.3	1.0	0.9	1.0	1.3
	50	0.3	1.8	1.1	1.9	1.6	0.9	0.9	1.2
	20	0.6	2.6	1.1	1.3	1.1	0.7	0.6	1.1
Pest Resistance	80	4.9	5.0	4.8	4.4	4.3	4.3	3.0	4.4
	50	5.0	4.9	4.6	4.4	4.4	4.1	3.1	4.4
	20	4.9	4.9	4.7	4.4	4.0	4.0	3.0	4.3
Disease Resistance	80	4.6	3.9	4.8	5.0	5.0	5.0	3.0	4.5
	50	4.5	4.1	4.6	5.0	5.0	5.0	3.1	4.5
	20	4.7	4.0	4.4	5.0	5.0	5.0	3.0	4.4
Vigor	80	5.0	5.0	5.0	5.0	4.9	3.6	3.4	4.6
	50	5.0	5.0	4.9	4.9	5.0	3.5	3.3	4.5
	20	5.0	5.0	5.0	4.7	5.0	3.3	3.0	4.4

Table 23b. *Rosa* 'Meimirrote' Apricot Drift® average monthly quality ratings (scale 1-5, 1= lowest, 5 = highest) at South Coast REC on 3 ETo-based irrigation levels in 2020.

Category	ET_o%	Apr	May	Jun	Jul	Aug	Sep	Oct	AVG
Overall Appearance	80	3.9	3.9	3.6	3.4	3.6	3.1	3.1	3.5
	50	3.4	3.8	3.6	3.4	3.4	3.1	3.1	3.4
	20	3.8	3.5	3.7	3.8	3.5	3.1	3.1	3.5
Foliage	80	4.7	4.2	3.8	3.6	3.7	3.0	3.1	3.7
	50	4.0	4.6	3.9	3.7	3.7	3.1	3.0	3.7
	20	4.6	4.4	3.9	3.8	3.9	3.1	3.1	3.8
Flower	80	0.1	1.1	1.8	1.4	1.2	1.0	1.1	1.1
	50	0.3	1.3	2.6	1.9	1.1	1.0	1.3	1.4
	20	0.4	1.1	2.2	1.9	1.1	1.0	1.4	1.3
Pest Resistance	80	4.5	4.9	4.8	4.7	4.7	4.6	4.4	4.7
	50	4.6	4.9	4.8	4.7	4.6	4.3	4.2	4.6
	20	4.6	5.0	5.0	4.9	4.9	4.8	4.4	4.8
Disease Resistance	80	4.0	4.5	4.1	3.6	3.7	3.2	3.2	3.8
	50	3.5	4.8	3.9	3.8	3.7	3.3	3.3	3.8
	20	4.3	4.4	4.0	3.9	3.8	3.1	3.1	3.8
Vigor	80	4.1	4.1	3.9	3.9	3.9	3.7	3.6	3.9
	50	4.3	4.1	4.1	4.1	4.1	4.1	4.1	4.1
	20	4.1	3.9	3.8	3.8	3.8	3.9	3.9	3.9

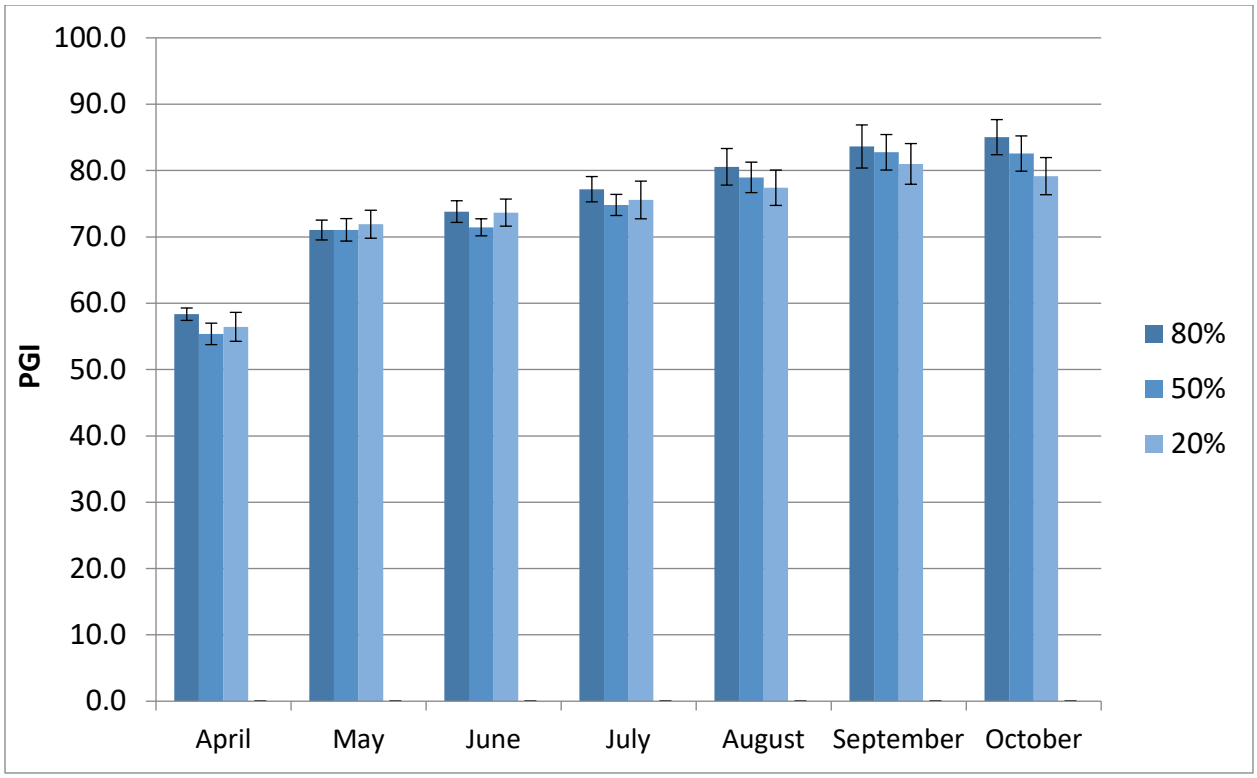


Figure 16a. *Rosa* 'Meimirrote' Apricot Drift® average monthly plant growth index (PGI) at UC Davis on 3 ETo-based irrigation levels in 2020.

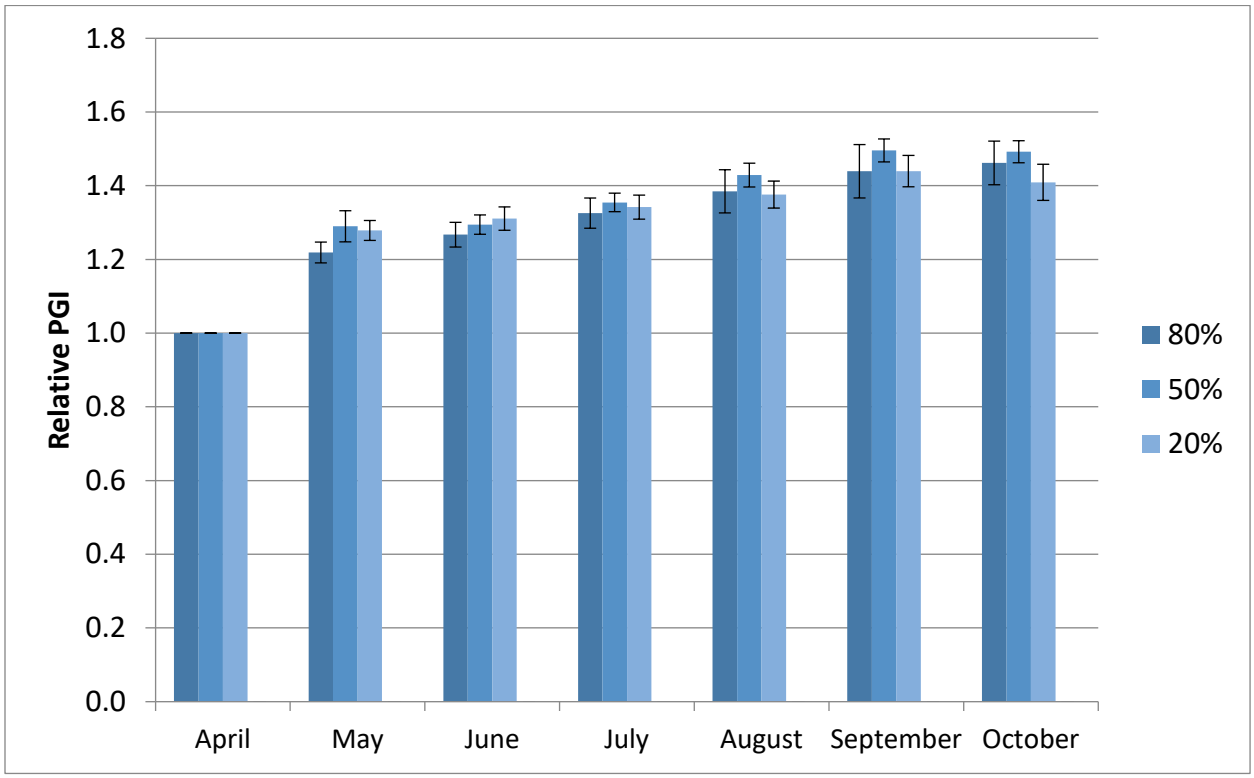


Figure 16b. *Rosa* 'Meimirrote' Apricot Drift® average monthly relative plant growth index (RPGI) at UC Davis on 3 ETo-based irrigation levels in 2020.

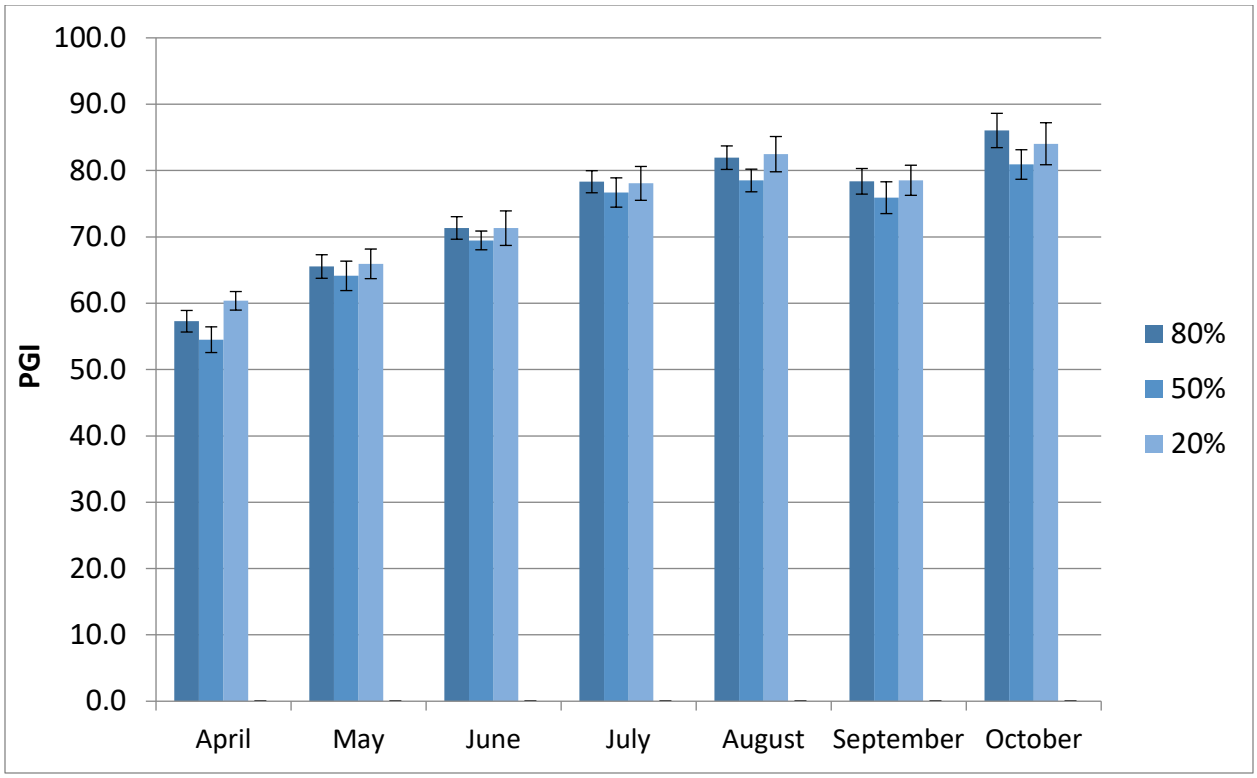


Figure 16c. *Rosa* 'Meimirrote' Apricot Drift® average monthly plant growth index (PGI) at South Coast REC on 3 ETo-based irrigation levels in 2020.

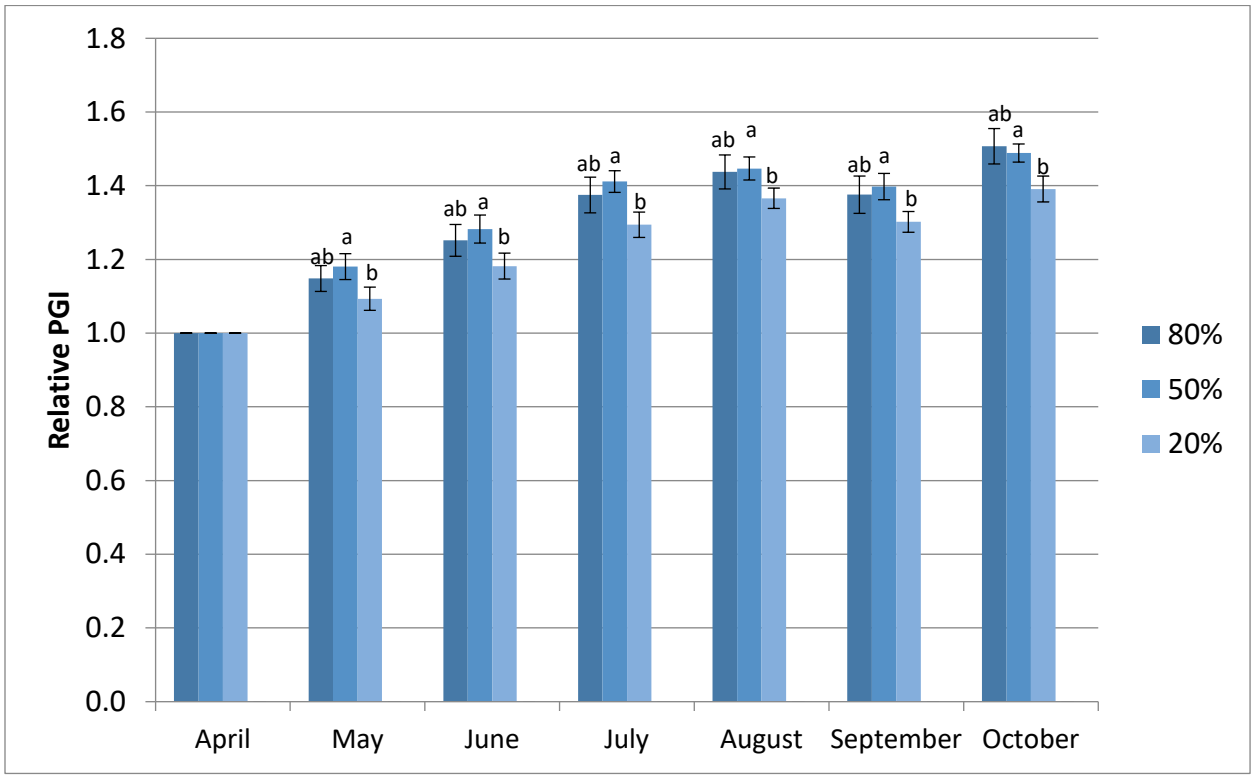


Figure 16d. *Rosa* 'Meimirrote' Apricot Drift® average monthly relative plant growth index (RPGI) at South Coast REC on 3 ETo-based irrigation levels in 2020.

Table 24a. *Rosa* 'NOA168098F' Flower Carpet® Pink Supreme average monthly quality ratings (scale 1-5, 1= lowest, 5 = highest) at UC Davis on 3 ETo-based irrigation levels in 2020.

Category	ET_o%	Apr	May	Jun	Jul	Aug	Sep	Oct	AVG
Overall Appearance	80	3.6	4.8	4.1	3.8	4.6	3.1	3.1	3.8
	50	4.0	4.8	4.8	4.1	4.6	3.2	3.0	4.1
	20	4.0	4.5	4.6	4.0	4.4	3.1	3.1	4.0
Foliage	80	4.9	5.0	4.5	4.4	3.7	3.1	2.9	4.1
	50	5.0	4.8	4.4	4.3	4.0	3.3	2.9	4.1
	20	4.9	4.9	4.3	4.1	3.9	3.1	3.1	4.0
Flower	80	0.5	3.8	3.8	0.9	3.3	0.9	0.9	2.0
	50	0.0	4.0	3.4	1.0	2.5	1.0	1.3	1.9
	20	0.4	3.4	3.1	1.4	2.4	1.3	1.1	1.9
Pest Resistance	80	5.0	5.0	4.8	4.9	3.8	4.8	3.1	4.5
	50	5.0	5.0	4.9	4.3	4.1	4.3	3.0	4.4
	20	5.0	5.0	4.9	4.6	4.0	4.6	3.1	4.4
Disease Resistance	80	4.9	5.0	4.5	4.9	5.0	5.0	3.1	4.6
	50	5.0	4.8	4.4	4.9	5.0	5.0	3.1	4.6
	20	4.9	4.9	4.3	4.9	5.0	5.0	3.1	4.6
Vigor	80	4.9	5.0	5.0	4.8	4.9	3.5	3.4	4.5
	50	5.0	5.0	5.0	5.0	5.0	3.5	3.3	4.5
	20	5.0	5.0	4.6	4.7	4.9	3.3	3.4	4.4

Table 24b. *Rosa* 'NOA168098F' Flower Carpet® Pink Supreme average monthly quality ratings (scale 1-5, 1= lowest, 5 = highest) at South Coast REC on 3 ETo-based irrigation levels in 2020.

Category	ET_o%	Apr	May	Jun	Jul	Aug	Sep	Oct	AVG
Overall Appearance	80	3.8	3.8	3.5	3.4	3.6	2.9	2.8	3.4
	50	4.0	3.9	3.6	3.6	3.8	3.1	3.1	3.6
	20	3.9	3.9	3.4	3.2	3.4	3.1	3.1	3.4
Foliage	80	4.4	4.0	4.4	3.8	3.6	2.9	2.8	3.7
	50	4.8	4.0	4.6	4.1	3.8	3.1	3.1	3.9
	20	4.6	4.1	4.4	3.9	3.6	3.1	3.1	3.8
Flower	80	0.0	2.3	2.6	1.6	1.8	1.2	1.2	1.5[ab]
	50	0.0	3.1	2.6	1.8	2.8	1.3	1.3	1.8[a]
	20	0.1	2.6	1.9	1.2	1.6	0.9	1.3	1.4[b]
Pest Resistance	80	5.0	5.0	4.8	4.7	4.6	4.4	4.4	4.7
	50	4.8	5.0	4.9	4.8	4.7	4.5	4.4	4.7
	20	4.8	5.0	5.0	4.4	4.3	4.4	4.0	4.6
Disease Resistance	80	4.4	4.0	4.3	3.6	3.6	3.1	3.3	3.8
	50	4.8	4.1	4.4	3.6	3.4	3.1	3.2	3.8
	20	4.4	4.1	4.6	4.0	3.6	3.1	3.1	3.8
Vigor	80	4.3	4.0	4.4	4.3	4.3	4.0	3.8	4.1
	50	4.9	4.4	4.4	4.4	4.5	4.5	4.5	4.5
	20	4.6	4.4	4.3	4.3	4.3	4.3	4.3	4.3

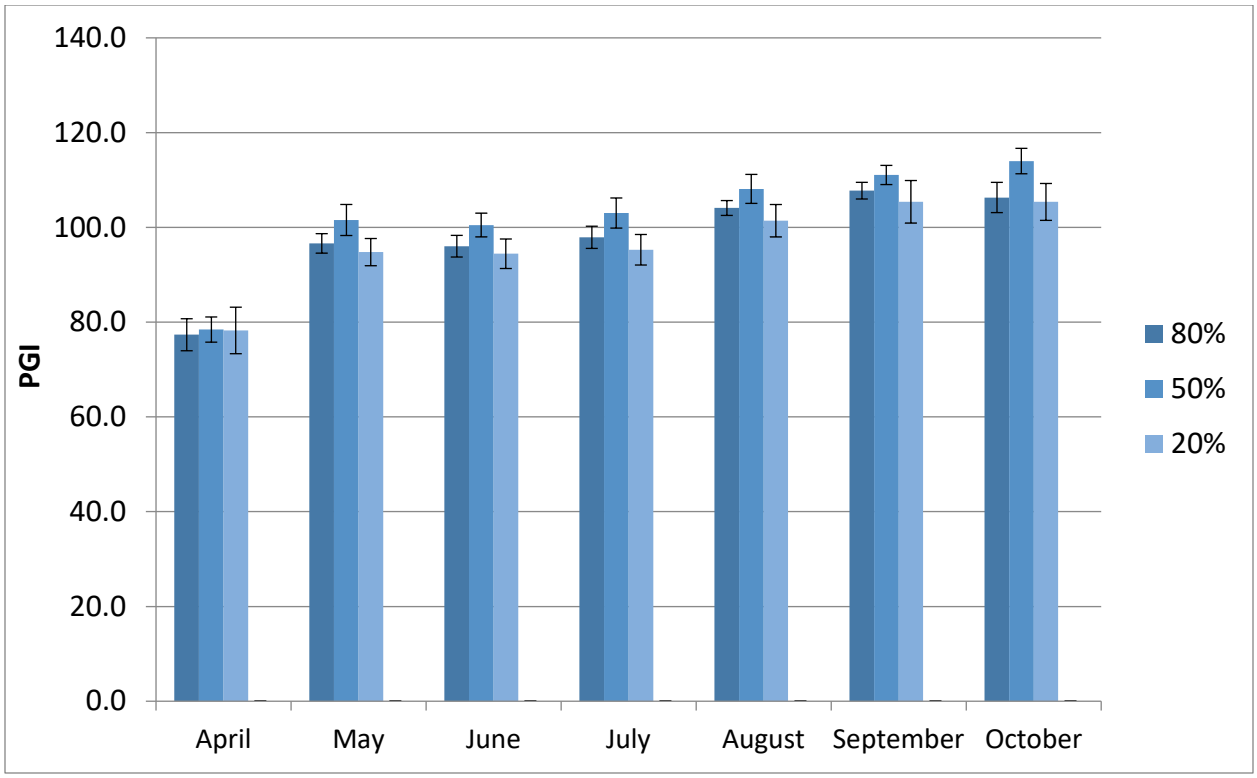


Figure 17a. *Rosa* 'NOA168098F' Flower Carpet® Pink Supreme average monthly plant growth index (PGI) at UC Davis on 3 ETo-based irrigation levels in 2020.

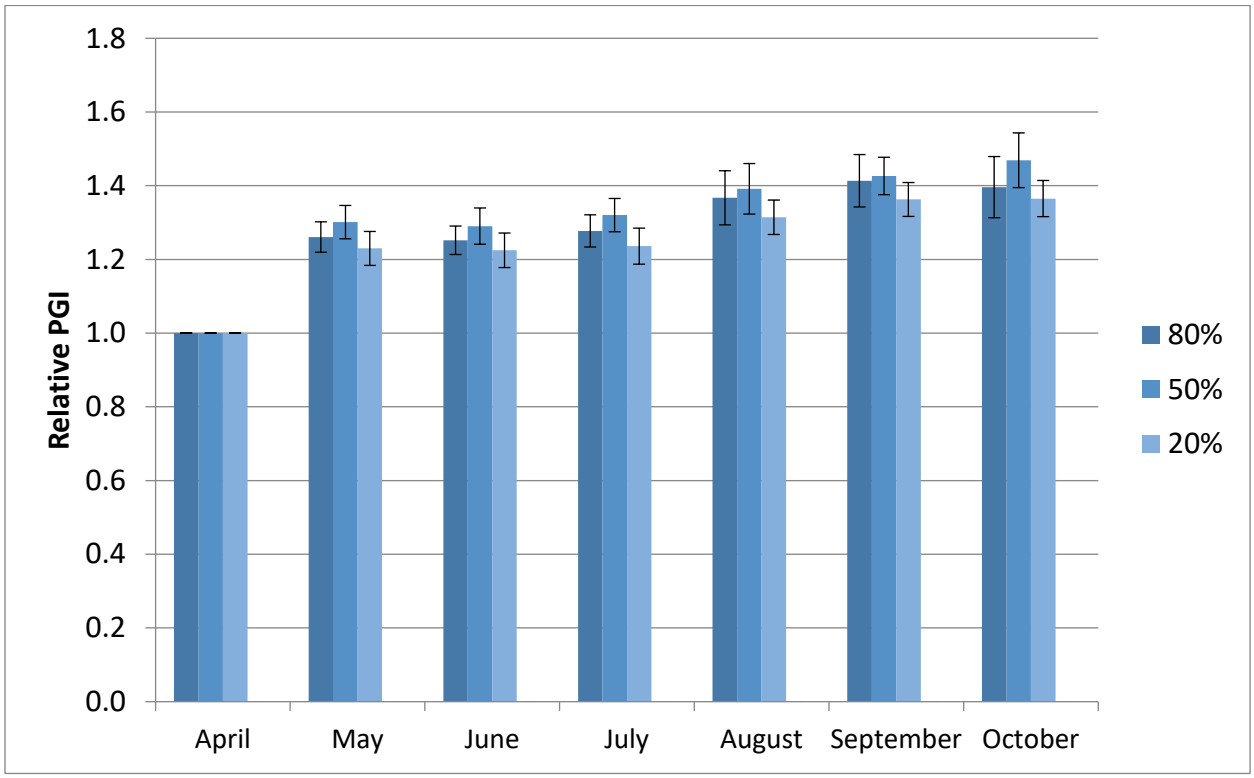


Figure 17b. *Rosa* 'NOA168098F' Flower Carpet® Pink Supreme average monthly relative plant growth index (RPGI) at UC Davis on 3 ETo-based irrigation levels in 2020.

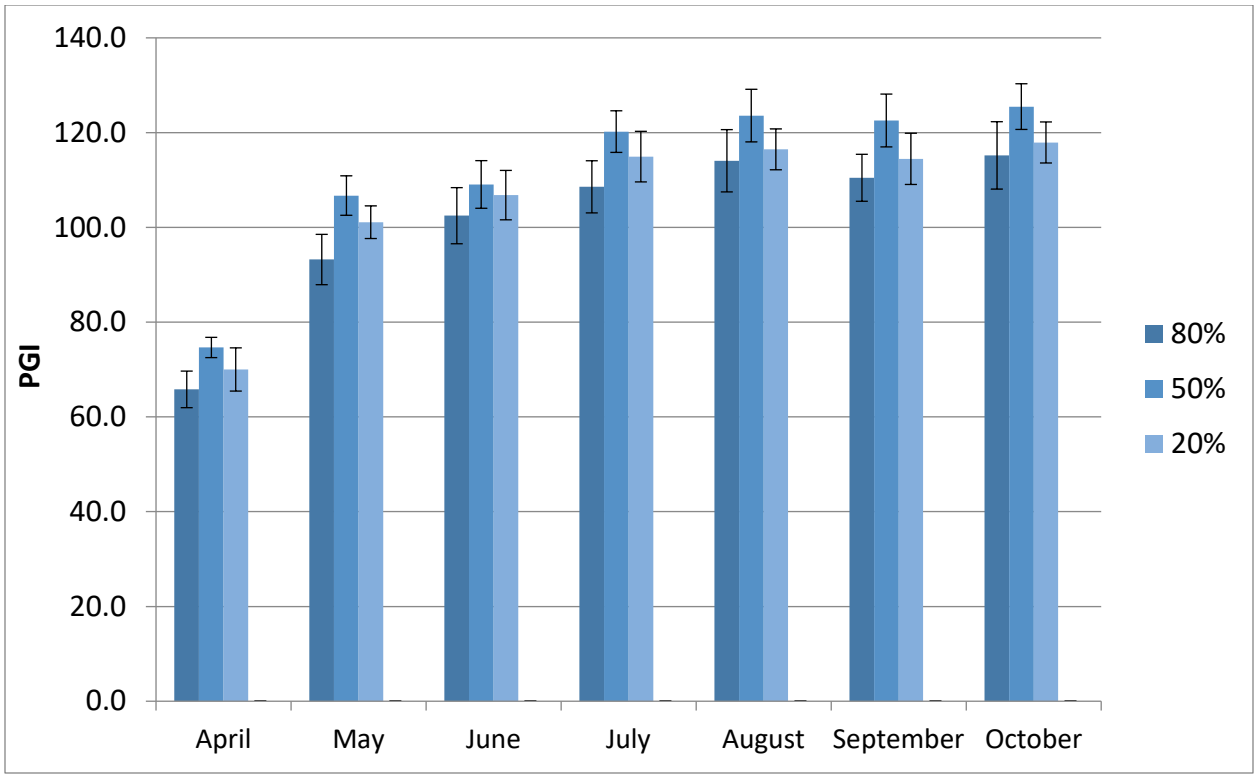


Figure 17c. *Rosa* 'NOA168098F' Flower Carpet® Pink Supreme average monthly plant growth index (PGI) at South Coast REC on 3 ETo-based irrigation levels in 2020.

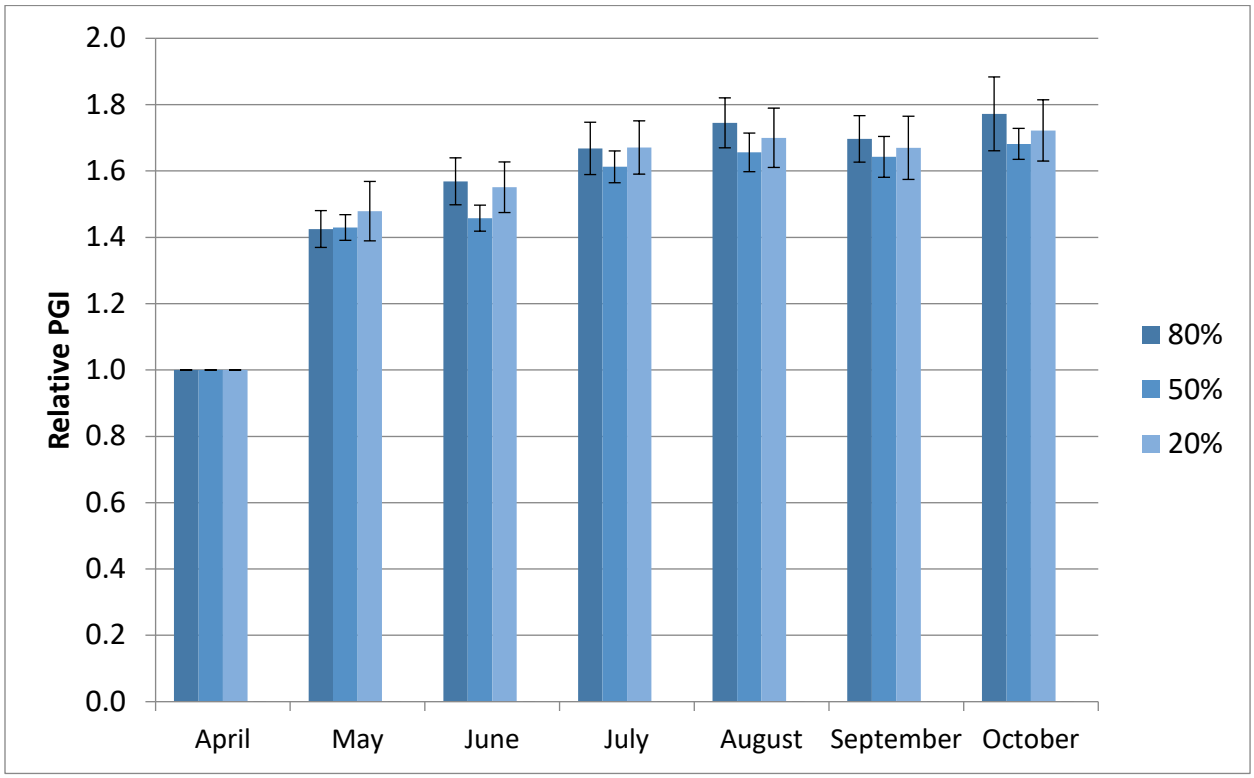


Figure 17d. *Rosa* 'NOA168098F' Flower Carpet® Pink Supreme average monthly relative plant growth index (RPGI) at South Coast REC on 3 ETo-based irrigation levels in 2020.

Table 25a. *Rosa* 'Radral' Coral Knock Out® average monthly quality ratings (scale 1-5, 1= lowest, 5 = highest) at UC Davis on 3 ETo-based irrigation levels in 2020.

Category	ET_o%	Apr	May	Jun	Jul	Aug	Sep	Oct	AVG
Overall Appearance	80	3.8	3.4	3.0	2.9	2.4	2.4	2.1	2.8
	50	3.6	3.3	3.1	2.8	2.8	2.5	2.2	2.9
	20	3.6	3.1	2.8	2.6	2.3	2.4	2.0	2.7
Foliage	80	2.5	2.4	2.6	2.4	2.3	2.0	2.0	2.3
	50	2.7	2.4	2.3	2.4	2.2	2.3	2.1	2.3
	20	2.3	2.6	2.3	2.3	2.1	2.0	2.0	2.2
Flower	80	0.4	1.5	1.0	1.1	1.1	1.1	1.1	1.1
	50	0.0	1.8	1.4	1.0	1.5	1.0	1.0	1.1
	20	0.4	1.6	1.0	1.0	0.9	1.0	1.0	1.0
Pest Resistance	80	4.3	5.0	4.8	3.9	3.1	4.4	3.0	4.1
	50	4.5	4.1	4.5	3.5	2.9	4.5	2.8	3.8
	20	4.9	4.9	4.4	3.7	3.0	4.1	3.0	4.0
Disease Resistance	80	2.5	2.4	2.6	2.9	2.9	5.0	3.0	3.0
	50	2.8	2.5	2.4	2.4	2.8	5.0	2.8	2.9
	20	2.3	2.4	2.1	2.6	2.6	5.0	3.0	2.8
Vigor	80	4.9	4.8	4.4	4.4	4.1	3.1	3.1	4.1
	50	4.5	4.8	4.1	3.8	4.4	3.3	3.0	4.0
	20	5.0	4.6	4.3	3.6	3.7	3.3	3.0	3.9

Table 25b. *Rosa* 'Radral' Coral Knock Out® average monthly quality ratings (scale 1-5, 1= lowest, 5 = highest) at South Coast REC on 3 ETo-based irrigation levels in 2020.

Category	ET_o%	Apr	May	Jun	Jul	Aug	Sep	Oct	AVG
Overall Appearance	80	3.5	2.8	2.0	2.1	1.8	1.6	2.1	2.3
	50	3.8	2.4	2.1	2.0	1.8	1.6	2.1	2.2
	20	3.3	2.7	2.1	2.1	1.6	1.4	2.1	2.2
Foliage	80	4.1	2.8	2.2	2.3	2.0	1.6	2.1	2.4
	50	4.2	2.6	2.1	2.2	2.0	1.6	2.0	2.4
	20	4.1	2.9	2.2	2.1	1.9	1.5	2.1	2.4
Flower	80	0.3	3.7	1.7	1.7	2.3	1.3	2.3	1.9
	50	0.4	3.1	1.3	1.6	2.0	1.5	1.6	1.6
	20	0.1	2.4	0.9	1.3	1.4	1.1	1.6	1.3
Pest Resistance	80	4.3	5.0	4.9	4.1	4.0	4.0	3.9	4.3
	50	4.3	5.0	4.9	4.7	4.7	4.7	4.1	4.6
	20	4.1	5.0	4.5	4.0	4.0	4.0	3.6	4.2
Disease Resistance	80	3.7	2.6	2.4	2.5	2.3	1.4	1.9	2.4
	50	3.7	2.8	2.0	1.7	1.6	1.6	1.8	2.2
	20	3.5	2.9	2.2	1.7	1.4	1.2	2.4	2.2
Vigor	80	4.6	3.1	3.4	3.4	3.4	3.0	3.1	3.4
	50	4.6	3.0	3.4	3.4	3.4	2.9	2.9	3.4
	20	3.9	3.6	2.7	2.7	2.6	2.4	2.4	2.9

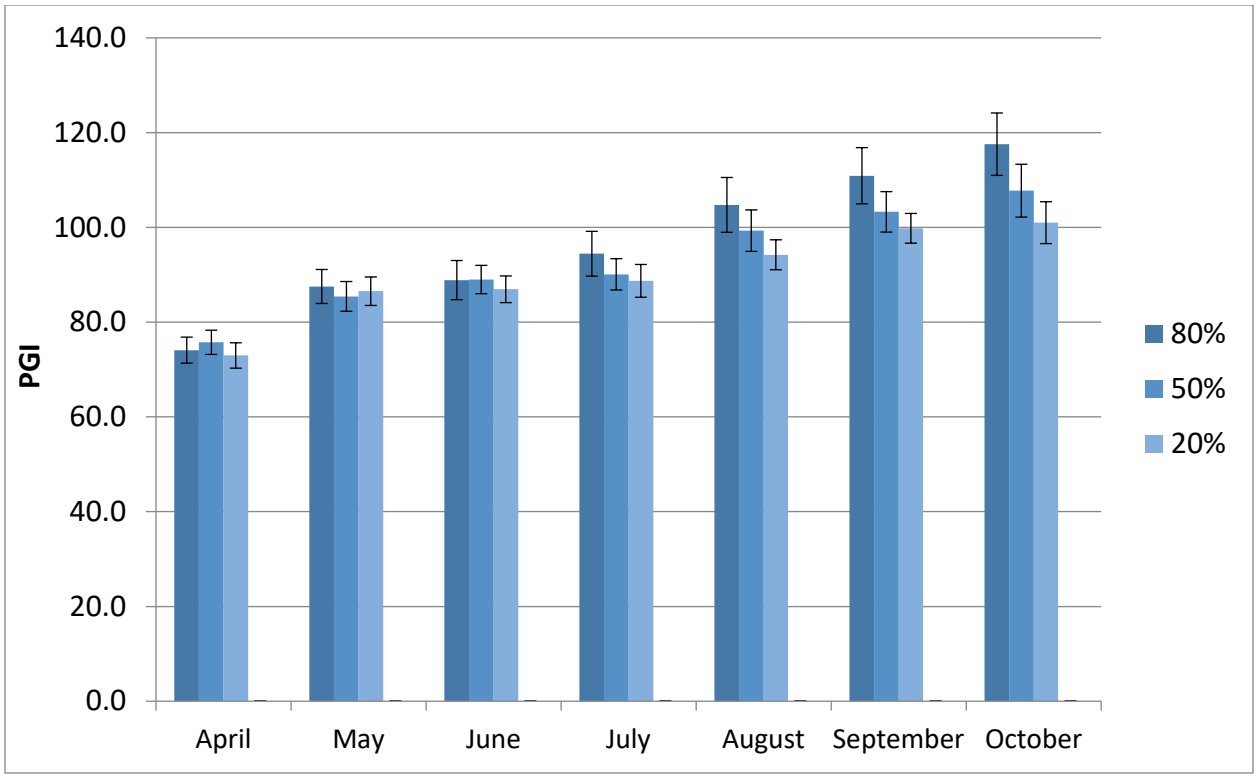


Figure 18a. *Rosa* 'Radral' Coral Knock Out® average monthly plant growth index (PGI) at UC Davis on 3 ETo-based irrigation levels in 2020.

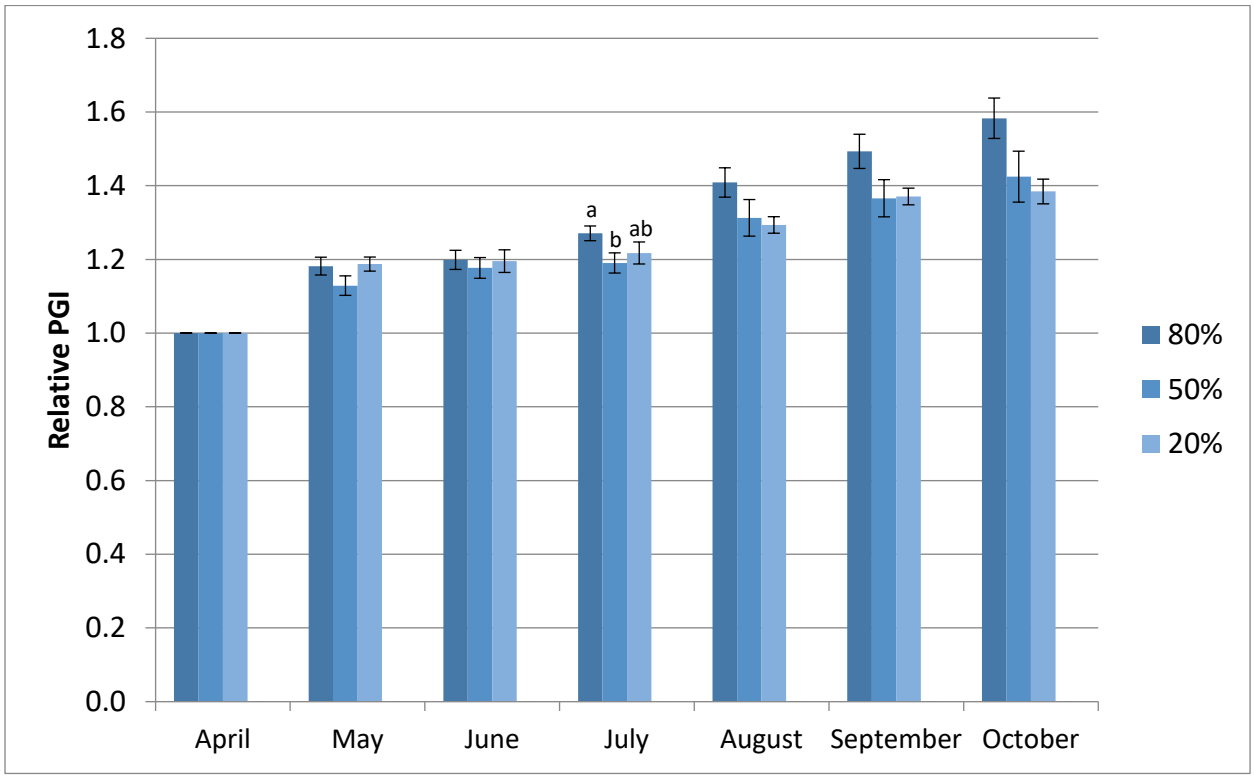


Figure 18b. *Rosa* 'Radral' Coral Knock Out® average monthly relative plant growth index (RPGI) at UC Davis on 3 ETo-based irrigation levels in 2020.

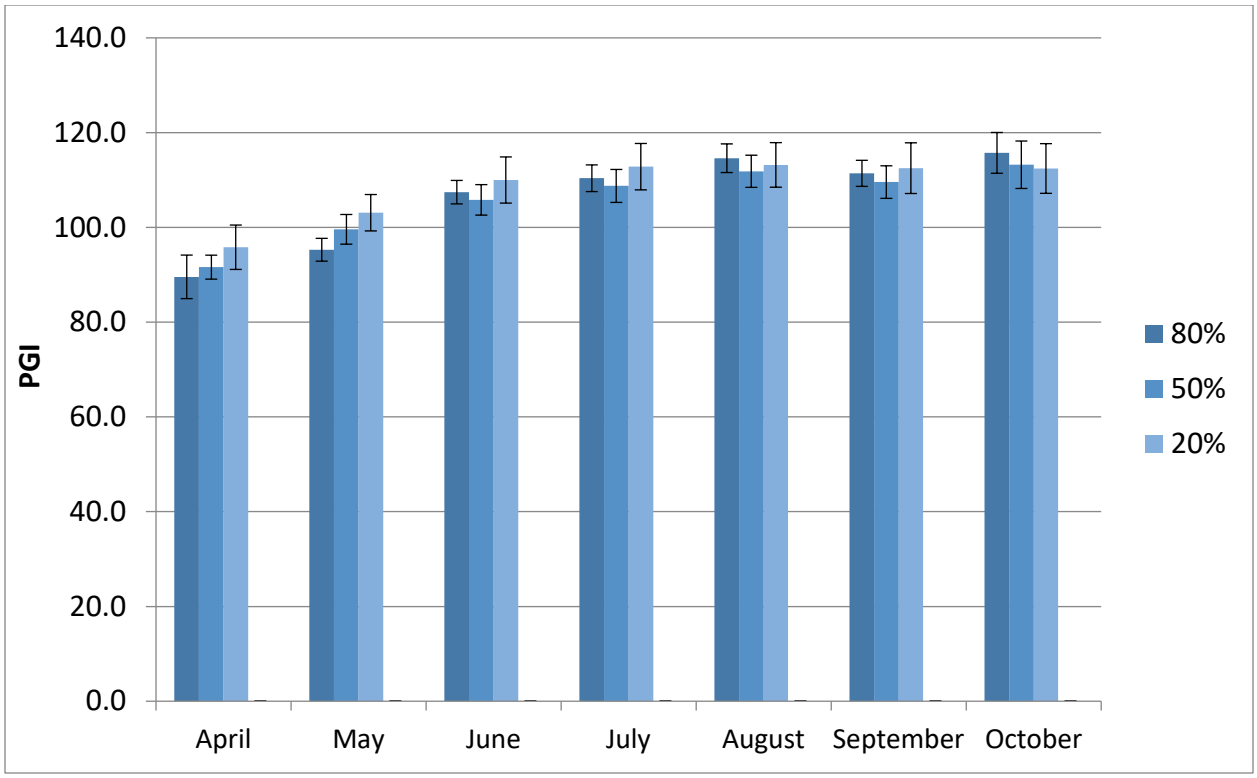


Figure 18c. *Rosa* 'Radral' Coral Knock Out® average monthly plant growth index (PGI) at South Coast REC on 3 ETo-based irrigation levels in 2020.

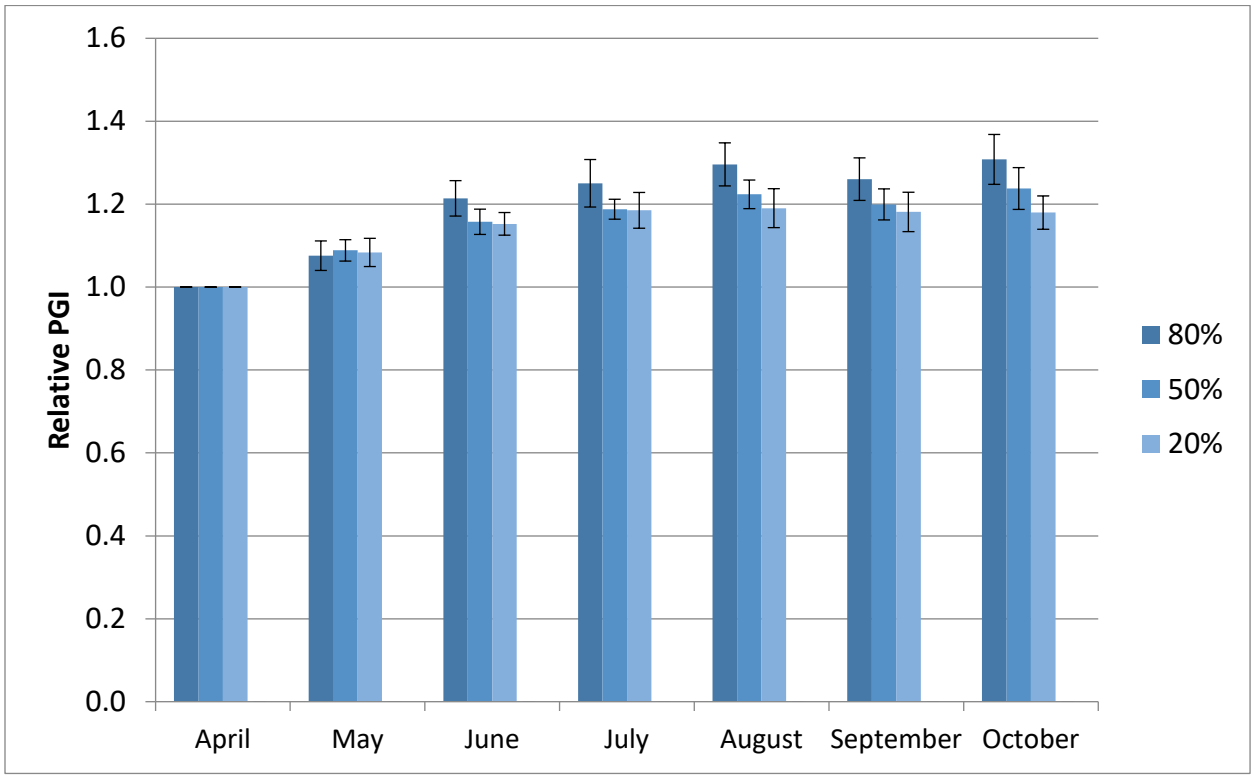


Figure 18d. *Rosa* 'Radral' Coral Knock Out® average monthly relative plant growth index (RPGI) at South Coast REC on 3 ETo-based irrigation levels in 2020.

Table 26a. *Ruschia lineolata* 'Nana' average monthly quality ratings (scale 1-5, 1= lowest, 5 = highest) at UC Davis on 3 ETo-based irrigation levels in 2020.

Category	ET_o%	Apr	May	Jun	Jul	Aug	Sep	Oct	AVG
Overall Appearance	80	3.8	3.8	3.4	3.4	3.6	4.0	3.2	3.6
	50	3.9	3.7	3.8	3.9	3.9	4.1	3.9	3.9
	20	3.9	3.7	3.3	3.0	3.4	3.6	3.3	3.4
Foliage	80	4.0	4.5	3.9	3.9	4.1	4.0	3.1	3.9
	50	4.3	4.1	4.3	4.3	4.4	4.1	4.3	4.2
	20	4.4	4.1	3.3	3.0	3.6	3.6	3.7	3.7
Flower	80	0.0	0.0	0.0	0.3	0.1	0.0	0.8	0.2
	50	0.0	0.0	0.0	0.4	0.0	0.0	0.6	0.1
	20	0.1	0.0	0.0	0.3	0.0	0.0	0.3	0.1
Pest Resistance	80	5.0	5.0	5.0	4.9	5.0	5.0	4.8	4.9
	50	5.0	5.0	4.9	5.0	5.0	5.0	5.0	5.0
	20	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0
Disease Resistance	80	5.0	5.0	4.8	4.9	4.8	5.0	4.8	4.9
	50	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0
	20	5.0	5.0	4.7	4.9	4.7	5.0	5.0	4.9
Vigor	80	4.9	4.6	4.3	4.1	4.5	4.1	3.8	4.3
	50	4.9	4.9	4.9	4.8	4.8	4.0	4.0	4.6
	20	5.0	4.7	4.1	4.4	4.4	3.4	3.7	4.3

Table 26b. *Ruschia lineolata* 'Nana' average monthly quality ratings (scale 1-5, 1= lowest, 5 = highest) at South Coast REC on 3 ETo-based irrigation levels in 2020.

Category	ET_o%	Apr	May	Jun	Jul	Aug	Sep	Oct	AVG
Overall Appearance	80	3.7	3.6	3.4	3.2	3.3	3.0	3.1	3.3
	50	3.9	3.8	3.3	3.4	3.1	3.1	3.0	3.4
	20	3.6	3.6	3.1	3.1	3.1	2.8	2.7	3.2
Foliage	80	4.1	3.7	3.9	3.4	3.4	3.0	3.1	3.5
	50	4.5	4.3	3.8	3.9	3.6	3.3	3.3	3.8
	20	4.0	3.6	3.4	3.4	3.3	2.9	2.7	3.3
Flower	80	0.0	0.0	0.0	0.3	0.9	1.1	1.3	0.5
	50	0.0	0.0	0.0	0.1	0.4	0.9	1.1	0.3
	20	0.0	0.0	0.0	0.3	0.3	0.4	1.1	0.3
Pest Resistance	80	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0
	50	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0
	20	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0
Disease Resistance	80	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0
	50	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0
	20	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0
Vigor	80	4.7	4.8	5.0	5.0	5.0	4.9	4.9	4.9
	50	4.9	4.8	4.8	4.8	4.8	4.8	4.8	4.8
	20	4.9	4.8	4.4	4.4	4.4	4.4	4.4	4.5

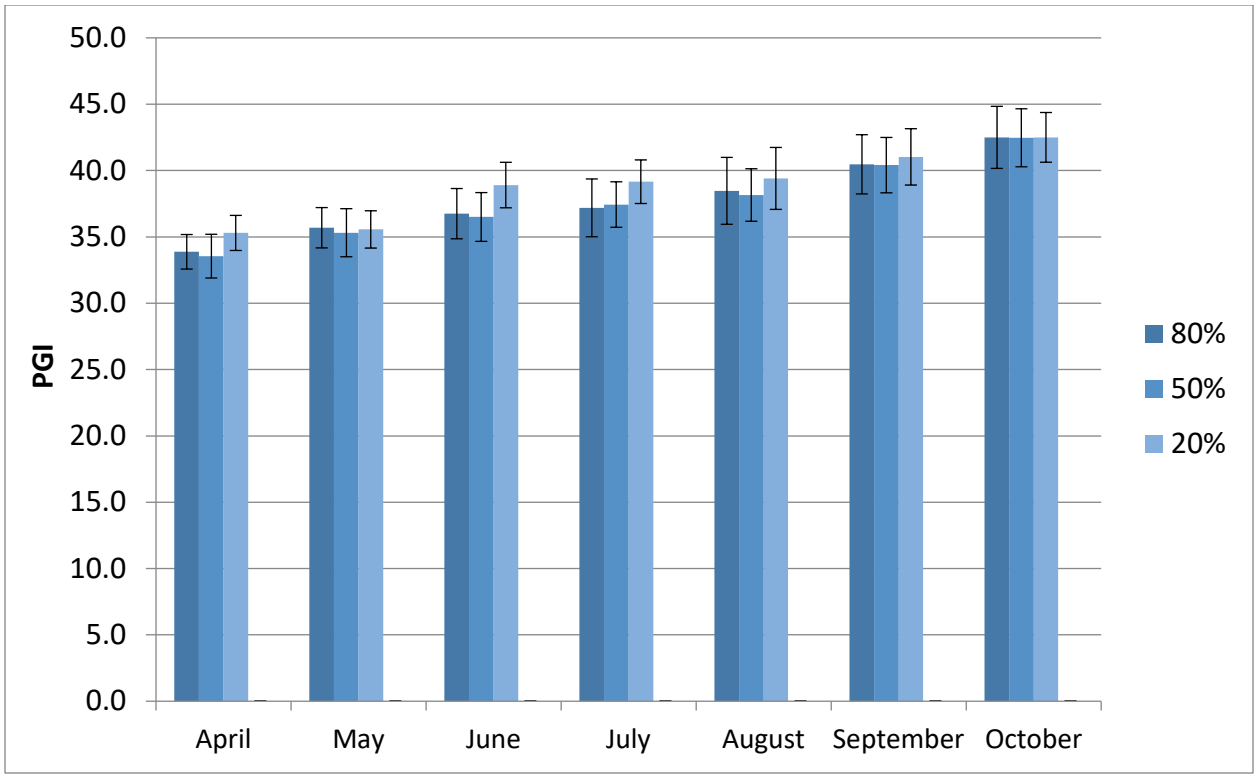


Figure 19a. *Ruschia lineolata* 'Nana' average monthly plant growth index (PGI) at UC Davis on 3 ETo-based irrigation levels in 2020.

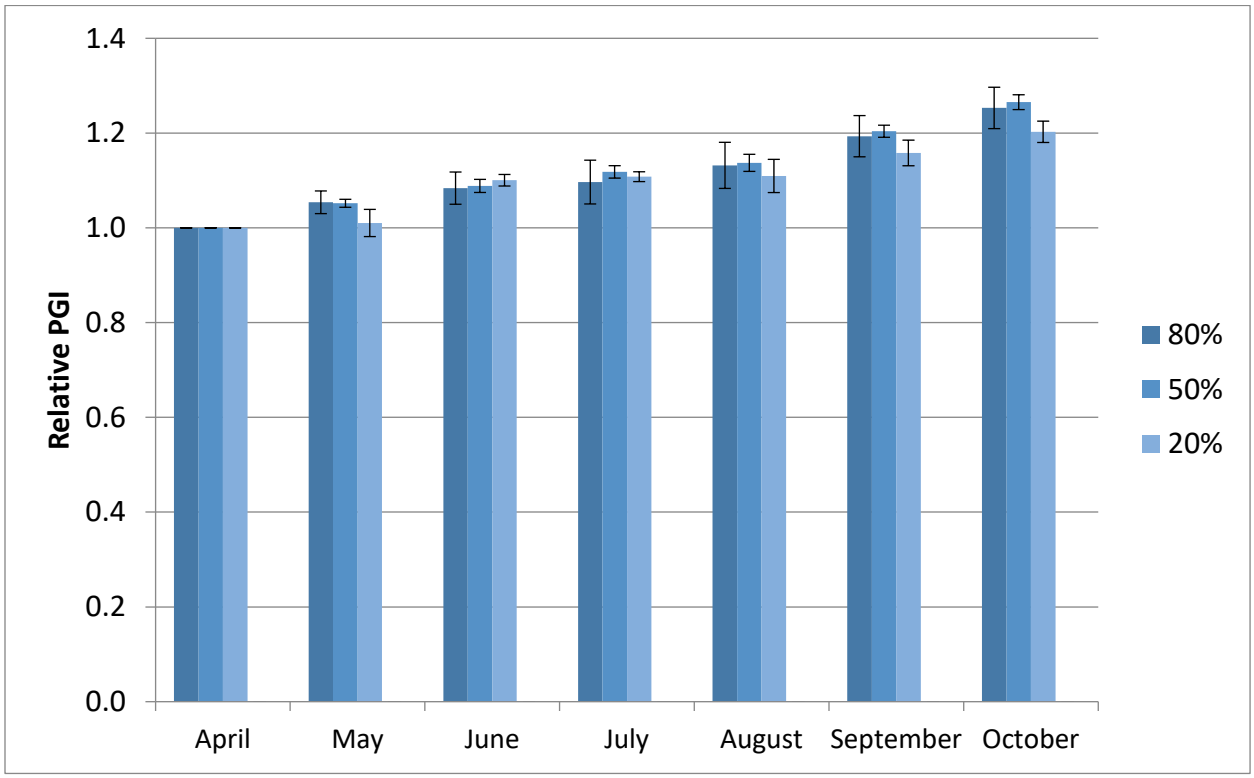


Figure 19b. *Ruschia lineolata* 'Nana' average monthly relative plant growth index (RPGI) at UC Davis on 3 ETo-based irrigation levels in 2020.

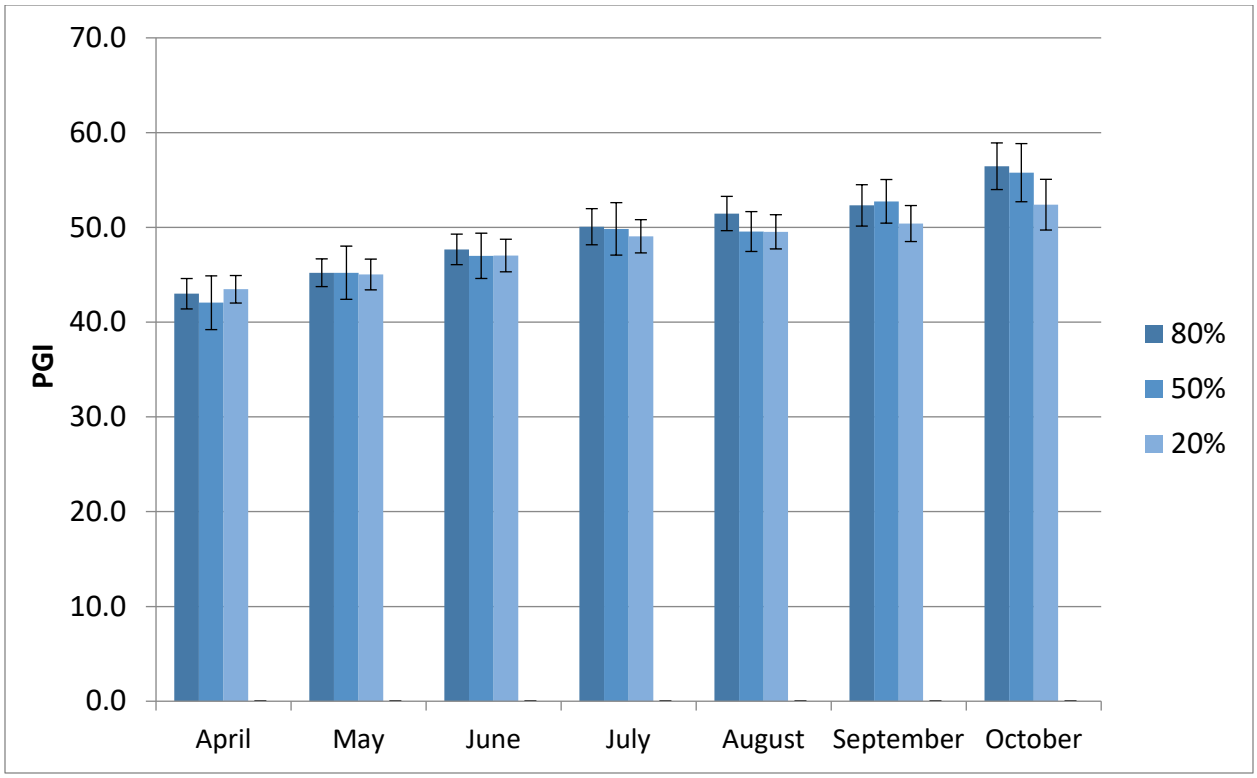


Figure 19c. *Ruschia lineolata* 'Nana' average monthly plant growth index (PGI) at South Coast REC on 3 ETo-based irrigation levels in 2020.

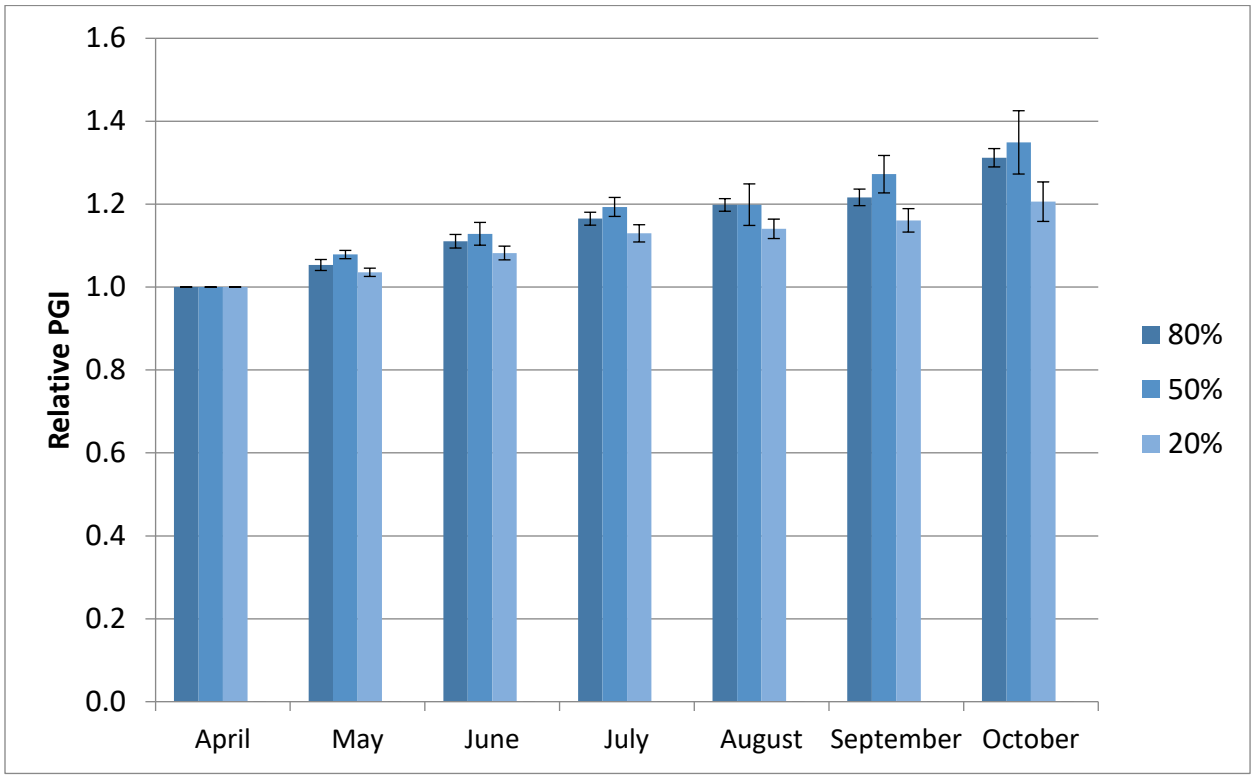


Figure 19d. *Ruschia lineolata* 'Nana' average monthly relative plant growth index (RPGI) at South Coast REC on 3 ETo-based irrigation levels in 2020.

Table 27a. *Tecomaria capensis* Riot Red® average monthly quality ratings (scale 1-5, 1= lowest, 5 = highest) at UC Davis on 3 ETo-based irrigation levels in 2020.

Category	ET_o%	May	Jun	Jul	Aug	Sep	Oct	AVG
Overall Appearance	80	2.9	3.2	2.9	3.2	3.5	3.4	3.2
	50	3.0	3.3	3.0	3.0	3.3	3.3	3.1
	20	2.9	3.0	3.1	3.3	3.4	3.5	3.2
Foliage	80	4.0	5.0	5.0	5.0	5.0	4.2	4.7
	50	4.8	5.0	5.0	5.0	5.0	4.3	4.8
	20	5.0	5.0	5.0	5.0	5.0	4.3	4.9
Flower	80	0.0	0.0	0.0	0.0	0.0	0.2	0.0
	50	0.0	0.0	0.0	0.0	0.0	0.0	0.0
	20	0.0	0.0	0.0	0.0	0.0	0.5	0.1
Pest Resistance	80	5.0	5.0	5.0	5.0	5.0	5.0	5.0
	50	5.0	5.0	5.0	5.0	5.0	5.0	5.0
	20	5.0	5.0	5.0	5.0	5.0	5.0	5.0
Disease Resistance	80	5.0	5.0	5.0	5.0	5.0	5.0	5.0
	50	5.0	5.0	5.0	5.0	5.0	5.0	5.0
	20	5.0	5.0	5.0	5.0	5.0	5.0	5.0
Vigor	80	4.8	4.0	5.0	4.4	4.6	4.6	4.6
	50	5.0	4.3	5.0	4.3	4.3	4.3	4.5
	20	4.8	4.0	5.0	4.3	4.8	4.3	4.5

Table 27b. *Tecomaria capensis* Riot Red® average monthly quality ratings (scale 1-5, 1= lowest, 5 = highest) at South Coast REC on 3 ETo-based irrigation levels in 2020.

Category	ET_o%	May	Jun	Jul	Aug	Sep	Oct	AVG
Overall Appearance	80	2.9	3.8	3.8	3.8	3.9	3.9	3.7
	50	2.9	3.6	3.6	3.8	3.8	3.9	3.6
	20	3.1	3.8	3.8	3.9	3.9	4.1	3.8
Foliage	80	3.0	4.8	4.8	4.7	4.7	4.8	4.4
	50	2.8	4.7	4.6	4.6	4.6	4.5	4.3
	20	3.1	4.6	4.7	4.5	4.8	4.8	4.4
Flower	80	0.0	0.0	0.0	0.0	0.0	0.5	0.1
	50	0.0	0.0	0.1	0.0	0.1	1.1	0.2
	20	0.2	0.0	0.0	0.0	0.0	0.3	0.1
Pest Resistance	80	5.0	5.0	5.0	4.8	4.9	5.0	4.9
	50	5.0	5.0	5.0	5.0	5.0	5.0	5.0
	20	5.0	5.0	5.0	4.8	5.0	5.0	5.0
Disease Resistance	80	5.0	4.9	4.9	4.9	4.9	5.0	4.9
	50	5.0	5.0	5.0	5.0	5.0	5.0	5.0
	20	5.0	5.0	5.0	5.0	5.0	5.0	5.0
Vigor	80	4.2	4.9	4.9	4.9	4.9	5.0	4.8
	50	4.0	4.8	4.9	4.9	4.9	4.9	4.7
	20	4.2	4.6	4.7	4.7	4.8	4.8	4.6

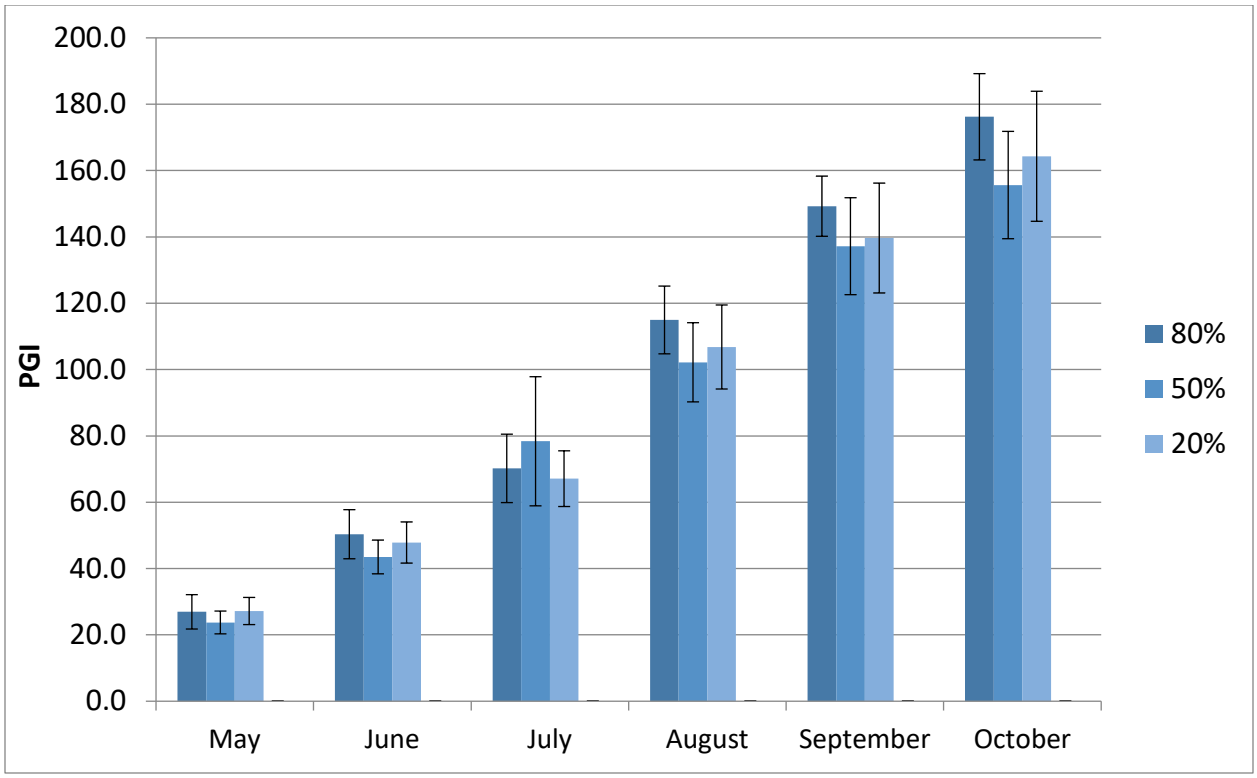


Figure 20a. *Tecomaria capensis* Riot Red® average monthly plant growth index (PGI) at UC Davis on 3 ETo-based irrigation levels in 2020.

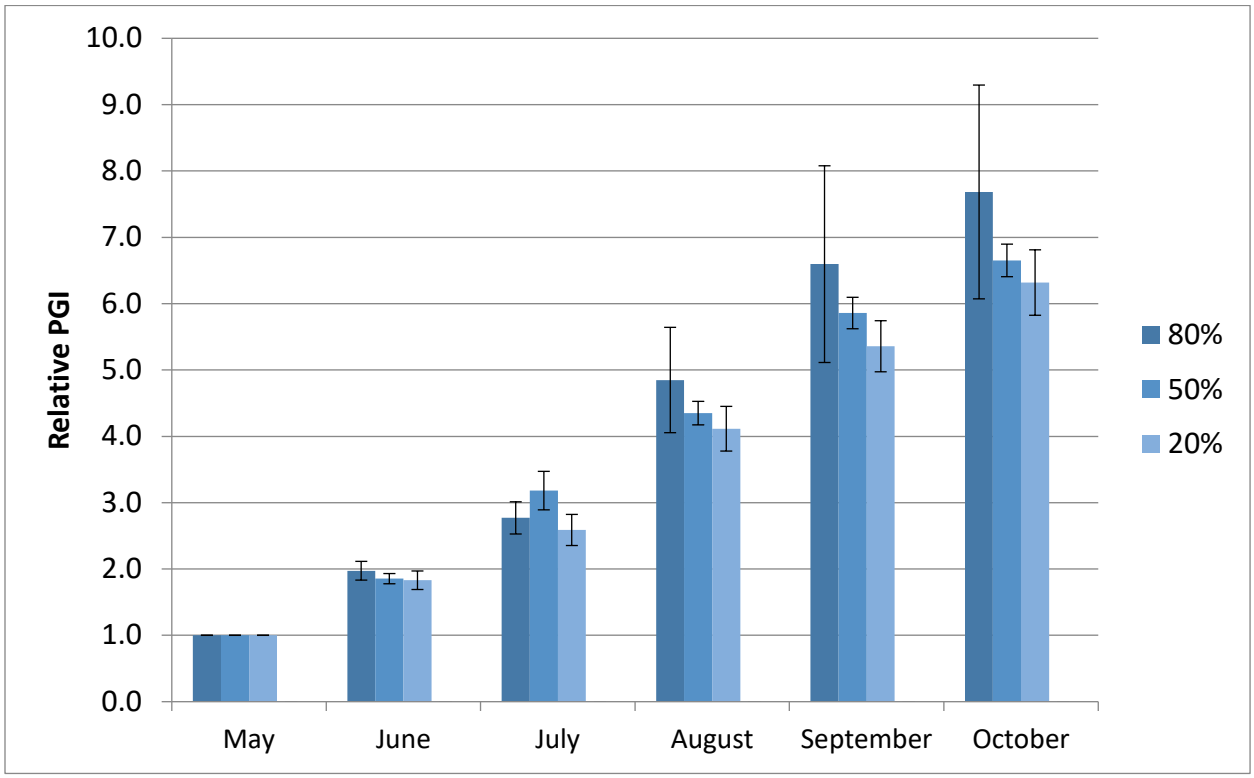


Figure 20b. *Tecomaria capensis* Riot Red® average monthly relative plant growth index (RPGI) at UC Davis on 3 ETo-based irrigation levels in 2020.

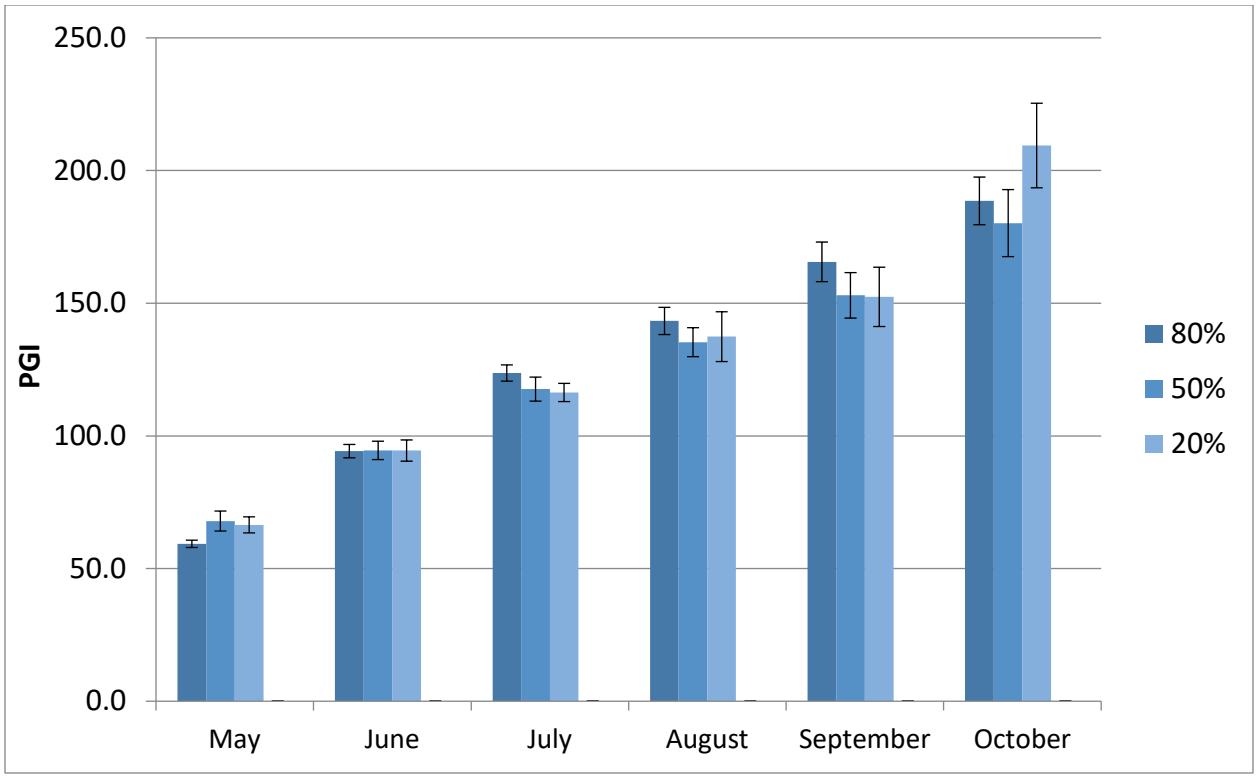


Figure 20c. *Tecomaria capensis* Riot Red® average monthly plant growth index (PGI) at South Coast REC on 3 ETo-based irrigation levels in 2020.

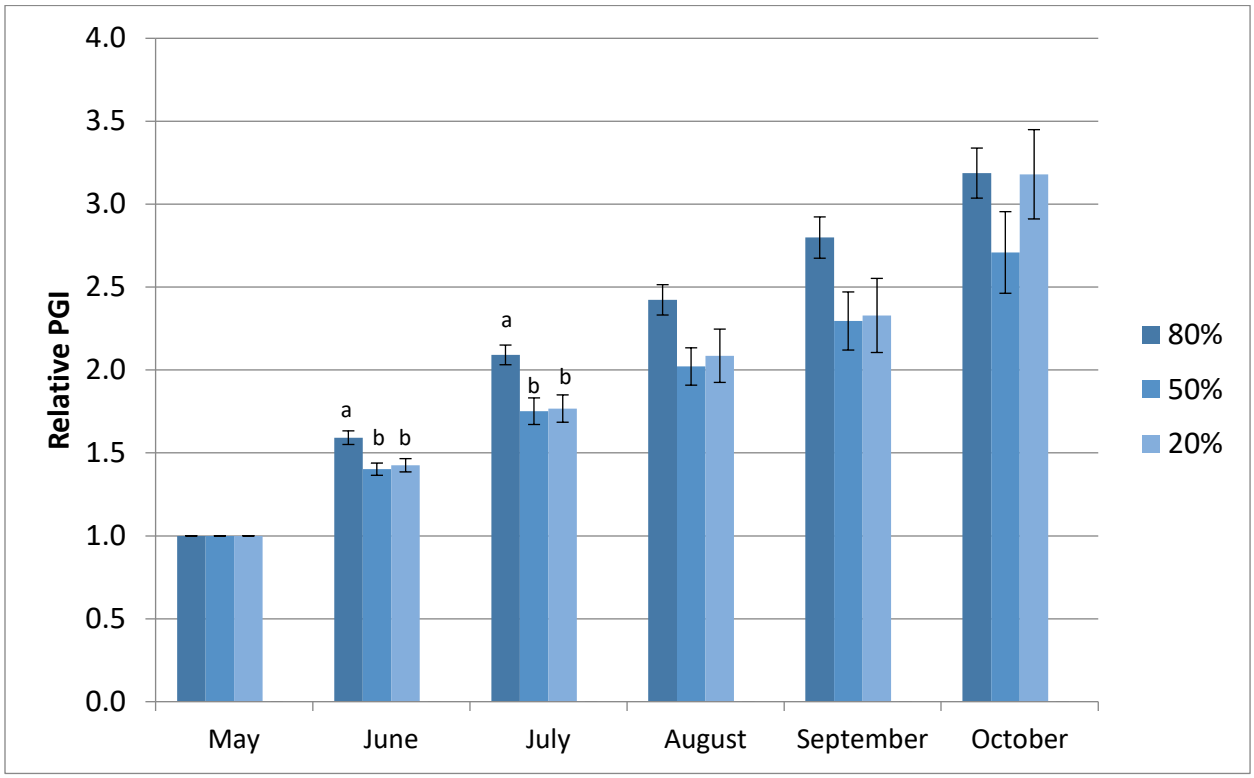


Figure 20d. *Tecomaria capensis* Riot Red® average monthly relative plant growth index (RPGI) at South Coast REC on 3 ETo-based irrigation levels in 2020.

Table 28a. *Vitex agnus-castus* 'Bailtextwo' Galactic Pink® average monthly quality ratings (scale 1-5, 1= lowest, 5 = highest) at UC Davis on 3 ETo-based irrigation levels in 2020.

Category	ET_o%	May	Jun	Jul	Aug	Sep	Oct	AVG
Overall Appearance	80	3.9	4.3	4.1	3.9	3.6	3.1	3.8
	50	3.9	4.4	4.2	3.9	3.8	3.3	3.9
	20	3.8	4.3	3.8	3.6	3.1	2.9	3.6
Foliage	80	5.0	5.0	4.8	4.1	3.9	3.4	4.4
	50	5.0	5.0	4.6	3.8	4.0	3.0	4.2
	20	5.0	4.9	4.6	3.7	3.4	3.0	4.1
Flower	80	0.0	1.8	1.1	1.0	0.9	1.0	1.0
	50	0.0	2.3	1.0	1.0	1.0	1.0	1.0
	20	0.0	2.0	1.3	1.1	0.9	1.0	1.0
Pest Resistance	80	5.0	5.0	4.9	5.0	4.9	5.0	5.0
	50	5.0	5.0	5.0	5.0	5.0	5.0	5.0
	20	5.0	5.0	4.9	5.0	4.3	5.0	4.9
Disease Resistance	80	5.0	5.0	5.0	5.0	5.0	5.0	5.0
	50	5.0	5.0	5.0	5.0	5.0	5.0	5.0
	20	5.0	5.0	5.0	5.0	4.3	5.0	4.9
Vigor	80	5.0	4.9	5.0	5.0	4.0	3.6	4.6
	50	4.6	4.9	5.0	4.9	4.0	3.6	4.5
	20	4.9	4.4	5.0	4.6	3.6	3.4	4.3

Table 28b. *Vitex agnus-castus* 'Bailtextwo' Galactic Pink® average monthly quality ratings (scale 1-5, 1= lowest, 5 = highest) at South Coast REC on 3 ETo-based irrigation levels in 2020.

Category	ET_o%	May	Jun	Jul	Aug	Sep	Oct	AVG
Overall Appearance	80	3.9	3.5	3.6	3.4	3.3	3.4	3.5
	50	3.8	3.6	3.6	3.3	3.3	3.4	3.5
	20	3.4	3.3	3.1	3.1	2.8	3.0	3.1
Foliage	80	4.1	5.0	4.9	4.1	3.6	3.4	4.2[a]
	50	4.1	4.8	4.7	3.8	3.6	3.4	4.1[a]
	20	3.6	4.9	4.0	3.0	2.8	3.0	3.5[b]
Flower	80	0.0	1.0	1.7	0.6	1.1	1.6	1.0[a]
	50	0.0	1.2	1.8	0.6	1.2	1.6	1.1[a]
	20	0.0	0.9	1.0	0.1	0.1	0.4	0.4[b]
Pest Resistance	80	5.0	5.0	5.0	4.1	3.4	3.6	4.4
	50	5.0	5.0	5.0	3.8	3.4	3.7	4.3
	20	5.0	5.0	5.0	3.9	2.6	3.1	4.1
Disease Resistance	80	5.0	5.0	5.0	5.0	5.0	5.0	5.0
	50	5.0	4.9	4.9	4.9	5.0	5.0	4.9
	20	5.0	5.0	5.0	4.9	5.0	5.0	5.0
Vigor	80	4.7	5.0	5.0	5.0	4.9	4.9	4.9
	50	4.7	4.9	4.5	4.6	4.3	4.4	4.6
	20	4.1	4.9	4.7	4.4	3.9	3.9	4.3

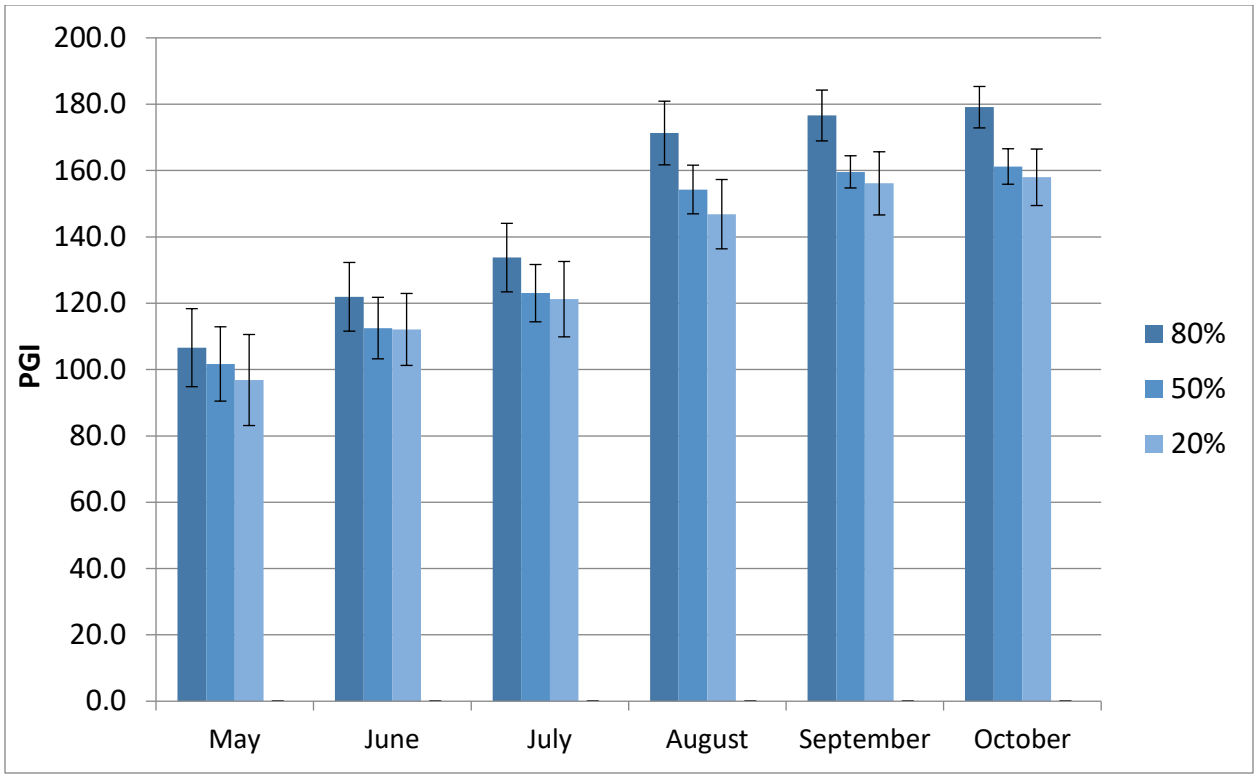


Figure 21a. *Vitex agnus-castus* 'Bailtextwo' Galactic Pink® average monthly plant growth index (PGI) at UC Davis on 3 ETo-based irrigation levels in 2020.

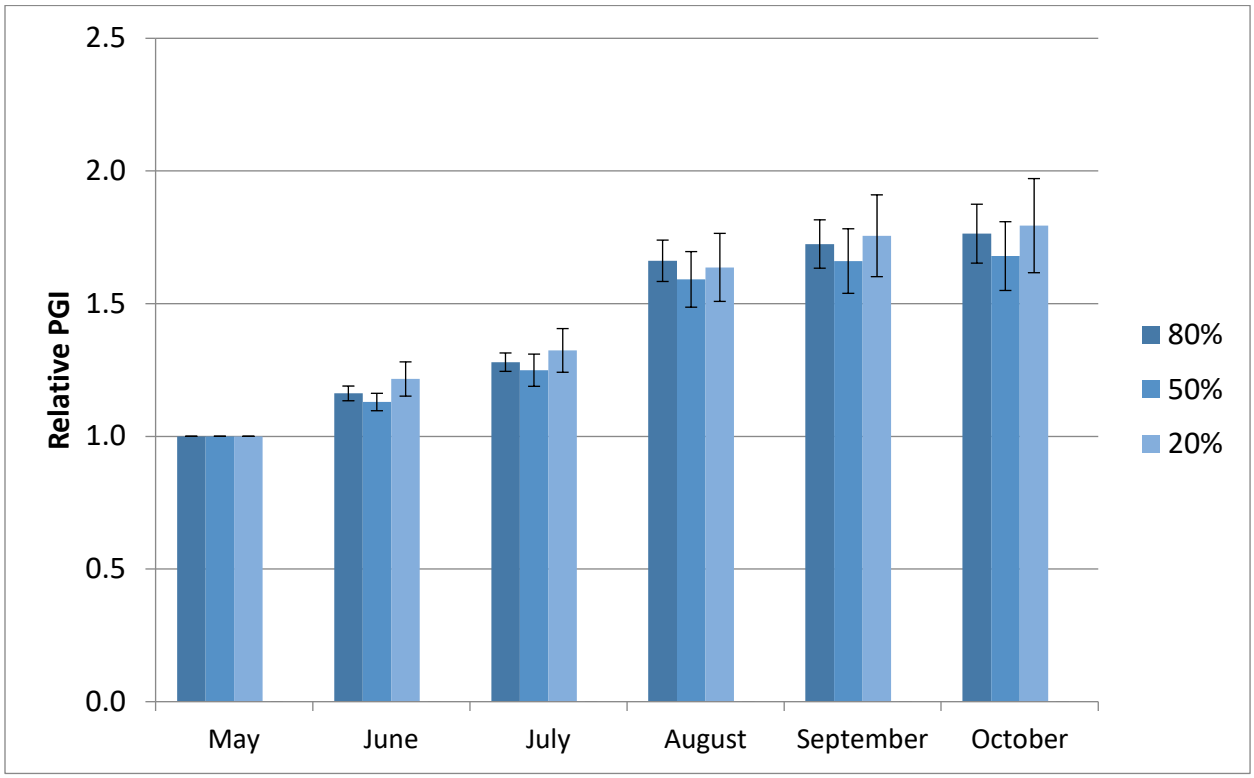


Figure 21b. *Vitex agnus-castus* 'Bailtextwo' Galactic Pink® average monthly relative plant growth index (RPGI) at UC Davis on 3 ETo-based irrigation levels in 2020.

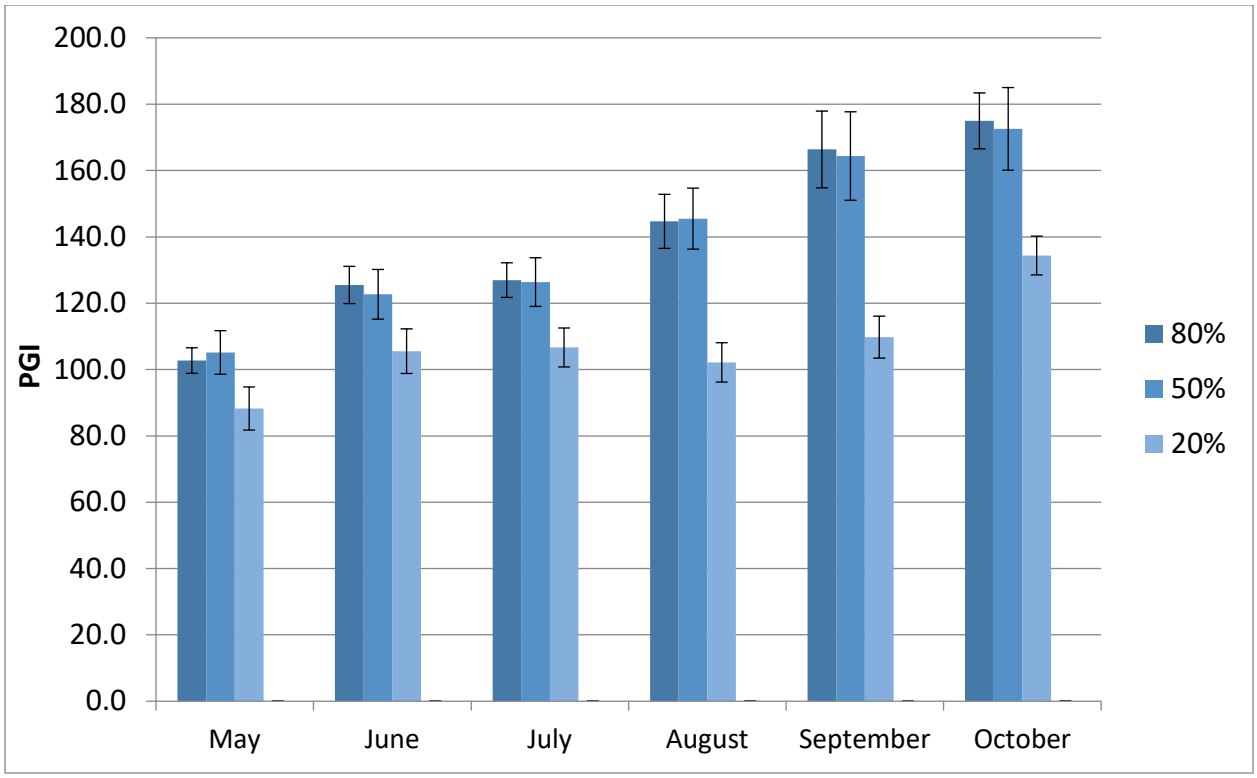


Figure 21c. *Vitex agnus-castus* 'Bailtextwo' Galactic Pink® average monthly plant growth index (PGI) at South Coast REC on 3 ETo-based irrigation levels in 2020.

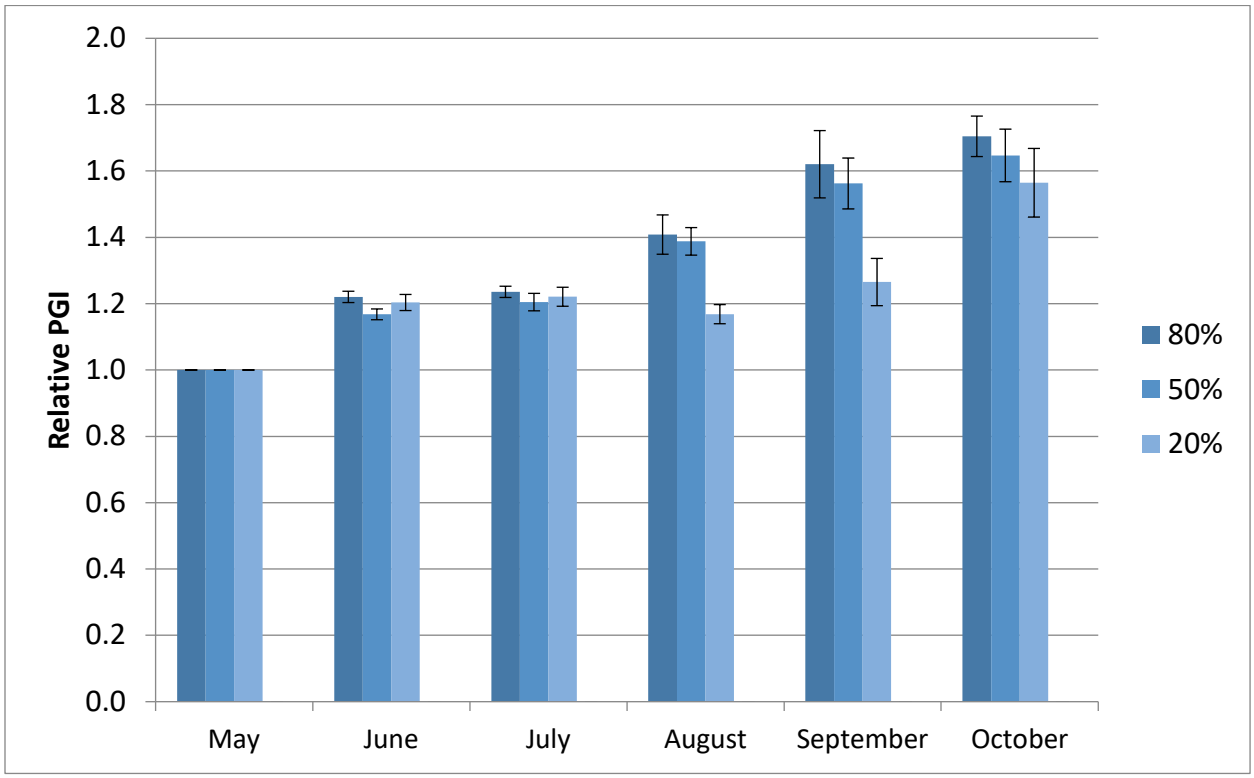


Figure 21d. Vitex agnus-castus 'Bailtextwo' Galactic Pink® average monthly relative plant growth index (RPGI) at South Coast REC on 3 ETo-based irrigation levels in 2020.

Table 29a. *Hydrangea paniculata* 'LeeP1' White Wedding® average monthly quality ratings (scale 1-5, 1= lowest, 5 = highest) at UC Davis on 3 ETo-based irrigation levels in 2020.

Category	ET_o%	Apr	May	Jun	Jul	Aug	Sep	Oct	AVG
Overall Appearance	1	3.9	4.0	4.1	4.3	4.4	2.1	2.6	3.6[a]
	0.5	3.8	3.1	3.7	3.7	4.1	2.4	2.2	3.3[ab]
	0.2	4.0	3.6	3.6	3.2	3.0	1.4	1.7	2.9[b]
Foliage	0.8	5.0	5.0	4.9	4.3	4.4	1.9	3.5	4.1[a]
	0.5	5.0	4.1	5.0	4.0	4.4	2.1	1.9	3.8[ab]
	0.2	5.0	5.0	4.7	3.7	3.3	1.4	1.7	3.6[b]
Flower	0.8	0.0	0.0	0.0	3.9	4.5	2.8	2.0	1.9[a]
	0.5	0.0	0.0	0.0	3.1	4.9	2.4	1.0	1.6[ab]
	0.2	0.0	0.0	0.0	1.1	1.9	1.1	0.4	0.7[b]
Pest Resistance	0.8	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0
	0.5	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0
	0.2	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0
Disease Resistance	0.8	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0
	0.5	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0
	0.2	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0
Vigor	0.8	4.9	5.0	5.0	4.9	4.9	2.5	3.4	4.4[a]
	0.5	5.0	4.3	4.6	4.7	5.0	2.9	2.4	4.1[ab]
	0.2	5.0	4.9	4.3	3.6	3.6	1.7	2.0	3.6[b]

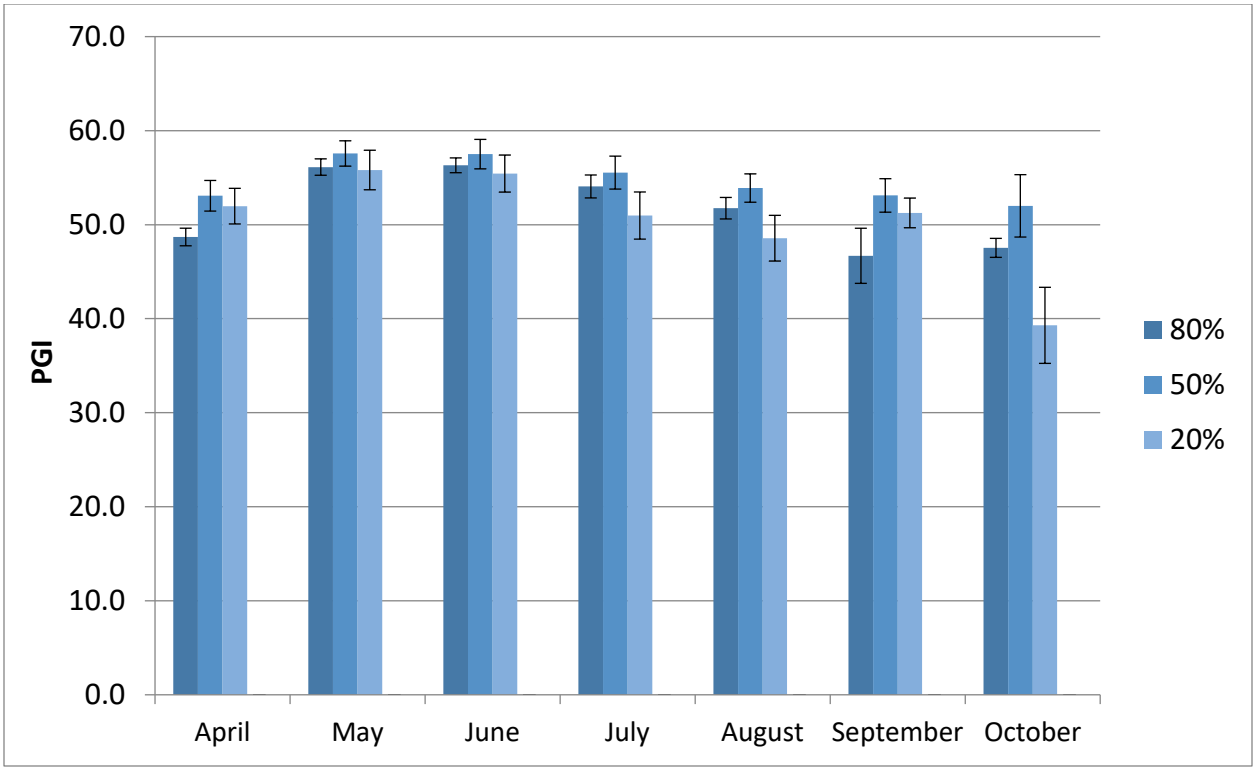


Figure 22a. *Hydrangea paniculata* 'LeeP1' White Wedding® average monthly plant growth index (PGI) at UC Davis on 3 ETo-based irrigation levels in 2020.

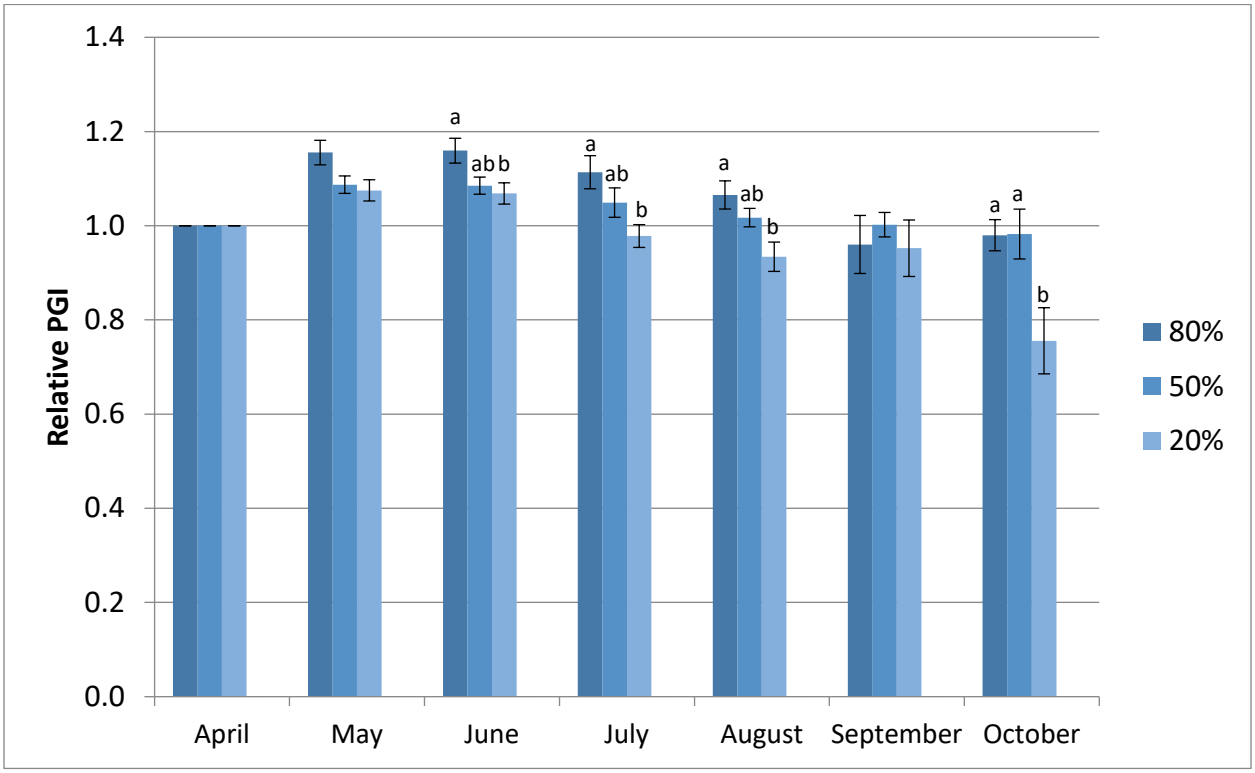


Figure 22b. *Hydrangea paniculata* 'LeeP1' White Wedding® average monthly relative plant growth index (RPGI) at UC Davis on 3 ETo-based irrigation levels in 2020.

Table 30a. *Hydrangea quercifolia* 'BIV01' Tara® average monthly quality ratings (scale 1-5, 1= lowest, 5 = highest) at UC Davis on 3 ETo-based irrigation levels in 2020.

Category	ET_o%	May	Jun	Jul	Aug	Sep	Oct	AVG
Overall Appearance	1	3.6	4.0	3.7	3.6	3.4	3.1	3.6
	0.5	3.5	3.4	3.2	3.1	2.6	2.5	3.1
	0.2	3.9	3.4	3.3	3.6	3.1	3.0	3.4
Foliage	0.8	4.4	4.3	3.9	4.0	3.4	3.0	3.8
	0.5	4.4	4.0	3.6	3.6	2.9	2.9	3.5
	0.2	4.6	4.4	3.7	4.0	3.1	3.0	3.8
Flower	0.8	0.0	2.0	2.3	1.9	0.1	1.1	1.2
	0.5	0.0	1.4	1.6	1.4	0.1	1.1	1.0
	0.2	0.0	1.9	2.1	1.7	0.1	1.1	1.2
Pest Resistance	0.8	5.0	5.0	5.0	5.0	5.0	5.0	5.0
	0.5	5.0	5.0	5.0	5.0	5.0	5.0	5.0
	0.2	5.0	5.0	5.0	5.0	5.0	5.0	5.0
Disease Resistance	0.8	5.0	5.0	5.0	5.0	5.0	5.0	5.0
	0.5	5.0	5.0	5.0	5.0	5.0	5.0	5.0
	0.2	5.0	5.0	5.0	5.0	5.0	5.0	5.0
Vigor	0.8	4.9	4.9	4.7	4.6	4.1	3.7	4.5
	0.5	4.4	4.4	4.4	3.7	3.4	3.1	3.9
	0.2	5.0	4.3	4.6	4.6	3.9	3.4	4.3

Table 30b. *Hydrangea quercifolia* 'BIV01' Tara® average monthly quality ratings (scale 1-5, 1= lowest, 5 = highest) at South Coast REC on 3 ETo-based irrigation levels in 2020.

Category	ET_o%	May	Jun	Jul	Aug	Sep	Oct	AVG
Overall Appearance	80	3.4	3.9	2.6	2.3	1.9	1.9	2.7
	50	2.9	3.9	2.9	2.6	2.3	2.4	2.8
	20	3.4	3.9	3.0	2.6	2.2	2.2	2.9
Foliage	80	3.6	4.1	2.4	2.3	2.0	1.8	2.7
	50	3.1	4.4	2.8	2.6	2.3	2.3	2.9
	20	3.5	4.2	3.0	2.6	2.2	2.2	2.9
Flower	80	0.4	2.3	2.9	2.8	0.9	0.1	1.6
	50	0.6	1.8	2.1	2.7	1.6	0.4	1.5
	20	0.7	2.5	2.8	2.6	0.8	0.2	1.6
Pest Resistance	80	4.7	4.5	2.6	2.4	1.5	2.0	2.9
	50	4.6	4.6	3.7	2.6	2.3	2.4	3.4
	20	4.4	4.8	3.4	2.6	2.2	2.2	3.3
Disease Resistance	80	5.0	5.0	5.0	5.0	5.0	5.0	5.0
	50	5.0	5.0	4.4	5.0	5.0	5.0	4.9
	20	5.0	5.0	5.0	4.7	4.8	4.8	4.9
Vigor	80	3.6	4.1	4.1	4.1	3.7	3.9	3.9
	50	3.1	4.0	4.1	4.1	3.9	4.1	3.9
	20	3.6	3.9	3.7	3.5	3.4	3.4	3.6

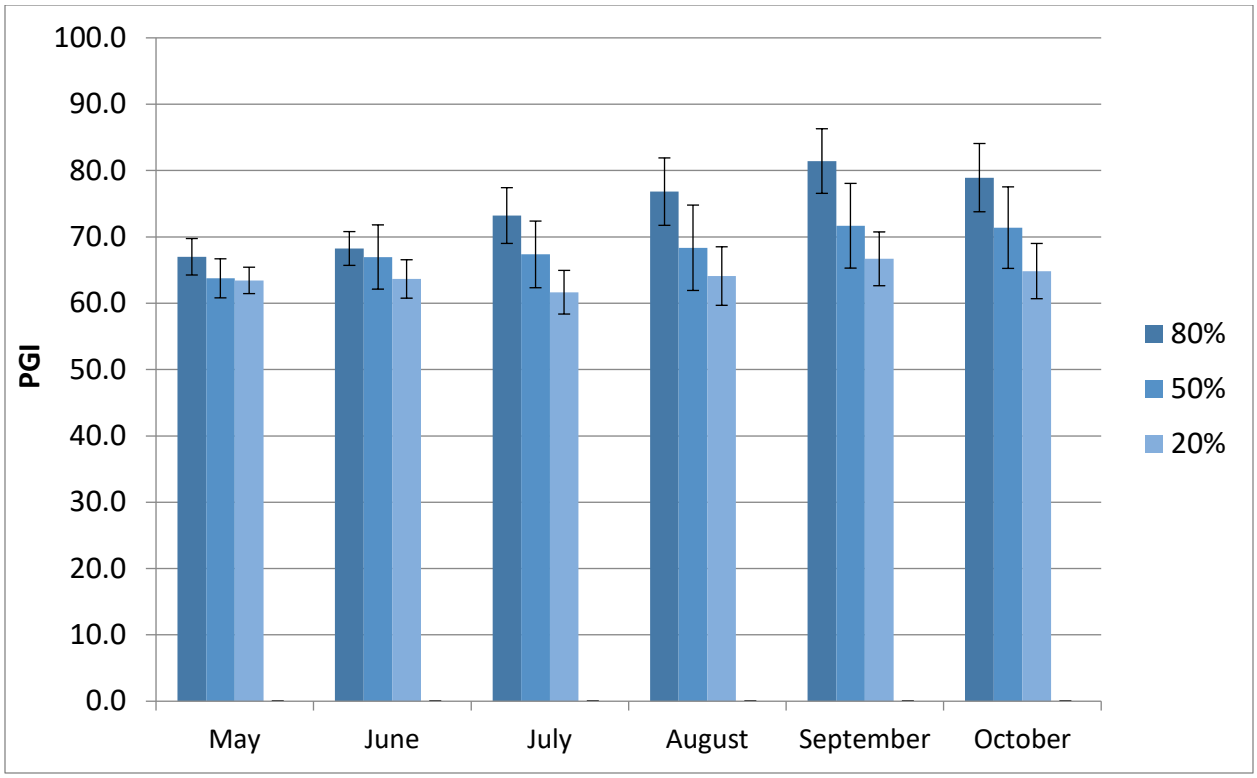


Figure 23a. *Hydrangea quercifolia* 'BIV01' Tara® average monthly plant growth index (PGI) at UC Davis on 3 ETo-based irrigation levels in 2020.

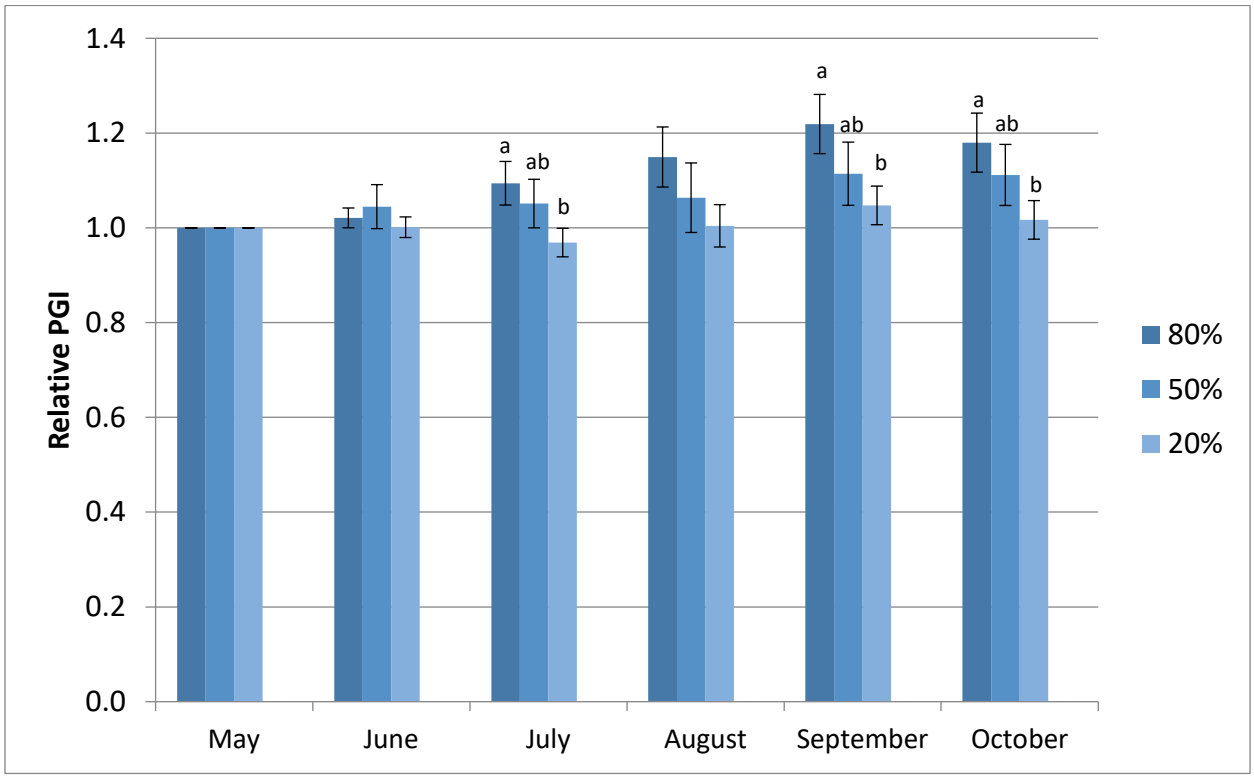


Figure 23b. *Hydrangea quercifolia* 'BIV01' Tara average monthly relative plant growth index (RPGI) at UC Davis on 3 ETo-based irrigation levels in 2020.

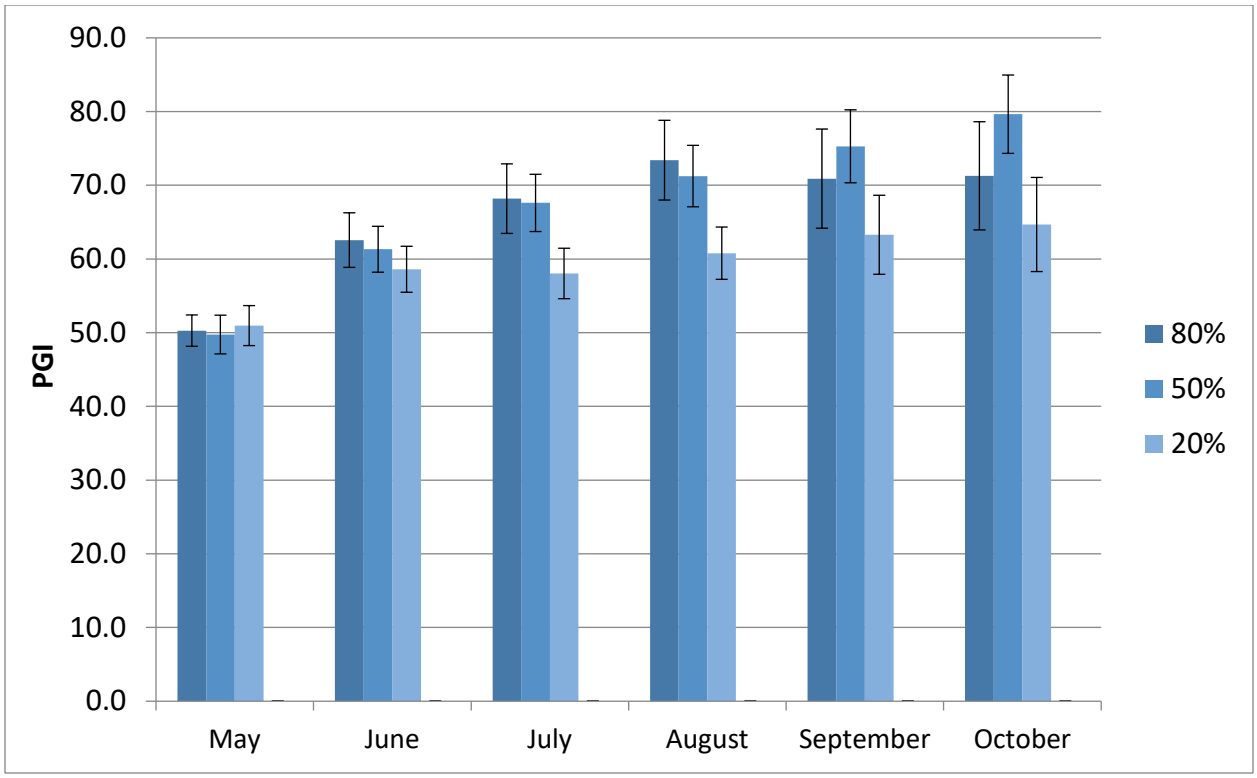


Figure 23c. *Hydrangea quercifolia* 'BIV01' Tara® average monthly plant growth index (PGI) at South Coast REC on 3 ETo-based irrigation levels in 2020.

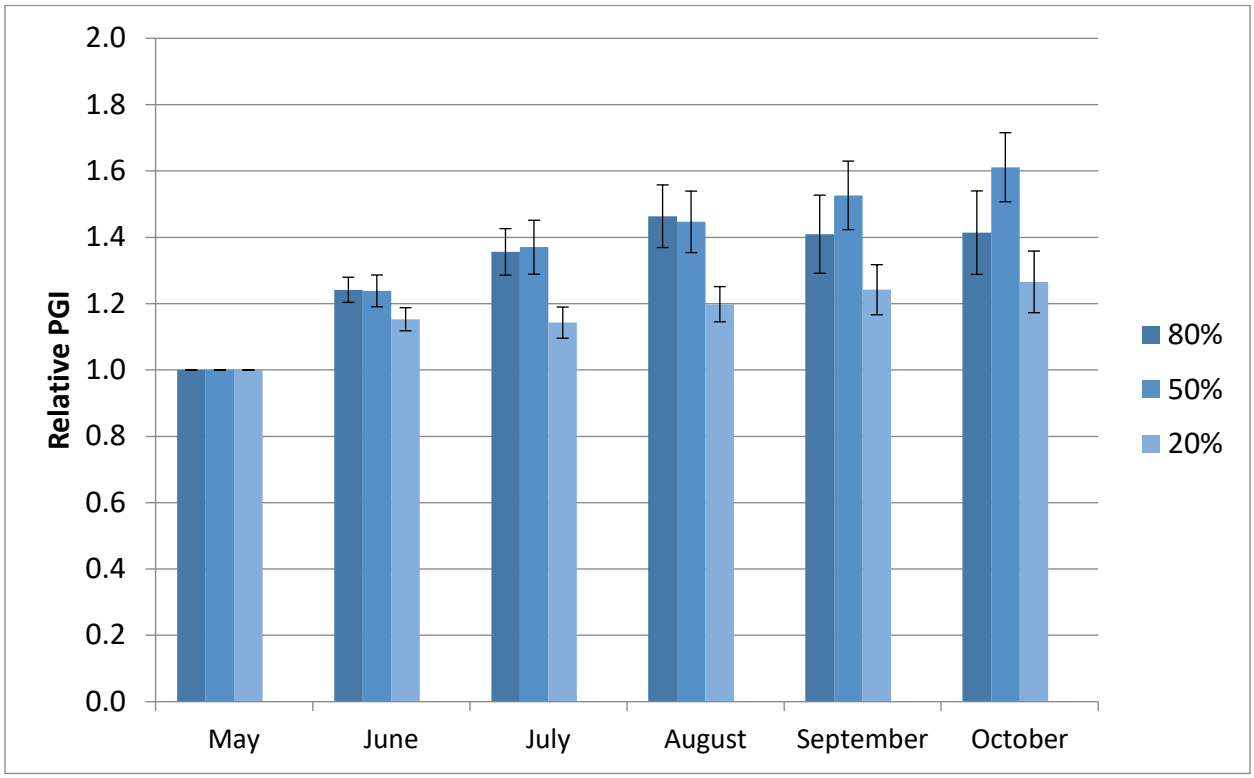


Figure 23d. *Hydrangea quercifolia* 'BIV01' Tara® average monthly relative plant growth index (RPGI) at South Coast REC on 3 ETo-based irrigation levels in 2020.

Table 31a. *Ilex crenata* 'Farrowone' Sky Box® average monthly quality ratings (scale 1-5, 1= lowest, 5 = highest) at South Coast REC on 3 ETo-based irrigation levels in 2020.

Category	ET_o%	May	Jun	Jul	Aug	Sep	Oct	AVG
Overall Appearance	80	3.0	3.1	2.6	1.8	1.3	0.2	2.0
	50	3.1	2.9	1.4	0.7	0.4	0.0	1.4
	20	2.8	2.8	1.7	1.1	0.0	0.0	1.4
Foliage	80	3.4	3.1	2.6	1.8	1.3	0.1	2.0
	50	3.1	3.0	1.6	0.6	0.4	0.0	1.5
	20	2.7	2.9	1.7	1.1	0.0	0.0	1.4
Flower	80	0.0	0.0	0.0	0.2	0.0	0.0	0.0
	50	0.0	0.0	0.0	0.0	0.0	0.0	0.0
	20	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Pest Resistance	80	5.0	5.0	5.0	3.8	2.5	0.6	3.6
	50	5.0	5.0	2.9	1.4	1.4	0.0	2.6
	20	4.9	5.0	3.6	2.9	0.0	0.0	2.7
Disease Resistance	80	4.6	5.0	5.0	3.8	2.5	0.6	3.6
	50	5.0	5.0	2.9	1.4	1.4	0.0	2.6
	20	5.0	5.0	3.6	2.9	0.0	0.0	2.7
Vigor	80	3.3	3.1	2.8	1.8	1.3	0.4	2.1
	50	3.2	3.1	1.5	0.9	0.5	0.0	1.5
	20	3.1	2.8	1.7	1.1	0.0	0.0	1.5

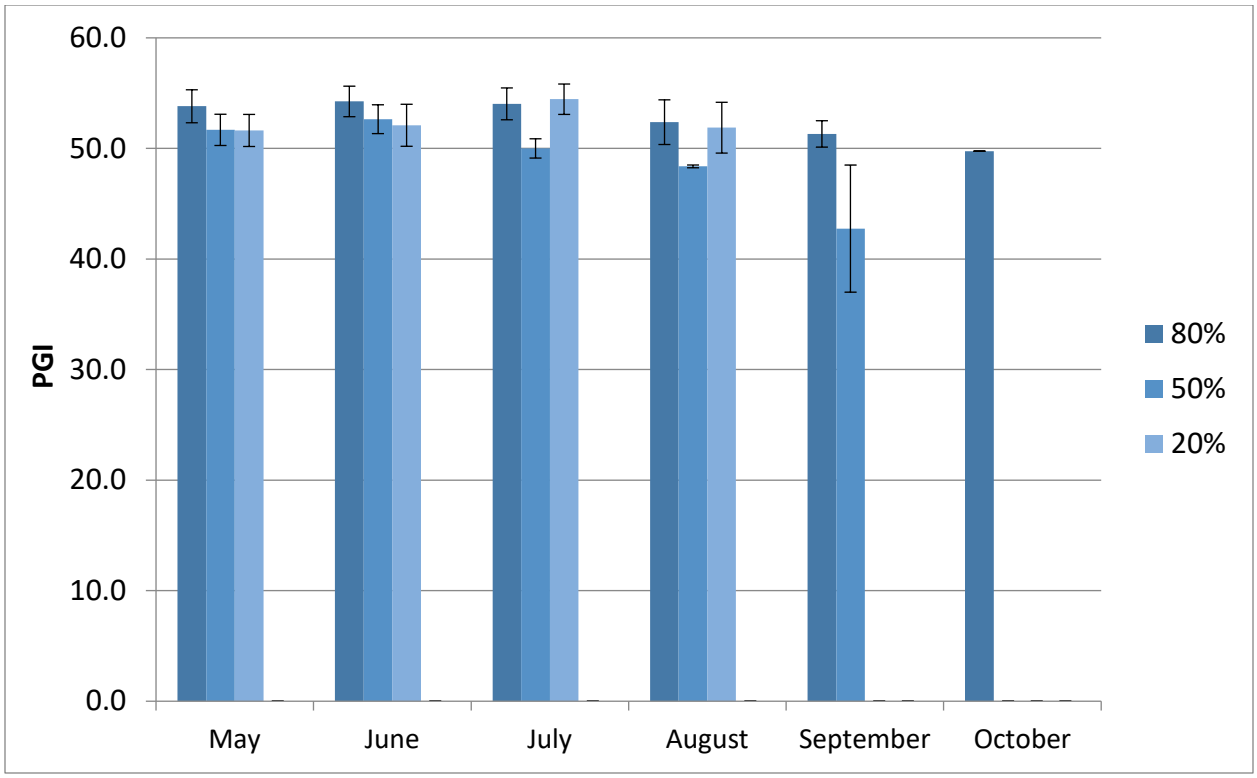


Figure 24a. *Ilex crenata* 'Farrowone' Sky Box® average monthly plant growth index (PGI) at South Coast REC on 3 ETo-based irrigation levels in 2020.

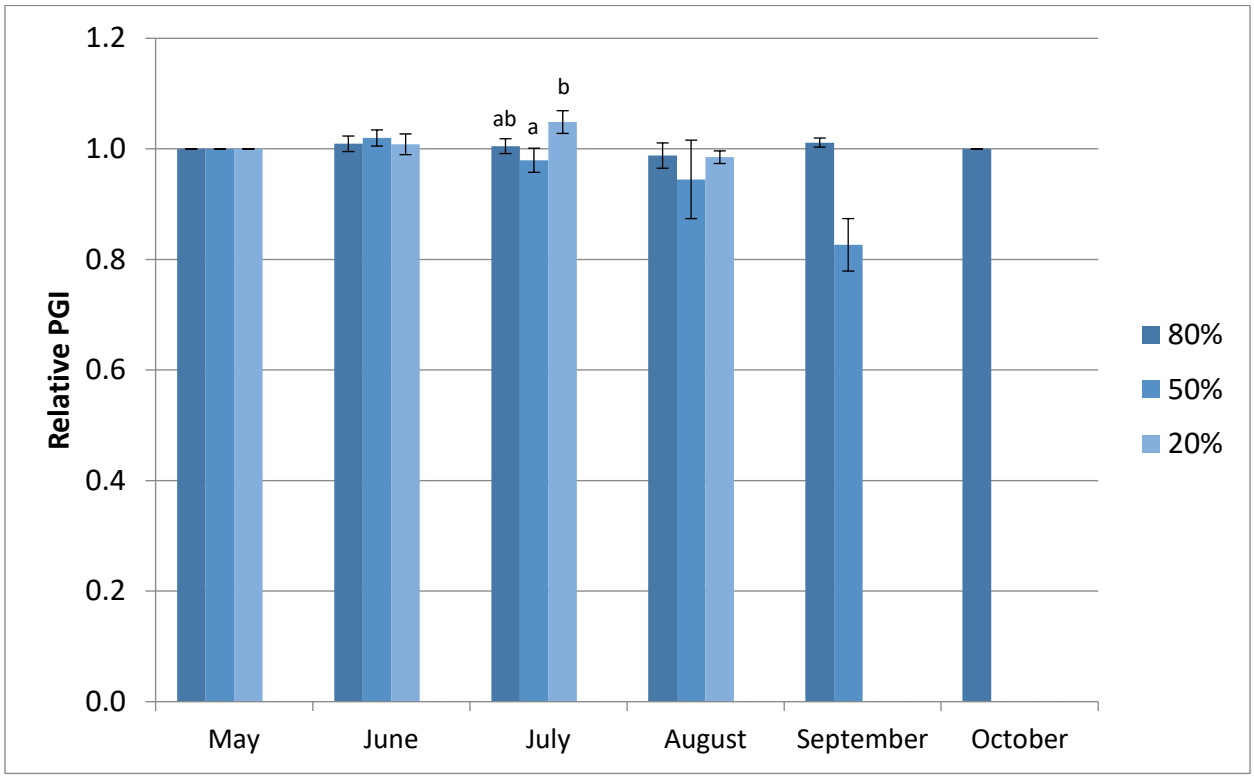


Figure 24b. *Ilex crenata* 'Farrowone' Sky Box® average monthly relative plant growth index (RPGI) at South Coast REC on 3 ETo-based irrigation levels in 2020.

Table 32a. *Lomandra longifolia* 'Katrinus Deluxe' average monthly quality ratings (scale 1-5, 1= lowest, 5 = highest) at UC Davis on 3 ETo-based irrigation levels in 2020.

Category	ET_o%	Apr	May	Jun	Jul	Aug	Sep	Oct	AVG
Overall Appearance	80	4.7	4.5	4.9	4.7	4.7	4.4	4.3	4.6
	50	4.2	4.3	4.6	4.4	4.2	4.1	4.1	4.3
	20	4.6	4.0	4.4	4.4	4.5	4.3	4.1	4.3
Foliage	80	4.9	5.0	5.0	5.0	5.0	5.0	4.9	5.0
	50	4.6	4.8	5.0	4.9	5.0	5.0	5.0	4.9
	20	4.5	4.7	4.7	4.7	4.8	5.0	4.5	4.7
Flower	80	1.3	2.9	3.3	1.3	1.6	1.0	1.0	1.8
	50	1.1	2.5	1.8	1.3	1.1	1.1	1.0	1.4
	20	1.0	2.0	1.5	1.5	1.0	1.0	1.0	1.3
Pest Resistance	80	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0
	50	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0
	20	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0
Disease Resistance	80	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0
	50	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0
	20	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0
Vigor	80	4.9	5.0	4.9	4.7	4.6	4.4	4.1	4.7
	50	4.5	4.9	4.4	4.8	4.3	4.1	4.1	4.4
	20	4.7	4.8	4.7	4.5	4.7	4.3	4.2	4.5

Table 32b. *Lomandra longifolia* 'Katrinus Deluxe' average monthly quality ratings (scale 1-5, 1= lowest, 5 = highest) at South Coast REC on 3 ETo-based irrigation levels in 2020.

Category	ET_o%	May	Jun	Jul	Aug	Sep	Oct	AVG
Overall Appearance	80	2.6	2.7	2.6	2.7	2.8	2.6	2.7
	50	2.7	2.8	2.6	2.7	2.7	2.6	2.7
	20	2.6	2.4	2.6	2.6	2.5	2.4	2.5
Foliage	80	3.1	3.9	3.4	3.2	3.2	3.1	3.3
	50	3.2	3.8	3.3	3.3	3.2	3.1	3.3
	20	3.1	3.6	2.9	3.0	3.1	2.9	3.1
Flower	80	1.1	0.0	0.0	0.3	0.6	0.7	0.5
	50	0.4	0.3	0.4	0.5	0.4	0.4	0.4
	20	0.8	0.3	0.3	0.3	0.6	0.6	0.5
Pest Resistance	80	5.0	5.0	5.0	5.0	5.0	5.0	5.0
	50	5.0	5.0	5.0	5.0	5.0	5.0	5.0
	20	5.0	5.0	5.0	5.0	5.0	5.0	5.0
Disease Resistance	80	5.0	5.0	5.0	5.0	5.0	5.0	5.0
	50	5.0	5.0	5.0	5.0	5.0	5.0	5.0
	20	5.0	5.0	5.0	5.0	5.0	5.0	5.0
Vigor	80	3.4	3.4	3.5	3.7	3.9	3.8	3.6
	50	3.2	3.3	3.2	3.2	3.5	3.5	3.3
	20	3.4	3.2	3.3	3.5	3.5	3.5	3.4

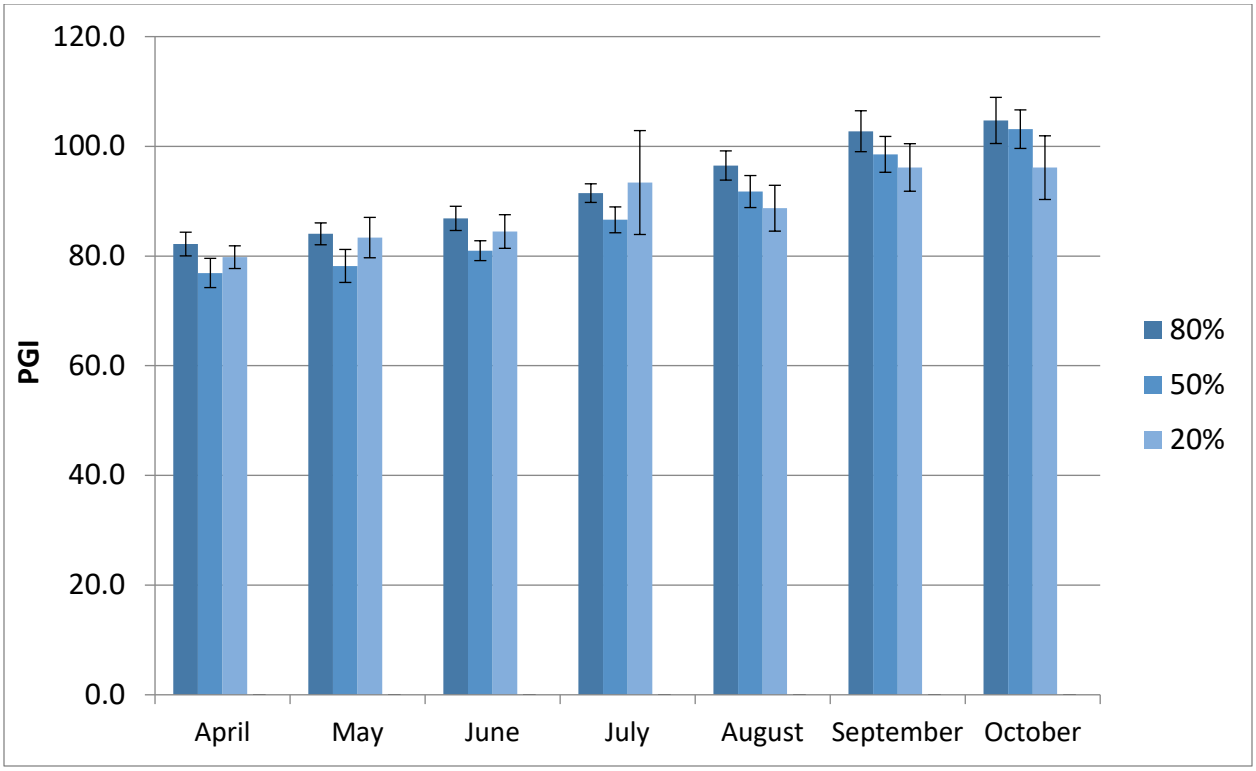


Figure 24a. *Lomandra longifolia* 'Katrinus Deluxe' average monthly plant growth index (PGI) at UC Davis on 3 ETo-based irrigation levels in 2020.

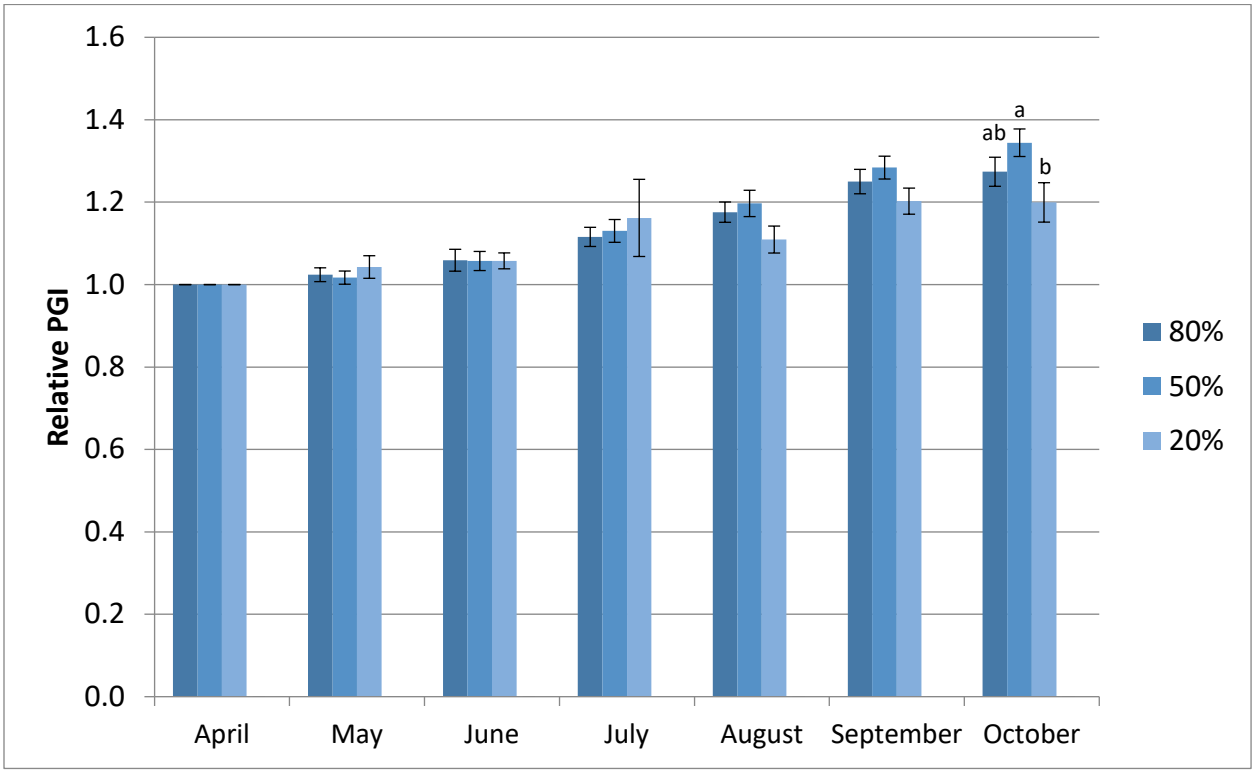


Figure 24b. *Lomandra longifolia* 'Katrinus Deluxe' average monthly relative plant growth index (RPGI) at UC Davis on 3 ETo-based irrigation levels in 2020.

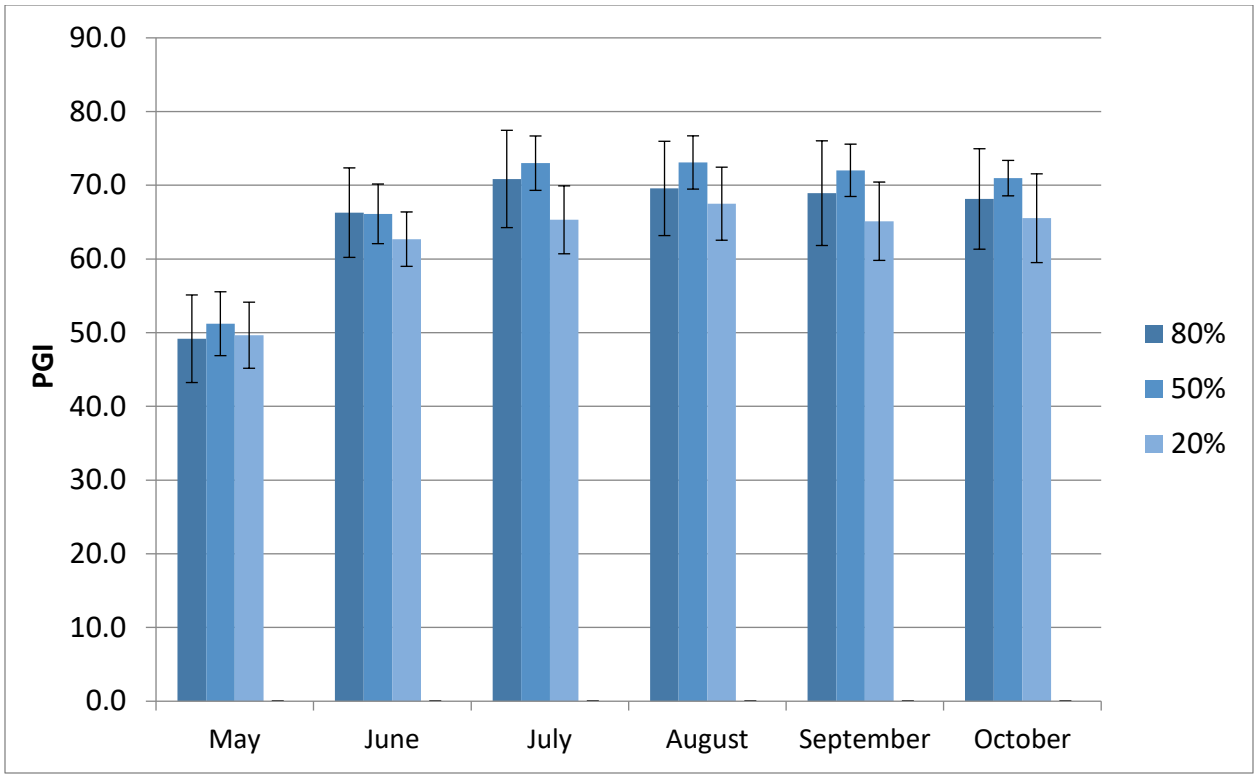


Figure 24c. *Lomandra longifolia* 'Katrinus Deluxe' average monthly plant growth index (PGI) at South Coast REC on 3 ETo-based irrigation levels in 2020.

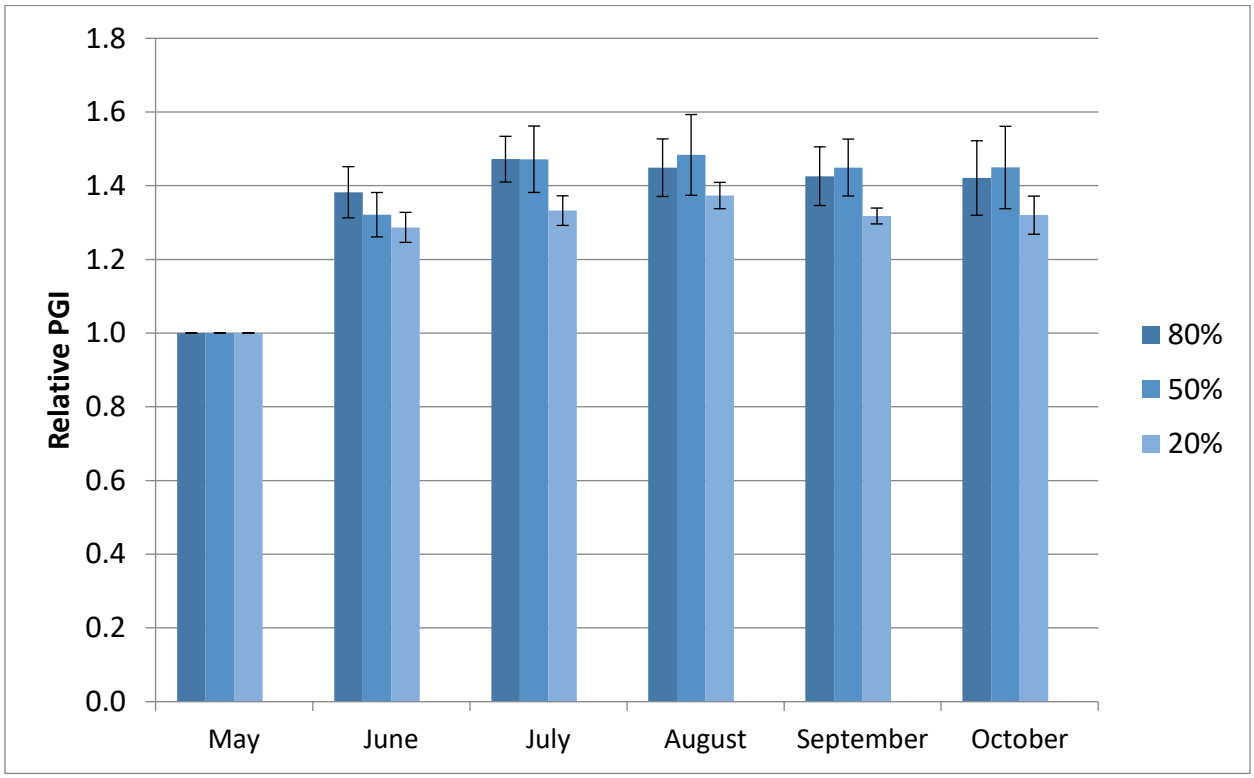


Figure 24d. *Lomandra longifolia* 'Katrinus Deluxe' average monthly relative plant growth index (RPGI) at South Coast REC on 3 ETo-based irrigation levels in 2020.

Table 33a. *Rhododendron* 'Robleza' Autumn Bonfire® average monthly quality ratings (scale 1-5, 1= lowest, 5 = highest) at South Coast REC on 3 ETo-based irrigation levels in 2020.

Category	ET_o%	May	Jun	Jul	Aug	Sep	Oct	AVG
Overall Appearance	80	2.0	2.6	2.6	2.6	2.0	1.6	2.2[a]
	50	2.1	2.6	2.4	2.4	2.0	1.8	2.2[a]
	20	2.3	2.5	1.8	1.1	0.1	0.0	1.3[b]
Foliage	80	2.0	2.8	2.6	2.7	2.1	1.6	2.3[a]
	50	2.4	2.8	2.3	2.3	2.2	1.8	2.3[a]
	20	2.5	2.4	1.9	1.3	0.1	0.0	1.4[b]
Flower	80	0.1	0.0	0.1	0.0	0.0	0.0	0.0
	50	0.0	0.0	0.0	0.1	0.3	0.0	0.1
	20	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Pest Resistance	80	4.4	5.0	5.0	5.0	5.0	3.8	4.7[a]
	50	5.0	5.0	5.0	5.0	5.0	5.0	5.0[a]
	20	5.0	5.0	5.0	4.3	0.7	0.0	3.3[b]
Disease Resistance	80	4.4	5.0	5.0	5.0	5.0	3.8	4.7[a]
	50	5.0	5.0	5.0	5.0	5.0	5.0	5.0[a]
	20	5.0	5.0	5.0	4.3	0.7	0.0	3.3[b]
Vigor	80	2.5	3.0	3.3	3.4	2.8	2.3	2.9[a]
	50	2.4	2.8	2.8	3.1	2.9	2.7	2.8[a]
	20	2.5	2.6	2.6	1.6	0.1	0.0	1.6[b]

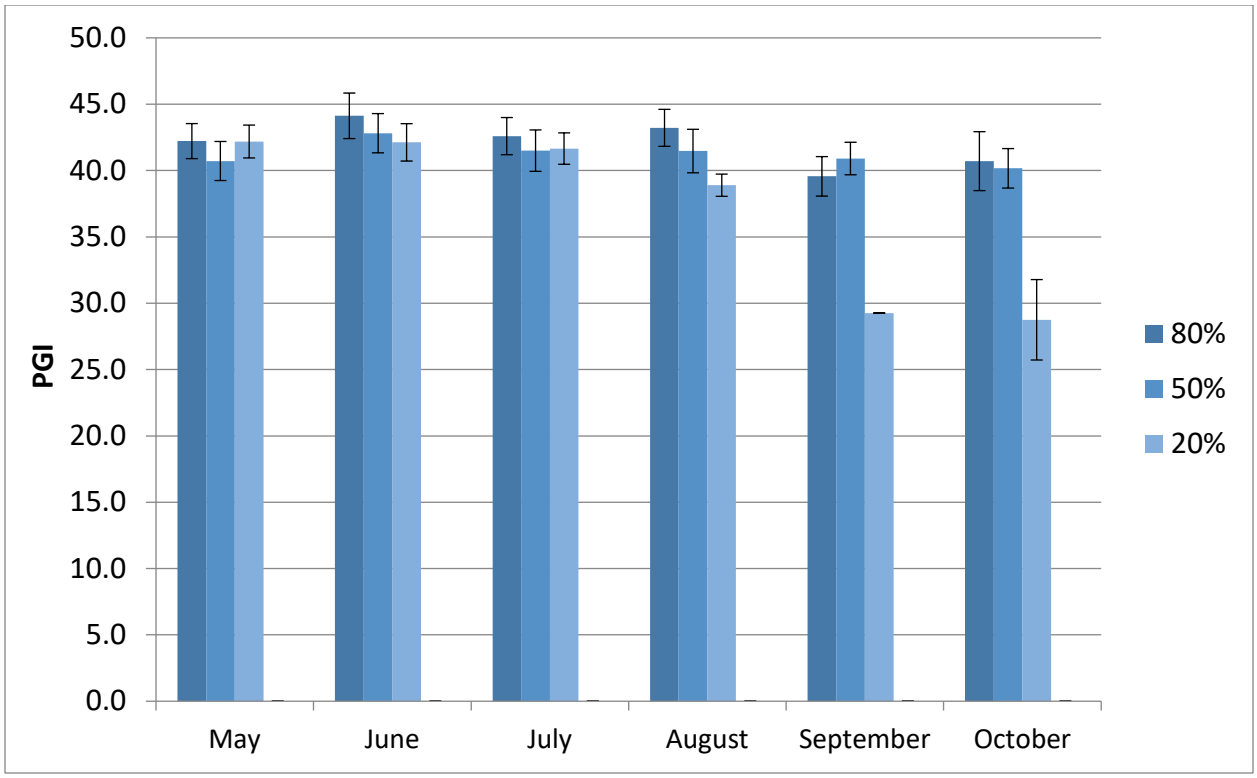


Figure 25a. *Rhododendron* 'Robleza' Autumn Bonfire® average monthly plant growth index (PGI) at South Coast REC on 3 ETo-based irrigation levels in 2020.

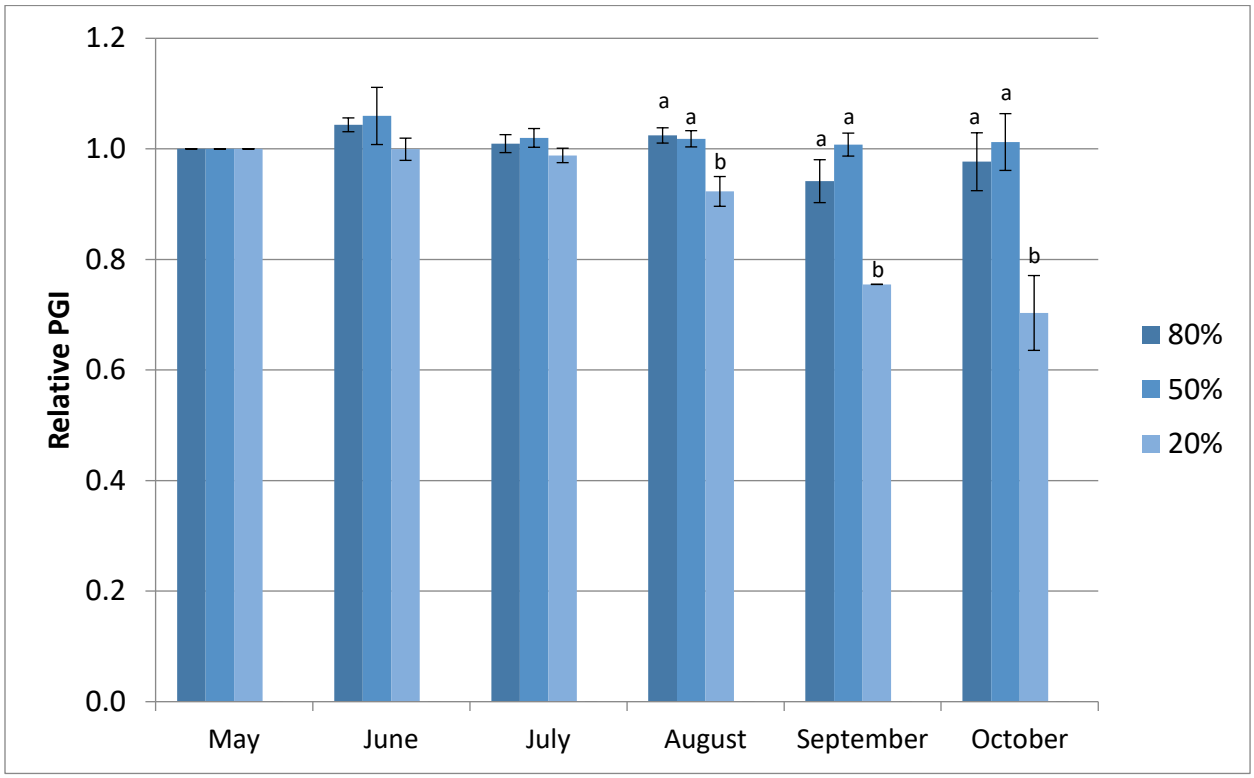


Figure 25b. *Rhododendron* 'Robleza' Autumn Bonfire® average monthly relative plant growth index (RPGI) at South Coast REC on 3 ETo-based irrigation levels in 2020.

Appendix B

PHOTOS

UC Davis Full Sun 2-m field in June 2020 with shade house in the background.

All photos in Davis: Karrie Reid unless noted as Jared Sisneroz. All photos at South Coast REC: Danielle Martinez. No photos used without explicit written permission.

Pink flower spikes of *Vitex* Galactic Pink® are attractive to bees.

Photo 1a. *Buddeia* × 'SMNBDBT' Pugster Blue® coming into full bloom at the end of June 2020 on low irrigation at UC Davis.

Photo 1b. *Buddleia* × 'SMNBDBT' Pugster Blue® in full bloom in early July 2020 on medium irrigation at UC Davis.

Photo 1c. *Buddleia* × 'SMNBDBT' Pugster Blue® still blooming at South Coast REC in October 2020 on low irrigation.

Photo 1d. *Buddleia* × 'SMNBDBT' Pugster Blue® close-up in August 2020.

Photo 2a. *Cotinus coggygria* 'NCCO1' Winecraft Black® on medium water in July 2020 at South Coast REC.

Photo 2b. *Cotinus coggygria* 'NCCO1' Winecraft Black® close-up at South Coast REC in October 2020.

Photo 2c. *Cotinus coggygria* 'NCCO1' Winecraft Black® on low irrigation at UC Davis in July 2020.

Photo 2d - e. *Cotinus coggygria* 'NCCO1' Winecraft Black® new foliage emerging in April (L) and foliage in September 2020 (R) at UC Davis.

Photo 3a. *Eremophila glabra* 'EREM1' Grey Horizon™ on low water at South Coast REC in October 2020.

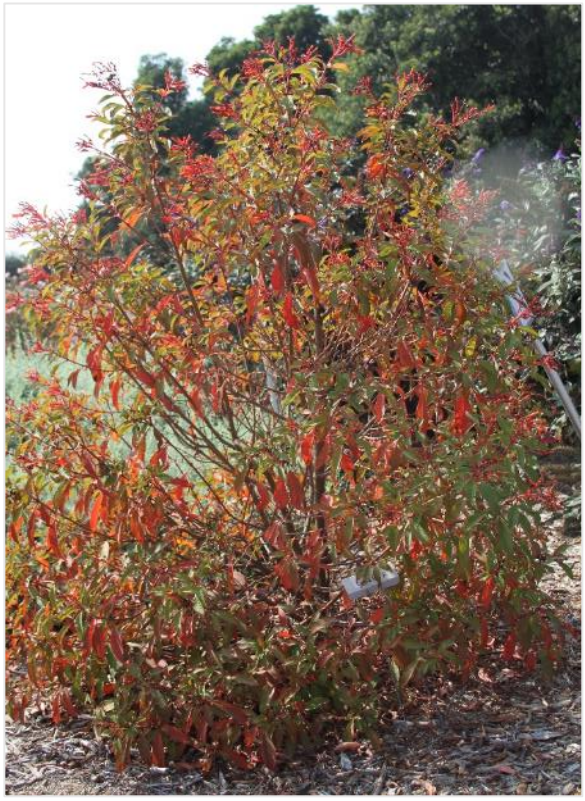
Photo 3b. The mostly inconspicuous flowers of *Eremophila glabra* 'EREM1' Grey Horizon™ in April 2020.

Photo 3c. *Eremophila glabra* 'EREM1' Grey Horizon™ at UC Davis in May 2020 showing the bare center found on many plants.

Photo 3d. *Eremophila glabra* 'EREM1' Grey Horizon™ in September 2020 at UC Davis on low water.

Photo 4a. *Hamelia patens* Sierra Red™ blooms and foliage close-up at South Coast REC in October 2020.

Photo 4b. *Hamelia patens* Sierra Red™ on medium water at South Coast REC in October 2020.



Photos 4c-d. *Hamelia patens* Sierra Red™ on high water (left) and low water (right), showing that more is not always better.

Photo 4e. *Hamelia patens* Sierra Red™ on high water at UC Davis in September 2020.

Photo 5a-b. *Hesperaloe parviflora* 'MSWNPERED' Sandia Glow® blooming on low water at Davis in July 2020.

Photo 6a. *Hypericum kalmianum* 'Deppe' Sunny Boulevard® in May 2020 on low water in Davis before bloom began.

Photo 6b. *Hypericum kalmianum* 'Deppe' Sunny Boulevard® in full bloom on low water in June 2020 at UC Davis.

Photo 6c-d. *Hypericum kalmianum* 'Deppe' Sunny Boulevard® close-ups in June showing its massive attractiveness to bees.

Photo 6e. *Hypericum kalmianum* 'Deppe' Sunny Boulevard® on low water in Davis in October 2020 with its seedheads.

Photo 6f. *Hypericum kalmianum* 'Deppe' Sunny Boulevard® at South Coast REC on medium water in July showing its sensitivity to reclaimed irrigation water. All irrigation treatments were similarly affected.

Photo 7a. *Laurus nobilis* 'MonRik' Little Ragu® on low water in Davis in May 2020 showing disease symptoms on leaves.

Photo 7b. Close-up of foliar disease symptoms on *Laurus nobilis* 'MonRik' Little Ragu® on low water treatment in Davis in July 2020.

Photo 7c. *Laurus nobilis* 'MonRik' Little Ragu® on low water at South Coast REC in October 2020 showing both new growth and disease symptoms on older leaves.

Photo 8a. *Lippia* 'ECOLOPIA2' Pink Kurapia® on low water at UC Davis in August 2020.

Photo 8b. *Lippia* 'ECOLOPIA2' Pink Kurapia® bloom close-up in August 2020 on low water.

Photo 9a. ×*Pyracomeles* 'NCXP1' Juke Box® at UC Davis in April before treatments and high heat arrive.

Photo 9b. ×*Pyracomeles* 'NCXP1' Juke Box® on low water at UC Davis in August 2020. Folded leaves give a pale appearance.

Photo 9c. Folded leaves and dying twigs on ×*Pyracomeles* 'NCXP1' Juke Box® on low water at South Coast REC in October 2020.

Photo 10a. *Rhagodia spinescens* 'SAB01' Aussie Flat Bush™ on low water at UC Davis in July 2020.

Photo 10b. Close up of young *Rhagodia spinescens* 'SAB01' Aussie Flat Bush™ leaves at UC Davis in April 2020.

Photo 10c. *Rhagodia spinescens* 'SAB01' Aussie Flat Bush™ on low water at South Coast REC in October 2020.

Photo 10d. Beautiful silvery foliage of *Rhagodia spinescens* 'SAB01' Aussie Flat Bush™ at South Coast REC in October 2020.

Photo 11a. *Rhaphiolepis indica* 'Parhap' Oriental Pearl on low water at UC Davis in April 2020.

Photo 11b. *Rhaphiolepis indica* 'Parhap' Oriental Pearl on low water at UC Davis in October 2020.

Photo 11c. *Rhaphiolepis indica* 'Parhap' Oriental Pearl on low water at South Coast REC in October 2020.

Photo 12a. *Rhaphiolepis indica* 'sPg-3-003' Redbird™ on low water at Davis in May 2020 with new red foliage.

Photo 12b. *Rhaphiolepis indica* 'sPg-3-003' Redbird™ on low water at UC Davis in September 2020 still looking very good.

Photo 12c. *Rhaphiolepis indica* 'sPg-3-003' Redbird™ on low water at South Coast REC in October 2020.

Photo 13a. A typical cluster of small, bright red rosette blooms found on *Rosa* 'Baillim' Chi™.

Photo 13b. *Rosa* 'Baillim' Chi™ on low water in Davis at the end of May 2020, already sending up the long canes which will bear the next round of blooms.

Photo 13c. *Rosa* 'Baillim' Chi™ on medium water reblooming at UC Davis in July 2020.

Photo 13d. *Rosa* 'Baillim' Chi™ on medium water at South Coast REC in July 2020.

Photo 14a. *Rosa* Lemon Fizz Kolorscape® in April 2020 in Davis before irrigation treatments began.

Photo 14b. *Rosa* Lemon Fizz Kolorscape® on medium water at South Coast REC in August 2020.

Photo 15a. *Rosa* 'Meiggili' Peach Drift® bloom closeup in May 2020.

Photo 15b. *Rosa* 'Meiggili' Peach Drift® on medium water at UC Davis in late May 2020.

Photo 16a. *Rosa* 'Meimirrote' Apricot Drift® on low water in Davis in May 2020.

Photo 16b. *Rosa* 'Meimirrote' Apricot Drift® closeup in May 2020.

Photo 17a. *Rosa* 'NOA168098F' Flower Carpet® Pink Supreme on low water at UC Davis in May 2020.

Photo 17b. *Rosa* 'NOA168098F' Flower Carpet® Pink Supreme closeup in July 2020.

Photo 17c. *Rosa* 'NOA168098F' Flower Carpet® Pink Supreme at UC Davis on medium water in October 2020 still pumping out blooms.

Photo 17d. *Rosa* 'NOA168098F' Flower Carpet® Pink Supreme on medium water at South Coast REC in August 2020.

Photo 18a. *Rosa* 'Radral' Coral Knock Out® on low water at UC Davis in May 2020.

Photo 18b. *Rosa* 'Radral' Coral Knock Out® on medium water at South Coast REC in August 2020.

Photo 19a. *Ruschia lineolata* ‘Nana’ with single flower in April 2020 at UC Davis.

Photo 19b. *Ruschia lineolata* ‘Nana’ closeup on medium water at UC Davis in August 2020 showing reddish tips.

Photo 19c. *Ruschia lineolata* ‘Nana’ on low water at UC Davis in August 2020.

Photo 19d. *Ruschia lineolata* ‘Nana’ on low water at South Coast REC in August 2020.

Photo 19e. *Ruschia lineolata* ‘Nana’ on low water in Davis in October 2020.

Photo 19f. *Ruschia lineolata* ‘Nana’ on low water at South Coast REC in October 2020.

Photo 20a. *Tecomaria capensis* Riot Red® on low water at UC Davis in October 2020.

Photo 20b. *Tecomaria capensis* Riot Red® on low water at South Coast REC in October 2020.

Photo 21a. *Vitex agnus-castus* 'Bailtextwo' Galactic Pink® on low water at South Coast REC in July 2020.

Photo 21b. *Vitex agnus-castus* 'Bailtextwo' Galactic Pink® on low water at UC Davis in July 2020.

Photo 21c. Despite the haze and ash at UC Davis from nearby wildfires, sulphur butterflies and bees still feed on *Vitex agnus-castus* 'Bailtextwo' Galactic Pink® in Aug. 2020.

Photo 22a. *Hydrangea paniculata* 'LeeP1' White Wedding® on medium water at UC Davis in July 2020.

Photos 22b-c. *Hydrangea paniculata* 'LeeP1' White Wedding® flowers beginning to transition from white to green in mid-July 2020.

Photo 22d. *Hydrangea paniculata* 'LeeP1' White Wedding® with celadon bloom heads and fading leaves at UC Davis in Sept. 2020.

Photo 22e. *Hydrangea paniculata* 'LeeP1' White Wedding® specimen on medium irrigation almost completely defoliated in September in Davis.

Photo 23a. New flower beginning to open on *Hydrangea quercifolia* 'BIV01' Tara® in April 2020.

Photo 23a. *Hydrangea quercifolia* 'BIV01' Tara® on low water at UC Davis in May 2020.

Photo 23b. *Hydrangea quercifolia* 'BIV01' Tara® in September on low water at UC Davis with foliage still attractive despite the ash and haze.

Photo23c. *Hydrangea quercifolia* 'BIV01' Tara® on low water at South Coast REC in July 2020.

Photo 23d. *Hydrangea quercifolia* 'BIV01' Tara® on low water at South Coast REC in October, showing signs of accumulated salt burn on leaf edges from reclaimed water. New foliage (upper right) is still unaffected.

Photos 24a-b. *Ilex crenata* 'Farrowone' Sky Box® on low (L) and high (R) water at South Coast REC in July 2020.

Photo 25a. *Lomandra* Katrinus Deluxe on low water at UC Davis in April 2020.

Photo 25a. *Lomandra longifolia* 'Katrinus Deluxe' on low water at UC Davis in August 2020.

Photo 25b. *Lomandra longifolia* 'Katrinus Deluxe' on low water in Davis in September 2020.

Photo 25c. *Lomandra longifolia* 'Katrinus Deluxe' flower/seed spike.

Photo 25d. *Lomandra longifolia* 'Katrinus Deluxe' on low water at South Coast REC in July 2020, showing pale foliage.