# Seville, Hubbard 87, Shenandoah atop most recent NTEP test results 

- Seville St. Augustinegrass and Hubbard 87 and Shenandoah turf-type tall fescues have outranked all other commerciallyavailable cultivars in the most recent tests released by the National Turfgrass Evaluation Program at Beltsville, Md.

Seville had an overall quality rating of 6.3 (of possible 9.0 ) of the 10 commercial-ly-available cultivars tested, according to 1991 data. This particular test was established in 1989.

Hubbard 87 and Shenandoah had mean quality ratings of 6.2 at 42 locations across the U.S. The results were for the final year of a tall fescue test established in 1987.

Though Seville was tops in the St. Augustinegrass ratings, Mercedes and Jade had 1991 scores of 6.0 and 5.9 , respectively, within the 0.4 tolerance established by the LSD (least significant difference) range.

Also rating high in the turf-type tall fescue test was Safari with a 6.1 mean score, within the LSD range of 0.1 .

Twilight was tops in genetic color ratings with a 7.4 rating while Twilight had the best leaf texture rating, 6.6.

KY-31 was on top of the seedling vigor ratings with 6.3 , followed by Jaguar, Trident, Adventure, Finelawn I, Apache and Titan, all within the 0.7 LSD tolerance.

Trident ranked highest in winter color (6.5), followed by Twilight, Rebel, Safari and Pacer. Hubbard 87, Bonanza, Titan, Thoroughbred, Twilight and Guardian all ranked at the top of the spring density ratings.

Here are 1991 ratings for all St. Augustine test sites and turf-type tall fescue sites.

## How to use these charts

- First, choose the test site closest to where you are planning to seed. Compare the scores of the varieties and select the ones best suited to your area.

Ratings range from 1.0 to 9.0 , with 9.0 being a perfect turf. Keep in mind that no comparitive difference is evident between turf scores closer than the LSD (least statistical difference) value. In other words, if one variety scores 6.5 for your area and another scores 6.9 and the LSD is 0.5 , both would be equally suited to your area.

Please note that the following capitalized letters next to test sites indicate maintenance practices:

$$
\begin{array}{ll}
\mathbf{A}=\text { high maintenance } & \mathbf{C}=\text { low mowing } \\
\mathbf{B}=\text { low maintenance } & \mathbf{D}=\text { high mowing }
\end{array}
$$

1991 PROGRESS REPORT/1989 ST. AUGUSTINE GRASS TEST
QUALITY RATINGS/COMMERCIALLY AVAILABLE CULTIVARS

|  |  |  | 픈 吾 斋 |  |  |  |  |  |  |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| SEVILLE | 5.5 | 7.3 | 6.7 | 8.4 | 6.7 | 5.0 | 3.9 | 7.0 | 6.3 |
| MERCEDES | 5.2 | 7.5 | 6.0 | 8.3 | 6.7 | 4.7 | 3.7 | 6.2 | 6.0 |
| JADE | 6.2 | 7.3 | 6.0 | 7.9 | 6.7 | 4.7 | 2.1 | 6.7 | 5.9 |
| DELMAR | 5.7 | 7.4 | 7.0 | 7.4 | 5.4 | 4.7 | 2.7 | 5.8 | 5.8 |
| BITTERBLUE | 5.7 | 6.9 | 7.3 | 8.1 | 5.2 | 4.3 | 3.1 | 5.2 | 5.7 |
| FLORALAWN | 4.9 | 7.8 | 6.7 | 6.8 | 5.5 | 4.7 | 3.4 | 5.2 | 5.6 |
| FLORATAM | 4.8 | 7.5 | 6.0 | 6.4 | 5.8 | 5.0 | 3.6 | 5.2 | 5.5 |
| SUNCLIPSE | 6.9 | 3.0 | 6.3 | 7.3 | 6.2 | 5.7 | 2.0 | 6.8 | 5.5 |
| RALEIGH | 4.2 | 7.4 | 4.3 | 6.8 | 6.6 | 4.3 | 4.0 | 5.8 | 5.4 |
| FX-10 | 5.9 | 7.1 | 5.0 | 7.7 | 4.3 | 4.0 | 2.4 | 6.2 | 5.3 |
| LSD | 0.9 | 1.7 | 1.8 | 0.9 | 0.9 | 1.1 | 1.6 | 0.5 | 0.4 |

ELSEWHERE

> Results of turf-type tall fescue trials, pages 34, 36

Low-water-use zones
in the landscape,
page 40

| 1991 FINAL REPORT <br> 1989 TALL-FESCUE TEST <br> Quality ratings COMMERCIALLYavailable cultivars |  |  |  |  |  |  | © |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| HUBBARD '87 | 5.2 | 6.5 | 6.9 | 6.2 | 6.8 | 4.7 | 7.0 | 7.1 | 6.4 | 7.5 | 5.9 | 7.5 | 4.7 | 7.5 | 7.6 | 6.3 | 6.3 | 5.5 | 6.4 | 6.6 | 6.1 |
| SHENANDOAH | 6.0 | 6.6 | 6.8 | 6.2 | 6.8 | 4.1 | 6.9 | 7.4 | 6.4 | 7.7 | 6.4 | 7.1 | 4.9 | 7.4 | 7.6 | 6.4 | 5.4 | 5.4 | 6.2 | 6.3 | 5.9 |
| SAFARI | 4.2 | 6.8 | 6.6 | 6.1 | 6.7 | 4.4 | 6.8 | 6.6 | 5.9 | 7.3 | 5.3 | 6.7 | 4.5 | 7.4 | 7.3 | 6.1 | 6.2 | 5.3 | 6.4 | 6.2 | 6.2 |
| GUARDIAN | 6.2 | 6.6 | 6.8 | 6.1 | 6.7 | 3.1 | 7.0 | 6.7 | 5.7 | 7.3 | 5.6 | 6.9 | 4.8 | 7.4 | 7.1 | 6.3 | 5.7 | 5.2 | 6.1 | 6.5 | 6.1 |
| AUSTIN | 4.8 | 6.6 | 6.4 | 6.2 | 6.7 | 5.7 | 7.0 | 6.9 | 6.4 | 7.7 |  | 7.0 |  | 7.1 | 7.1 | 6.0 | 5.4 | 5.6 | 6.0 | 6.0 | 5.5 |
| COCHISE | 5.7 | 6.4 | 6.2 | 6.0 | 6.6 | 5.0 | 7.1 | 6.5 | 5.9 | 7.5 | 5.9 | 6.8 | 4.6 | 7.4 | 7.0 | 5.8 | 6.3 | 5.5 | 6.4 | 5.8 | 6.3 |
| AZTEC | 5.2 | 6.5 | 6.8 | 6.2 | 6.7 | 3.4 | 6.7 | 6.1 | 6.0 | 7.3 | 6.0 | 6.6 | 4.4 | 7.6 | 7.2 | 6.3 | 5.6 | 4.9 | 6.3 | 5.6 | 6.4 |
| MONARCH | 5.6 | 6.2 | 6.8 | 6.2 | 6.7 | 3.9 | 6.8 | 6.3 | 6.2 | 7.1 | 5.9 | 6.9 | 4.6 | 7.1 | 7.6 | 5.9 | 5.7 | 5.0 | 6.1 | 5.8 | 6.6 |
| AMIGO | 5.6 | 6.5 | 6.6 | 6.1 | 6.7 | 4.1 | 6.7 | 6.6 | 6.2 | 7.5 | 5.0 | 6.8 | 4.7 | 7.3 | 7.6 | 6.1 | 6.0 | 5.5 | 5.9 | 5.9 | 3.7 |
| CROSSFIRE | 6.4 | 6.2 | 6.7 | 6.2 | 6.7 | 4.4 | 7.3 | 6.6 | 6.1 | 7.2 | 5.8 | 6.8 | 4.5 | 7.6 | 7.5 | 6.2 | 6.1 | 4.7 | 6.3 | 5.4 | 6.4 |
| AVANTI | 4.6 | 6.5 | 6.7 | 6.3 | 6.7 | 4.0 | 6.9 | 6.5 | 6.2 | 7.0 | 5.7 | 6.6 | 4.5 | 7.9 | 7.0 | 6.1 | 5.7 | 5.0 | 6.2 | 6.4 | 6.2 |
| VEGAS | 6.2 | 6.2 | 6.3 | 6.1 | 6.7 | 4.0 | 6.5 | 7.2 | 5.7 | 7.0 | 6.1 | 6.5 | 4.7 | 7.5 | 7.5 | 5.8 | 5.1 | 5.6 | 6.4 | 5.7 | 6.5 |
| TRIBUTE | 5.4 | 6.6 | 6.2 | 6.1 | 6.8 | 4.4 | 7.1 | 7.2 | 6.0 | 7.0 | 5.8 | 6.7 | 5.0 | 7.1 | 7.3 | 6.2 | 5.9 | 5.6 | 5.8 | 6.0 | 5.7 |
| PHOENIX | 4.9 | 6.4 | 6.5 | 6.0 | 6.7 | 5.3 | 6.9 | 6.8 | 6.2 | 7.6 | 5.8 | 6.9 | 4.5 | 7.0 | 7.2 | 6.4 | 5.9 | 5.6 | 6.1 | 6.0 | 5.1 |
| THOROUGHBRED | 5.4 | 6.6 | 6.4 | 6.0 | 6.8 | 6.1 | 6.7 | 6.5 | 6.3 | 7.2 | 5.0 | 6.9 | 4.6 | 6.9 | 7.1 | 5.9 | 6.1 | 5.0 | 5.7 | 6.3 | 5.1 |
| ELDORADO | 5.0 | 6.4 | 6.4 | 6.1 | 6.7 | 5.3 | 6.6 | 6.6 | 6.2 | 7.1 | 5.5 | 6.6 | 4.6 | 7.4 | 7.0 | 6.0 | 5.9 | 5.4 | 6.2 | 5.8 | 6.2 |
| SHORTSTOP | 5.4 | 6.2 | 6.5 | 6.2 | 6.6 | 3.2 | 6.3 | 6.5 | 5.8 | 6.9 | 5.6 | 6.6 | 4.8 | 7.6 | 7.3 | 5.8 | 6.3 | 5.4 | 5.9 | 5.9 | 5.7 |
| OLYMPIC II | 6.0 | 6.4 | 6.6 | 6.1 | 6.7 | 4.1 | 6.9 | 6.2 | 5.4 | 6.9 | 5.5 | 6.8 | 4.5 | 7.0 | 7.4 | 6.1 | 6.1 | 5.0 | 5.8 | 5.2 | 5.3 |
| REBEL II | 5.4 | 6.5 | 6.4 | 6.1 | 6.8 | 5.9 | 6.9 | 6.4 | 6.0 | 7.2 | 5.4 | 6.9 | 4.6 | 6.8 | 7.1 | 6.4 | 6.1 | 5.4 | 5.7 | 5.5 | 5.1 |
| BONANZA | 5.2 | 6.2 | 6.5 | 6.0 | 6.7 | 5.6 | 6.6 | 6.4 | 6.0 | 7.5 | 5.4 | 6.9 | 4.8 | 6.8 | 7.1 | 6.1 | 6.1 | 5.1 | 6.1 | 5.8 | 5.4 |
| WRANGLER | 5.4 | 6.1 | 6.7 | 6.0 | 6.7 | 5.4 | 6.3 | 6.2 | 6.2 | 7.3 | 5.9 | 7.0 | 4.7 | 6.9 | 6.8 | 6.2 | 6.1 | 5.3 | 5.8 | 5.8 | 5.1 |
| WINCHESTER | 4.8 | 6.5 | 6.3 | 5.9 | 6.7 | 4.4 | 6.8 | 6.6 | 6.1 | 7.0 | 5.7 | 6.6 | 4.6 | 7.0 | 7.2 | 6.0 | 5.9 | 5.4 | 6.0 | 5.6 | 5.1 |
| MAVERICK II | 5.1 | 6.3 | 6.5 | 6.1 | 6.7 | 4.0 | 6.8 | 6.3 | 5.6 | 7.1 | 5.7 | 6.7 | 4.1 | 7.3 | 7.2 | 5.7 | 6.0 | 4.8 | 5.7 | 5.9 | 5.5 |
| CHIEETAIN | 4.7 | 6.4 | 6.3 | 6.1 | 6.7 | 4.0 | 6.5 | 6.3 | 6.1 | 7.2 | 5.4 | 6.9 | 4.5 | 7.1 | 6.9 | 6.5 | 5.9 | 5.3 | 6.0 | 5.6 | 5.2 |
| MESA | 5.3 | 6.5 | 6.2 | 6.0 | 6.7 | 5.9 | 7.0 | 7.1 | 6.0 | 7.5 | 5.4 | 6.6 | 4.8 | 6.9 | 7.2 | 6.2 | 6.0 | 5.4 | 5.8 | 5.5 | 5.0 |
| ANTHEM | 5.1 | 6.4 | 6.4 | 6.1 | 6.7 | 3.6 | 6.9 | 6.8 | 6.7 | 7.4 | 5.3 | 6.6 | 4.5 | 7.2 | 6.9 | 5.6 | 5.9 | 5.5 | 6.5 | 5.0 | 5.8 |
| TRAILBLAZER | 4.3 | 6.2 | 6.6 | 6.1 | 6.8 | 4.2 | 5.7 | 6.2 | 5.8 | 7.1 | 5.3 | 6.7 | 4.5 | 7.4 | 7.1 | 5.7 | 5.9 | 5.4 | 6.2 | 5.3 | 5.7 |
| ARRIBA | 5.2 | 5.9 | 6.8 | 6.1 | 6.7 | 3.2 | 6.6 | 6.6 | 5.9 | 7.0 | 5.7 | 6.7 | 4.6 | 7.0 | 6.6 | 6.2 | 5.5 | 5.0 | 5.8 | 6.1 | 5.3 |
| SILVERADO | 5.0 | 6.3 | 6.8 | 6.1 | 6.7 | 3.7 | 6.6 | 6.2 | 6.0 | 6.8 | 5.4 | 6.4 | 4.5 | 7.3 | 7.1 | 5.8 | 5.8 | 5.1 | 6.0 | 5.5 | 6.3 |
| OLYMPIC | 5.3 | 6.5 | 6.0 | 6.0 | 6.7 | 5.2 | 6.4 | 6.1 | 5.8 | 7.3 | 5.3 | 6.9 | 4.3 | 6.9 | 7.1 | 6.0 | 6.2 | 5.2 | 5.5 | 5.9 | 4.9 |
| JAGUAR II | 5.0 | 6.2 | 6.3 | 6.0 | 6.8 | 4.2 | 6.9 | 6.6 | 6.4 | 7.1 | 5.2 | 6.8 | 4.4 | 6.8 | 7.0 | 6.4 | 6.6 | 5.2 | 5.7 | 5.4 | 4.7 |
| TRADITION | 5.8 | 6.3 | 6.1 | 6.0 | 6.8 | 4.4 | 6.9 | 6.7 | 6.2 | 7.1 | 5.1 | 6.7 | 4.7 | 6.9 | 7.2 | 6.0 | 5.9 | 4.8 | 5.7 | 5.2 | 4.8 |
| TWILIGHT | 5.9 | 6.8 | 6.3 | 5.9 | 6.7 | 3.2 | 6.0 | 6.4 | 6.4 | 6.3 | - | 6.4 | 4.5 | 8.2 | 6.9 | 5.7 | 5.8 | 4.9 | 7.2 | 5.3 | 5.4 |
| SUNDANCE | 4.9 | 6.4 | 6.0 | 6.1 | 6.7 | 4.4 | 6.5 | 6.7 | 5.8 | 7.2 | 5.6 | 6.6 | 4.6 | 7.1 | 7.1 | 5.8 | 6.1 | 4.9 | 6.0 | 5.8 | 5.3 |
| APACHE | 5.7 | 6.3 | 6.2 | 5.9 | 6.7 | 4.2 | 6.5 | 6.8 | 5.9 | 7.3 | 5.7 | 6.8 | 4.6 | 7.2 | 7.1 | 5.9 | 5.8 | 4.7 | 5.8 | 6.1 | 4.8 |
| TITAN | 5.0 | 6.3 | 5.8 | 6.0 | 6.7 | 5.4 | 7.0 | 6.5 | 6.4 | 7.1 | 5.6 | 6.7 | 4.6 | 6.7 | 7.0 | 6.3 | 6.0 | 5.6 | 5.5 | 5.3 | 4.6 |
| BARNONE | 5.0 | 6.3 | 6.4 | 6.0 | 6.7 | 5.7 | 7.0 | 6.6 | 6.2 | 7.0 | - | 6.6 | 4.7 | 6.9 | 7.1 | 5.8 | 5.5 | 4.9 | 5.9 | 5.9 | 4.6 |
| TAURUS | 5.3 | 6.5 | 6.4 | 6.1 | 6.7 | 3.8 | 6.4 | 6.4 | 5.9 | 7.0 | 5.6 | 6.6 | 4.6 | 6.8 | 6.9 | 6.3 | 5.9 | 4.9 | 5.7 | 5.8 | 5.2 |
| BRAHMA | 5.5 | 6.0 | 6.5 | 6.1 | 6.6 | 3.9 | 6.2 | 6.3 | 5.9 | 6.7 | 5.5 | 6.9 | 4.6 | 7.0 | 7.2 | 6.0 | 6.3 | 5.0 | 5.9 | 6.3 | 5.3 |
| CIMARRON | 5.1 | 6.4 | 6.4 | 5.9 | 6.8 | 4.3 | 6.3 | 6.6 | 6.2 | 7.2 | 5.4 | 6.6 | 4.3 | 6.9 | 7.4 | 6.1 | 6.2 | 4.8 | 5.8 | 5.2 | 4.7 |
| ARID | 5.8 | 6.2 | 6.1 | 6.1 | 6.7 | 4.8 | 6.8 | 6.3 | 6.2 | 6.8 | 5.7 | 6.6 | 4.6 | 6.6 | 6.5 | 5.9 | 6.0 | 5.1 | 5.5 | 5.5 | 4.5 |
| FINELAWN 5GL | 5.0 | 5.8 | 6.1 | 6.0 | 6.7 | 6.0 | 6.6 | 6.5 | 6.0 | 6.7 | 4.8 | 6.9 | 4.8 | 6.6 | 6.7 | 5.8 | 5.6 | 5.1 | 5.4 | 5.5 | 4.1 |
| JAGUAR | 4.5 | 6.2 | 6.1 | 6.1 | 6.7 | 4.8 | 7.0 | 6.4 | 5.8 | 7.5 | 5.2 | 6.9 | 4.6 | 6.8 | 6.4 | 6.0 | 5.6 | 5.7 | 5.4 | 5.5 | 4.5 |
| REBEL | 5.3 | 6.0 | 6.2 | 6.0 | 6.7 | 5.9 | 6.3 | 6.2 | 6.2 | 6.8 | 4.9 | 6.6 | 4.6 | 6.6 | 6.6 | 6.0 | 6.0 | 5.2 | 5.5 | 5.3 | 4.4 |
| CAREFREE | 4.5 | 6.5 | 6.1 | 6.0 | 6.8 | 4.8 | 5.6 | 6.3 | 6.3 | 7.0 | 5.7 | 6.7 | 4.6 | 7.1 | 7.0 | 5.8 | 6.1 | 5.1 | 5.4 | 5.9 | 4.6 |
| MURIETTA | 4.3 | 6.0 | 6.9 | 6.2 | 6.7 | 4.1 | 6.2 | 6.2 | 5.4 | 6.9 | 5.3 | 6.7 | 4.3 | 7.1 | 6.9 | 5.8 | 5.8 | 5.0 | 5.9 | 6.0 | 5.0 |
| TRIDENT | 4.7 | 6.4 | 6.0 | 5.9 | 6.7 | 4.9 | 6.3 | 6.6 | 6.1 | 7.1 | 5.6 | 6.6 | 4.2 | 6.7 | 6.8 | 6.0 | 5.8 | 5.1 | 5.6 | 5.4 | 4.2 |
| ADVENTURE | 4.7 | 6.2 | 6.3 | 6.0 | 6.5 | 5.3 | 6.5 | 6.0 | 6.0 | 7.2 | 5.8 | 6.8 | 4.5 | 6.8 | 6.5 | 5.9 | 5.5 | 4.6 | 5.4 | 5.6 | 3.8 |
| EMPEROR | 4.6 | 6.2 | 6.4 | 6.2 | 6.7 | 2.6 | 6.4 | 5.9 | 5.1 | 6.3 | 6.1 | 6.4 | 4.5 | 7.2 | 6.9 | 5.9 | 6.1 | 4.7 | 6.0 | 5.2 | 5.3 |
| FALCON | 4.5 | 6.0 | 5.7 | 5.9 | 6.6 | 4.3 | 6.7 | 6.3 | 5.4 | 6.8 | 5.4 | 6.2 | 4.6 | 6.5 | 6.2 | 6.0 | 6.1 | 4.6 | 5.4 | 5.2 | 3.7 |
| PACER | 5.2 | 5.7 | 5.5 | 5.8 | 6.6 | 5.2 | 6.6 | 6.2 | 6.0 | 6.6 | 5.4 | 6.3 | 4.5 | 6.5 | 6.2 | 5.8 | 5.6 | 4.8 | 5.5 | 5.0 | 3.8 |
| FINELAWNI | 5.3 | 6.0 | 5.8 | 5.6 | 6.5 | 5.7 | 6.4 | 6.1 | 6.2 | 6.7 | 4.8 | 6.5 | 4.4 | 6.2 | 6.3 | 5.8 | 5.9 | 5.0 | 5.1 | 5.2 | 3.4 |
| WILLAMETTE | 5.2 | 6.2 | 5.7 | 5.8 | 6.6 | 4.8 | 5.9 | 6.1 | 5.7 | 6.5 | 5.3 | 6.7 | 4.4 | 6.2 | 6.7 | 5.9 | 6.1 | 5.2 | 5.4 | 4.1 | 3.4 |
| RICHMOND | 4.7 | 6.1 | 5.6 | 5.8 | 6.6 | 4.4 | 6.1 | 5.8 | 6.0 | 6.7 | 5.2 | 6.2 | 4.6 | 6.3 | 6.4 | 5.6 | 5.8 | 4.9 | 5.2 | 5.2 | 3.6 |
| AQUARA | 5.1 | 6.0 | 5.3 | 5.9 | 6.6 | 4.7 | 6.2 | 6.1 | 5.7 | 6.3 | 5.0 | 6.4 | 4.4 | 6.3 | 6.5 | 5.4 | 5.7 | 4.7 | 5.2 | 4.9 | 3.4 |
| FATIMA | 5.0 | 6.1 | 5.3 | 5.8 | 6.4 | 4.9 | 6.5 | 6.1 | 6.0 | 6.5 | 5.3 | 6.0 | 4.4 | 6.1 | 6.2 | 5.8 | 5.8 | 5.2 | 5.0 | 5.2 | 3.3 |
| TIP | 5.1 | 6.1 | 5.7 | 5.9 | 6.6 | 4.3 | 5.8 | 5.9 | 5.7 | 6.5 | 5.0 | 6.0 | 4.2 | 6.3 | 5.8 | 5.7 | 5.8 | 5.1 | 4.9 | 4.3 | 3.0 |
| K4-31 | 4.4 | 5.6 | 4.7 | 5.0 | 5.6 | 6.0 | 5.2 | 5.6 | 5.3 | 6.0 | 5.1 | 5.7 | 4.2 | 5.3 | 5.3 | 5.1 | 5.3 | 4.4 | 4.4 | 4.3 | 2.3 |
| LSD | 0.6 | 0.6 | 0.3 | 0.2 | 0.3 | 1.7 | 0.6 | 0.7 | 0.7 | 0.5 | 1.1 | 0.3 | 0.5 | 0.3 | 0.6 | 0.7 | 0.4 | 1.4 | 0.5 | 0.8 | 0.4 |

[^0]| 1991 FINAL REPORT <br> 1989 TALL－FESCUE TEST QUALITY RATINGS COMMERCIALLY－ AVAILABLE CULTIVARS |  |  |  |  |  |  | 른 言 롱 | 登 |  |  |  |  | $\square$ |  |  |  |  |  |  |  | $\underset{\text { 2 }}{\substack{\text { ² }}}$ |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| HUBBARD＇87 | 7.2 | 5.7 | 5.7 | 6.1 | 7.1 | 5.6 | 6.8 | 5.6 | 6.2 | 5.1 | 5.1 | 7.7 | 6.9 | 6.4 | 6.0 | 5.9 | 6.5 | 4.8 | 6.8 | 3.7 | 6.2 |
| SHENANDOAH | 6.9 | 5.6 | 5.1 | 5.4 | 7.3 | 5.9 | 6.6 | 5.3 | 5.9 | 4.7 | 5.0 | 7.7 | 7.1 | 6.4 | 5.6 | 5.9 | 6.6 | 5.3 | 5.9 | 4.7 | 6.2 |
| SAFARI | 6.8 | 5.8 | 5.3 | 5.5 | 7.1 | 5.6 | 6.5 | 5.1 | 6.3 | 4.7 | 5.2 | 7.5 | 6.8 | 5.9 | 5.6 | 5.7 | 6.0 | 4.4 | 6.9 | 6.7 | 6.1 |
| GUARDIAN | 7.0 | 5.7 | 4.9 | 5.4 | 6.9 | 5.5 | 6.6 | 5.3 | 5.6 | 4.7 | 5.2 | 7.7 | 6.9 | 6.2 | 5.5 | 5.7 | 6.4 | 4.7 | 6.9 | 4.7 | 6.0 |
| AUSTIN | 6.0 | 5.1 | 5.2 | 5.6 | 6.8 | 5.5 | 5.8 | 5.1 | 6.2 | 4.9 | 4.8 | 7.4 | 6.7 | 6.2 | 5.1 | 5.6 | 5.8 | 5.0 |  | 5.3 | 6.0 |
| COCHISE | 6.8 | 5.5 | 5.1 | 5.6 | 6.7 | 5.3 | 6.4 | 5.1 | 6.0 | 4.8 | 4.6 | 7.6 | 7.1 | 6.0 | 5.2 | 5.8 | 6.3 | 4.4 | 5.1 | 5.7 | 6.0 |
| AZTEC | 6.6 | 5.9 | 4.7 | 5.2 | 6.8 | 5.3 | 6.4 | 4.9 | 5.9 | 5.2 | 4.7 | 7.7 | 7.0 | 6.0 | 5.4 | 5.7 | 6.2 | 4.5 | 6.0 | 7.3 | 6.0 |
| MONARCH | 6.5 | 5.6 | 4.8 | 5.0 | 6.8 | 5.4 | 6.5 | 5.1 | 6.3 | 4.6 | 4.7 | 7.5 | 6.9 | 6.1 | 5.2 | 5.9 | 6.2 | 4.5 | 4.8 | 7.7 | 6.0 |
| AMIGO | 6.1 | 5.4 | 5.3 | 5.6 | 7.0 | 5.1 | 6.9 | 5.2 | 6.1 | 5.1 | 4.8 | 7.5 | 6.8 | 6.1 | 5.6 | 5.6 | 6.3 | 4.5 | 5.6 | 5.3 | 6.0 |
| CROSSFIRE | 6.8 | 5.6 | 4.7 | 5.7 | 6.8 | 6.0 | 6.4 | 4.8 | 6.3 | 4.8 | 5.0 | 7.5 | 6.9 | 6.0 | 5.5 | 5.5 | 6.3 | 4.2 | 5.1 | 3.7 | 6.0 |
| AVANTI | 6.6 | 5.5 | 4.6 | 5.4 | 6.7 | 5.5 | 6.6 | 5.2 | 5.9 | 5.0 | 4.8 | 7.5 | 7.1 | 6.0 | 5.6 | 5.6 | 6.1 | 4.7 | 6.3 | 5.0 | 6.0 |
| VEGAS | 6.9 | 5.6 | 4.8 | 5.0 | 6.5 | 5.4 | 6.5 | 5.0 | 5.6 | 5.0 | 5.1 | 7.6 | 7.1 | 5.8 | 5.7 | 5.7 | 6.4 | 4.7 | 5.9 | 4.3 | 5.9 |
| TRIBUTE | 5.8 | 5.0 | 4.5 | 4.9 | 6.9 | 5.7 | 6.1 | 5.0 | 6.2 | 5.0 | 4.7 | 7.4 | 6.8 | 6.1 | 5.6 | 5.7 | 6.3 | 4.8 | 5.3 | 3.7 | 5.9 |
| PHOENIX | 5.9 | 5.0 | 4.8 | 5.5 | 7.0 | 5.5 | 6.0 | 5.2 | 6.1 | 4.8 | 5.1 | 7.2 | 6.7 | 6.2 | 5.6 | 5.7 | 5.9 | 4.9 | 5.7 | 2.3 | 5.9 |
| THOROUGHBRED | 5.8 | 5.3 | 4.6 | 4.7 | 6.9 | 5.6 | 5.7 | 5.2 | 6.3 | 4.1 | 4.8 | 7.2 | 6.6 | 6.0 | 5.3 | 5.5 | 6.0 | 4.8 | 6.6 | 5.7 | 5.9 |
| ELDORADO | 6.8 | 5.3 | 4.5 | 5.1 | 6.6 | 5.4 | 6.2 | 5.0 | 5.4 | 4.6 | 5.0 | 7.5 | 6.9 | 5.7 | 5.8 | 5.7 | 5.8 | 5.1 | 4.7 | 4.3 | 5.9 |
| SHORTSTOP | 6.3 | 5.5 | 4.5 | 4.6 | 6.5 | 5.3 | 6.4 | 5.0 | 5.1 | 4.5 | 4.7 | 7.6 | 7.0 | 6.0 | 5.5 | 5.8 | 6.4 | 4.4 | 6.0 | 6.3 | 5.9 |
| OLYMPIC II | 5.5 | 5.2 | 4.9 | 5.3 | 6.9 | 5.7 | 6.1 | 4.8 | 6.0 | 5.0 | 5.1 | 7.2 | 6.4 | 5.8 | 5.5 | 5.6 | 6.1 | 5.3 | 6.2 | 5.3 | 5.8 |
| REBEL II | 5.3 | 5.4 | 4.7 | 5.1 | 7.0 | 5.5 | 6.0 | 4.9 | 6.5 | 4.6 | 4.7 | 7.2 | 6.5 | 6.2 | 5.6 | 5.4 | 6.1 | 4.9 | 5.3 | 4.3 | 5.8 |
| BONANZA | 5.6 | 4.9 | 4.8 | 5.1 | 7.4 | 5.6 | 6.0 | 4.8 | 6.0 | 5.0 | 4.7 | 7.4 | 6.7 | 5.9 | 5.1 | 5.6 | 6.2 | 4.9 | 5.3 | 4.0 | 5.8 |
| WRANGLER | 5.7 | 5.2 | 5.0 | 5.2 | 7.0 | 5.6 | 6.2 | 5.2 | 5.8 | 4.7 | 4.6 | 7.3 | 6.4 | 6.0 | 5.4 | 5.4 | 6.1 | 5.1 | 4.4 | 4.7 | 5.8 |
| WINCHESTER | 6.1 | 5.0 | 4.2 | 4.9 | 6.9 | 5.5 | 5.4 | 4.9 | 6.1 | 4.9 | 4.5 | 7.3 | 6.7 | 5.9 | 5.6 | 5.7 | 5.9 | 5.3 | 5.6 | 6.7 | 5.8 |
| MAVERICK II | 6.5 | 5.4 | 4.8 | 5.3 | 6.5 | 5.6 | 5.9 | 4.6 | 6.0 | 5.0 | 4.7 | 7.3 | 6.8 | 5.8 | 5.5 | 5.5 | 6.3 | 5.3 | 6.7 | 4.0 | 5.8 |
| CHIEFTAIN | 5.9 | 5.4 | 4.9 | 5.6 | 7.3 | 5.6 | 6.2 | 5.1 | 6.3 | 4.8 | 4.4 | 7.2 | 6.5 | 5.9 | 5.6 | 5.7 | 6.1 | 4.9 | 5.7 | 3.3 | 5.8 |
| MESA | 5.5 | 4.5 | 4.5 | 4.7 | 6.9 | 5.5 | 5.8 | 4.9 | 5.5 | 4.5 | 4.8 | 7.1 | 6.6 | 6.0 | 5.0 | 5.5 | 6.1 | 4.9 | 5.0 | 5.7 | 5.8 |
| ANTHEM | 6.9 | 5.3 | 4.1 | 4.8 | 6.7 | 5.2 | 6.2 | 5.0 | 5.7 | 4.5 | 4.5 | 7.5 | 6.7 | 5.9 | 5.2 | 5.6 | 6.2 | 4.1 | 6.7 | 2.7 | 5.8 |
| TRAILBLAZER | 6.0 | 5.1 | 4.8 | 5.4 | 7.2 | 5.8 | 6.3 | 5.5 | 5.5 | 5.4 | 4.8 | 7.2 | 6.7 | 5.6 | 5.0 | 5.3 | 5.6 | 4.7 | 6.1 | 4.3 | 5.8 |
| ARRIBA | 6.3 | 5.2 | 4.7 | 5.2 | 6.8 | 5.6 | 6.0 | 5.2 | 6.1 | 4.8 | 4.6 | 7.3 | 6.3 | 6.1 | 5.3 | 5.6 | 6.2 | 4.5 | 4.4 | 5.7 | 5.8 |
| SILVERADO | 6.6 | 5.0 | 4.3 | 4.9 | 6.6 | 5.6 | 6.8 | 4.9 | 6.0 | 4.7 | 4.3 | 7.5 | 6.6 | 5.9 | 5.3 | 5.3 | 5.9 | 3.9 | 5.3 | 4.7 | 5.7 |
| OLYMPIC | 5.1 | 4.7 | 5.1 | 5.3 | 6.9 | 5.4 | 5.6 | 5.1 | 6.0 | 4.6 | 4.8 | 7.0 | 6.3 | 5.7 | 5.3 | 5.8 | 5.5 | 4.7 | 6.3 | 5.0 | 5.7 |
| JAGUAR II | 5.2 | 4.7 | 4.7 | 5.2 | 6.7 | 5.7 | 6.1 | 5.2 | 6.1 | 4.5 | 4.6 | 7.1 | 6.6 | 6.2 | 5.0 | 5.2 | 5.8 | 4.6 | 5.3 | 5.0 | 5.7 |
| TRADITION | 5.6 | 4.9 | 4.5 | 5.1 | 6.9 | 5.6 | 5.6 | 5.1 | 5.5 | 4.8 | 4.3 | 7.2 | 6.3 | 5.9 | 5.4 | 5.3 | 6.1 | 4.4 | 5.7 | 5.7 | 5.7 |
| TWILIGHT | 6.0 | 5.0 | 3.8 | 4.7 | 6.8 | 5.2 | 4.9 | 4.6 | 5.3 | 5.3 | 5.0 | 7.2 | 6.5 | 5.4 | 5.0 | 5.3 | 5.6 | 4.3 | 6.6 | 5.3 | 5.7 |
| SUNDANCE | 5.4 | 5.2 | 4.0 | 4.4 | 6.8 | 5.6 | 5.4 | 4.8 | 5.6 | 4.7 | 4.4 | 7.1 | 6.4 | 5.7 | 5.3 | 5.8 | 5.8 | 4.8 | 5.4 | 5.7 | 5.7 |
| APACHE | 5.1 | 4.9 | 4.6 | 5.0 | 7.0 | 5.5 | 5.6 | 5.1 | 5.8 | 4.9 | 4.3 | 6.9 | 6.7 | 5.9 | 5.7 | 5.4 | 5.6 | 5.2 | 6.5 | 2.0 | 5.7 |
| TITAN | 5.1 | 4.8 | 4.3 | 4.7 | 6.8 | 5.7 | 5.3 | 4.8 | 5.5 | 4.5 | 4.6 | 6.8 | 6.3 | 5.9 | 5.6 | 5.6 | 6.0 | 5.2 | 5.2 | 4.3 | 5.7 |
| BARNONE | 5.1 | 4.9 | 4.3 | 5.0 | 6.9 | 5.2 | 5.9 | 4.9 | 5.3 | 5.0 | 4.8 | 7.3 | 6.5 | 5.8 | 5.3 | 5.1 | 5.7 | 4.4 | 5.2 | 3.7 | 5.7 |
| TAURUS | 4.8 | 5.1 | 4.6 | 4.6 | 6.8 | 5.6 | 5.5 | 4.9 | 5.0 | 5.0 | 4.9 | 7.2 | 6.1 | 5.7 | 5.5 | 5.1 | 5.7 | 5.2 | 6.0 | 4.7 | 5.7 |
| BRAHMA | 5.7 | 4.8 | 4.5 | 5.0 | 6.7 | 5.4 | 5.9 | 4.9 | 5.1 | 4.8 | 4.8 | 7.1 | 6.5 | 5.4 | 5.4 | 5.4 | 5.3 | 4.4 | 5.2 | 4.3 | 5.7 |
| CIMARRON | 5.3 | 4.5 | 4.7 | 5.1 | 7.0 | 5.3 | 5.4 | 4.5 | 5.5 | 5.0 | 4.9 | 7.3 | 6.6 | 5.7 | 5.4 | 5.4 | 5.2 | 4.6 | 4.7 | 5.3 | 5.7 |
| ARID | 4.5 | 4.5 | 4.6 | 5.2 | 6.3 | 5.7 | 5.3 | 5.0 | 5.7 | 5.0 | 4.5 | 6.7 | 6.2 | 5.6 | 5.4 | 5.3 | 5.8 | 4.7 | 5.4 | 5.0 | 5.6 |
| FINELAWN 5GL | 4.7 | 4.6 | 4.3 | 4.9 | 7.1 | 5.5 | 5.6 | 5.0 | 5.2 | 4.9 | 4.3 | 6.9 | 6.3 | 5.8 | 5.5 | 5.5 | 5.8 | 5.2 | 5.8 | 5.0 | 5.6 |
| JAGUAR | 4.5 | 4.5 | 4.6 | 4.8 | 7.0 | 5.5 | 5.5 | 5.2 | 6.2 | 4.9 | 4.8 | 6.9 | 6.1 | 5.9 | 5.3 | 5.3 | 5.7 | 4.3 | 5.4 | 4.7 | 5.6 |
| REBEL | 4.3 | 4.3 | 4.7 | 5.1 | 6.6 | 5.5 | 5.0 | 5.1 | 6.0 | 4.7 | 4.5 | 6.8 | 6.1 | 5.9 | 5.3 | 5.2 | 5.5 | 4.7 | 5.7 | 5.3 | 5.6 |
| CAREFREE | 4.8 | 4.6 | 4.1 | 4.8 | 6.5 | 5.3 | 5.3 | 5.1 | 5.2 | 4.2 | 4.5 | 6.9 | 6.4 | 5.4 | 4.9 | 5.2 | 5.6 | 4.9 | 6.2 | 5.7 | 5.6 |
| MURIETTA | 5.5 | 4.7 | 4.3 | 4.8 | 6.8 | 5.3 | 5.9 | 4.9 | 5.5 | 4.5 | 4.0 | 7.2 | 6.4 | 5.3 | 4.7 | 5.0 | 5.9 | 4.6 | 6.0 | 4.3 | 5.6 |
| TRIDENT | 5.3 | 3.6 | 4.5 | 4.6 | 6.6 | 5.2 | 5.3 | 5.1 | 4.9 | 4.8 | 4.8 | 7.1 | 6.3 | 5.4 | 5.3 | 5.0 | 5.4 | 4.8 | 5.7 | 4.3 | 5.5 |
| ADVENTURE | 4.2 | 4.5 | 4.5 | 5.1 | 6.9 | 5.1 | 5.6 | 5.1 | 5.5 | 5.0 | 4.3 | 6.6 | 5.8 | 5.5 | 5.2 | 5.3 | 5.3 | 4.5 | 5.1 | 3.7 | 5.5 |
| EMPEROR | 5.7 | 4.7 | 3.8 | 4.3 | 6.3 | 5.2 | 5.8 | 4.6 | 5.3 | 4.6 | 4.7 | 7.1 | 6.8 | 5.6 | 4.7 | 5.3 | 5.8 | 3.8 | 4.8 | 5.0 | 5.5 |
| FALCON | 3.9 | 4.1 | 4.4 | 4.8 | 6.9 | 5.5 | 4.9 | 4.9 | 5.4 | 4.8 | 5.0 | 6.4 | 5.8 | 5.6 | 5.3 | 5.3 | 5.5 | 4.8 | 5.2 | 6.3 | 5.4 |
| PACER | 3.6 | 4.2 | 4.1 | 4.4 | 6.4 | 5.6 | 4.5 | 4.8 | 4.8 | 4.7 | 4.7 | 6.6 | 5.6 | 5.2 | 5.1 | 4.9 | 5.4 | 4.7 | 5.7 | 5.3 | 5.4 |
| FINELAWN I | 3.9 | 3.8 | 3.9 | 4.3 | 6.8 | 5.5 | 4.7 | 5.0 | 5.5 | 4.6 | 4.3 | 6.4 | 5.6 | 5.3 | 5.2 | 5.0 | 5.4 | 4.9 | 4.4 | 3.7 | 5.3 |
| WILLAMETTE | 3.9 | 3.3 | 4.3 | 4.7 | 6.9 | 5.3 | 4.7 | 4.7 | 4.7 | 4.7 | 4.4 | 6.4 | 5.7 | 5.3 | 4.8 | 5.1 | 5.1 | 4.7 | 6.1 | 3.0 | 5.3 |
| RICHMOND | 3.6 | 4.0 | 4.1 | 4.6 | 6.2 | 5.3 | 4.7 | 4.6 | 5.1 | 4.3 | 4.8 | 6.5 | 5.6 | 5.2 | 4.7 | 4.8 | 5.3 | 4.6 | 5.4 | 3.3 | 5.2 |
| AQUARA | 3.6 | 3.7 | 3.9 | 4.2 | 6.8 | 5.2 | 4.5 | 4.7 | 4.1 | 4.5 | 4.6 | 6.0 | 5.8 | 5.2 | 5.0 | 5.1 | 5.2 | 4.4 | 5.1 | 5.0 | 5.2 |
| FATIMA | 3.3 | 3.6 | 4.0 | 4.4 | 6.4 | 5.5 | 4.5 | 4.7 | 4.6 | 4.4 | 4.3 | 6.3 | 5.5 | 5.6 | 5.0 | 5.3 | 5.2 | 4.6 | 5.6 | 1.7 | 5.2 |
| TIP | 3.3 | 3.5 | 3.6 | 4.0 | 6.4 | 5.5 | 4.6 | 4.9 | 4.9 | 4.6 | 4.8 | 6.3 | 5.6 | 5.2 | 5.1 | 5.0 | 5.0 | 4.6 | 5.4 | 5.0 | 5.1 |
| K4－31 | 2.4 | 3.1 | 3.5 | 3.9 | 6.4 | 5.4 | 3.4 | 4.6 | 4.1 | 4.4 | 4.2 | 5.1 | 4.6 | 5.0 | 5.1 | 4.5 | 4.4 | 4.3 | 4.3 | 3.7 | 4.7 |
| LSD | 0.5 | 0.4 | 0.6 | 0.5 | 0.5 | 0.5 | 0.4 | 0.6 | 0.8 | 0.8 | 0.9 | 0.4 | 0.3 | 0.3 | 0.5 | 0.5 | 0.3 | 0.7 | 1.1 | 2.9 | 0.1 |

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# Low-water-use zones in the landscape 

## If you can group plants by water requirements at the design stage of a landscape, you'll end up saving clients water.

- You don't have to turn to desert plants to conserve water, says Ray Rothenberger, an extension agent for the University of Missouri-Columbia.

To make landscapes more water-efficient, you need to group plants into at least three major water-use areas based on yearly water needs, Rothenberger says. These zones will fit most sites, but some landscapes will use only one or two. The idea is to keep the zones separate so that only the water necessary is used.

Low-water-use zones in the landscape receive no additional watering after plants are established. Natural rainfall is the only water source, even during a drought. Plant examples for this zone include native perennials and shrubs such as forsythia.
"A good way to determine which plants will endure in a landscape without extra water is to observe the native plants," Rothenberger says.

In the moderate zone, water is added during establishment and drought stress. Plants selected for this zone, Rothenberger says, should be drought tolerant, such as needled evergreens.

Plants located in the high-water-use zone are watered when needed. In this zone, plants are selected for special needs or hobby interests of the residents. Without regular watering, these plants will not survive even minimal drought stress without damage, he says.

Rothenberger suggests that these higher use areas be focal points in the landscape and kept green and attractive at all times. Examples include azaleas, rhododendrons and annual flowers.

Rothenberger says plants in the highuse category need an inch of water a week; in 80-90 degree weather, two inches of water is needed. "This is rainfall and watering for total watering, so a rain gauge is important," he observes.
"If overhead sprinklers are used," he continues, "scatter some large cans around to gauge the time it takes the sprinkler to fill an inch.
"If you get some run-off, stop for a


Breaking up a client's landscape into 'hydrozones' can help solve irrigation problems. Further refinement can be made by 'grouping' plants according to water requirements when designing the property.
while and let the water soak in. After a couple of times, you'll know roughly whether it took an hour or two hours to accumulate that water that is needed."

Generalizations about soil are hard to make because there are so many different types, slopes and infiltration rates.
"People have done this for a long time, but we have had a number of droughts and the rainfall continues to be erratic," Rothenberger notes. "So the people who prepare will have less expense and lose fewer plants. A well-planned, water-efficient landscape will better survive without spending a lot of time and money watering."

The same principles can be used in determining "hydrozones" of your clients' landscapes, according to Marsha Prillwitz of the California Department of Water Resources.
"Grouping plants together in a hydrozone area is one way to save water in the long run," she says. "We have very little scientific data on plant water needs. But we do have very good data on turf and we know native plants don't need any supplemental irrigation."

# Going native in urban landscapes 

- A native plant is any tree, shrub or flower that occurs naturally in a region and is ideally suited to grow there.
"When appropriately placed in the landscape, native plants will grow as they do in their natural habitat with a minimum of care," says Dr. John Frett, ornamental horticulture professor at the University of Delaware.
"If you're pampering a native plant, the most likely reason is an unsuitable location."

Examples:

- The beech tree does well in a woodland setting, but it doesn't stand up to the compact soils, foot traffic and concentrated car exhaust of populated areas.
- "The spiceplant grows well, requires little maintenance and provides a nice complement to trees and perennials" in Delaware.
- "Mountain clethra is another example of a hardy plant, which in winter displays its beautiful multi-colored, peeling bark, adding interest to an otherwise bare landscape."
- Though they are non-native to Delaware, the Norway maple, bridal-veil spirea and Chinese dogwood have thrived there for a long time.


[^0]:    34 Landscape Management, January 1993

