

# Versatile Nativegrasses and a Groundcover for the Arid Southwest U.S.A.

Worku Burayu and Kai Umeda

The University of Arizona Cooperative Extension, Phoenix, AZ 85040  
Corresponding author's e-mail: workuburayu@email.arizona.edu



## Background

Finding horticultural plant materials appropriate for landscaping needs of the southwest necessitates the evaluation of low input turf alternative nativegrasses and a groundcover in low desert Arizona.

## Objectives

1. Assess 2 varieties of Kurapia under 3 levels of drip irrigation,
2. Evaluate nativegrasses under arid desert conditions,
3. Produce local research-based information,
4. Enhance the awareness by turf and landscape managers.

## Materials and Methods

Experimental studies were initiated in Litchfield Park, AZ:

(1) Two varieties of kurapia (*Lippia nodiflora*) were planted from 4-liters pots in 10 m<sup>2</sup> plots on May 13, 2019 and evaluated for their establishment and performance under optimum overhead irrigation. One year later, the white and pink varieties were further investigated for their overall quality under three drip irrigation rates at 20%, 40%, and 80% of rates typically applied on bermudagrass.

(2) Ten nativegrasses species were seeded into 6 m<sup>2</sup> plots on June 25, 2019 and established with overhead sprinkler irrigation. After establishment, species were further evaluated for their performance and adaptation under arid natural conditions.

Field plots for both experiments were arranged in a randomized complete block design with 4 replicates. Data were analyzed using JMP ver. 14 statistical software and means compared using Student's t-test.

**Table 1.** Nativegrasses (6m<sup>2</sup>) and Kurapia (10m<sup>2</sup>) planted at Wigwam Golf Club, Litchfield Park, AZ, 2019

Common name	Scientific name	(gm/plot)
Alkali sacaton	<i>Sporobolus aeroides</i>	6.00
Little Bluestem	<i>Schizachyrium scoparium</i>	3.00
Sand Bluestem	<i>Andropogon hallii</i>	3.00
Buffalograss	<i>Bouteloua dactyloides</i>	348.00
Blue Grama	<i>Bouteloua gracilis</i>	8.00
Sideoats Grama	<i>Bouteloua curtipendula</i>	8.00
Galleta 'Viva'	<i>Hilaria jamesii</i>	280.00
Sand Lovegrass	<i>Eragrostis trichodes</i>	2.00
Purple Threawn	<i>Aristida purpurea</i>	6.00
Sand dropseed	<i>Sporobolus cryptandrus</i>	3.00
Kurapia	<i>Lippia nodiflora</i>	1 gallon

## Acknowledgements

This project was supported in part by the Specialty Crop Block Grant Program of the U.S. Department of Agriculture (USDA) and the United States Golf Association (USGA). We thank Kurapia Inc. for providing plant materials and Wigwam Golf Club for providing experimental sites to conduct this study.

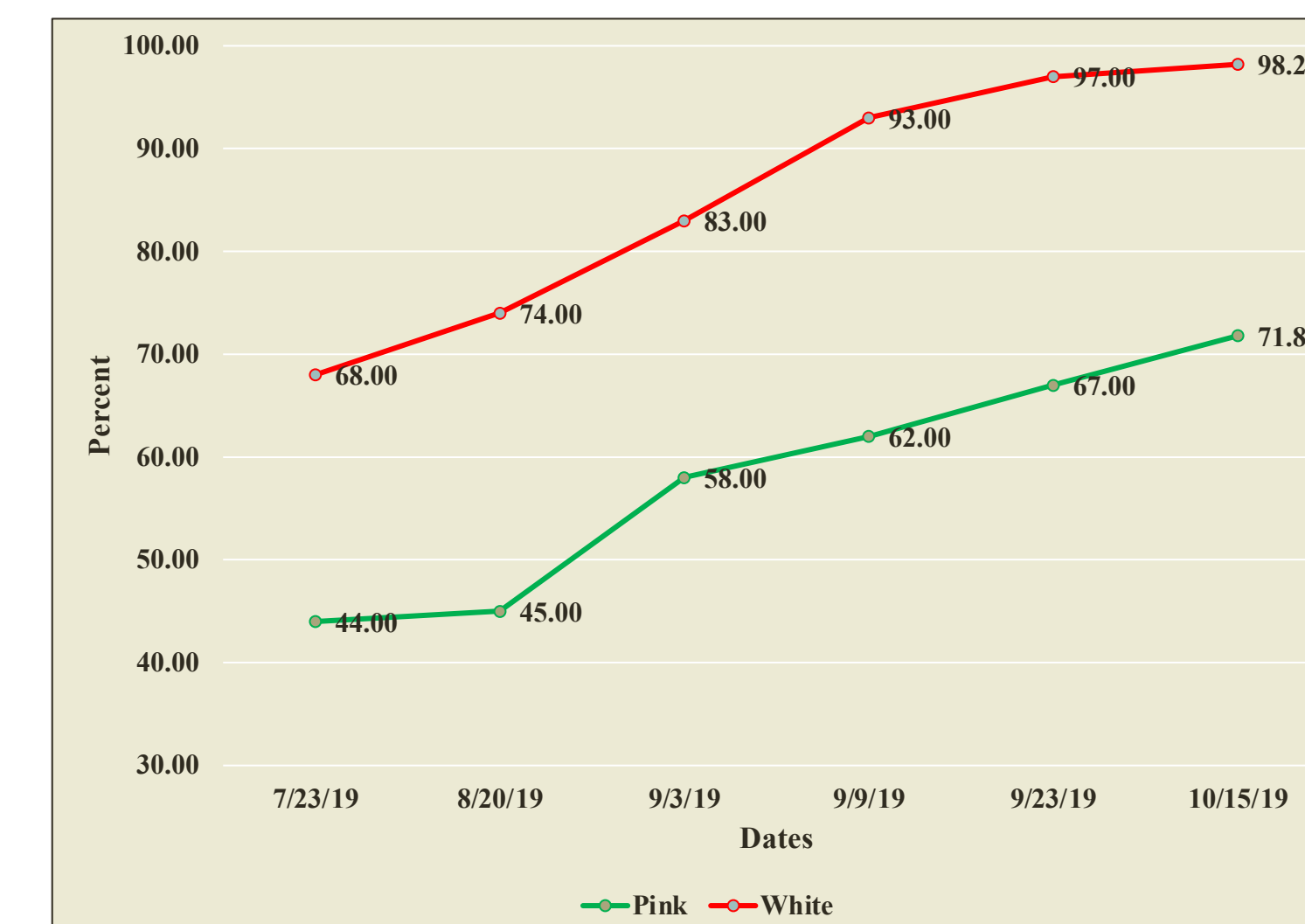
## Results

### 1. Kurapia

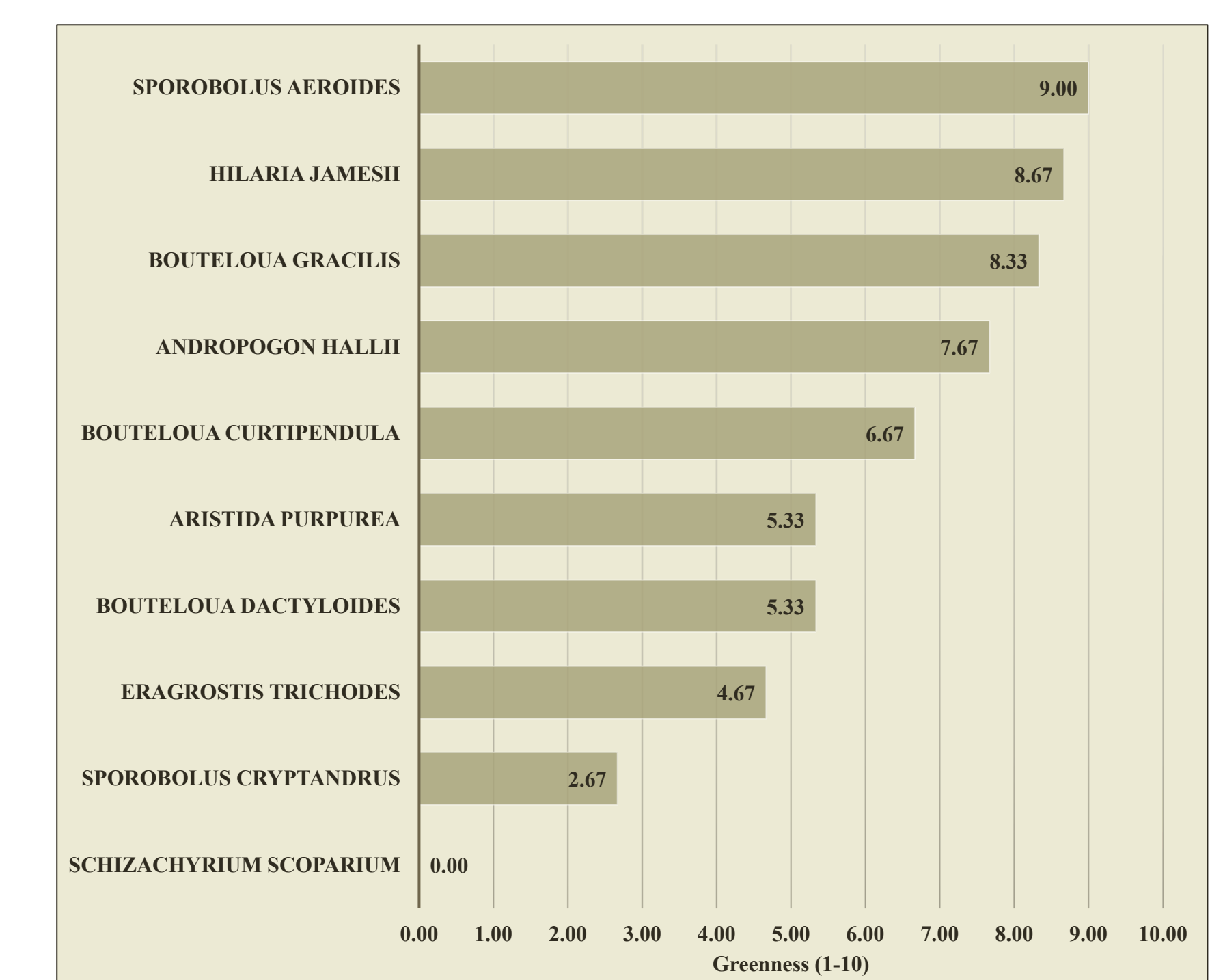
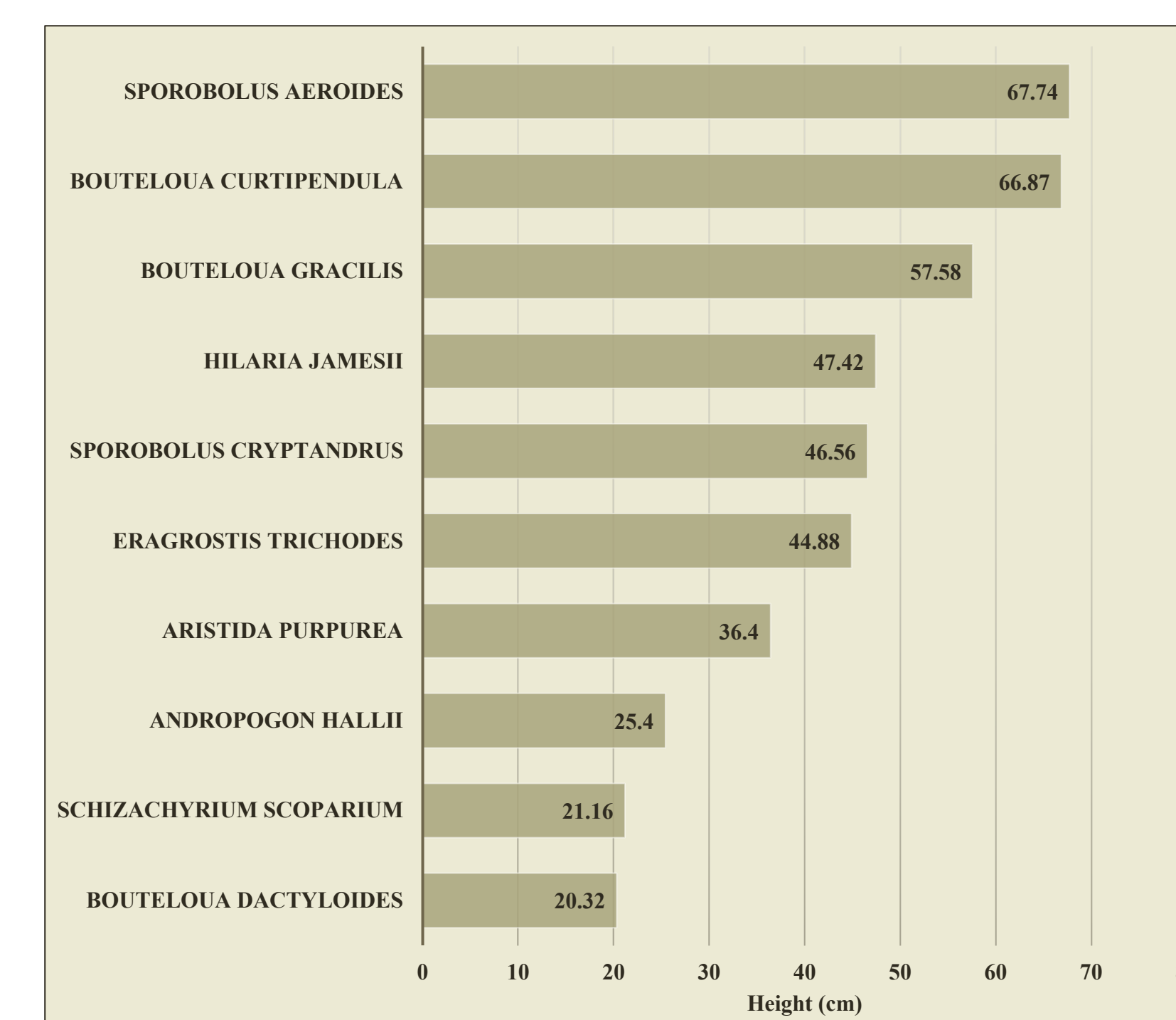
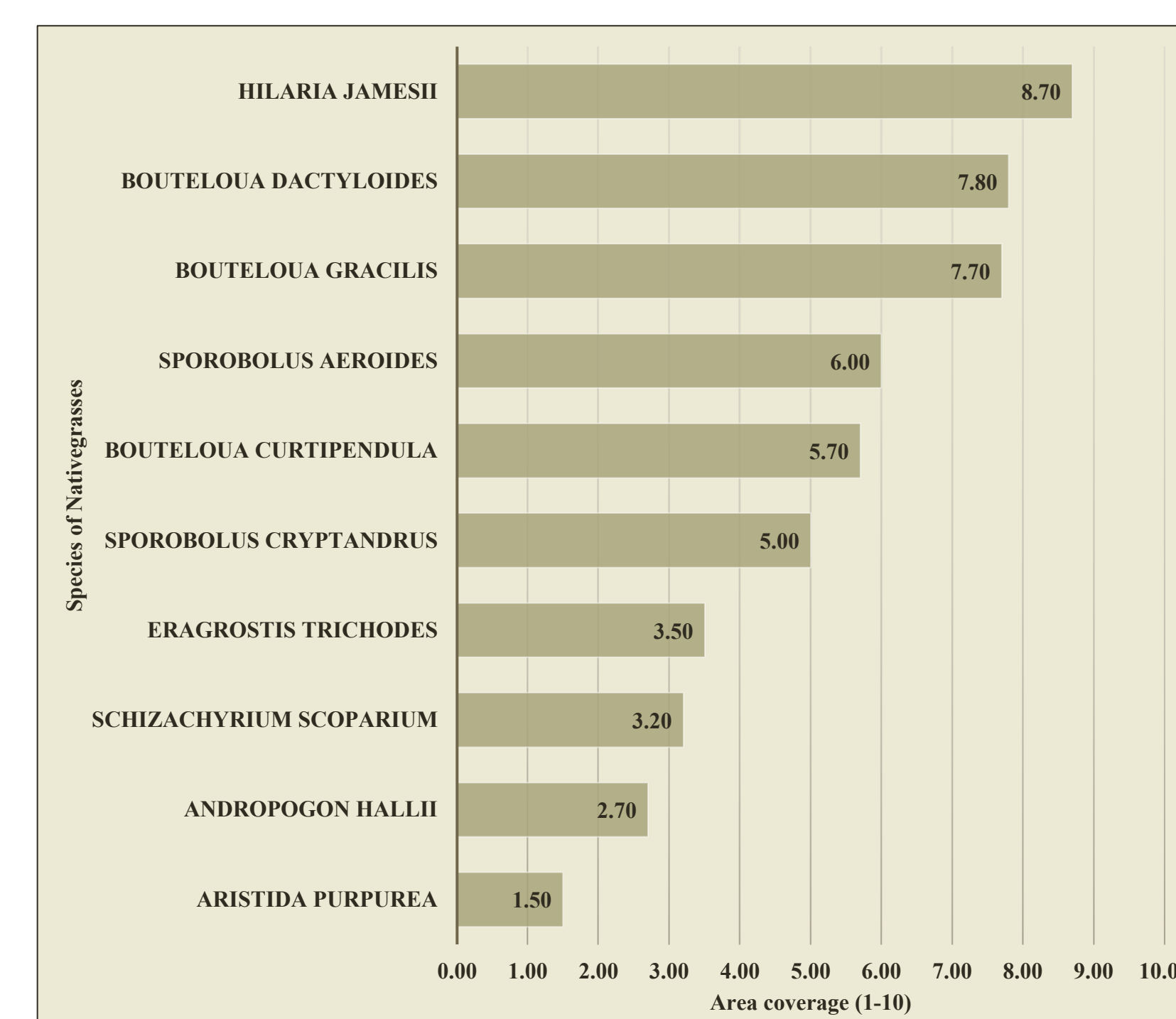
- White flower variety covered about 98% of the area (10 m<sup>2</sup>) and grew 2 inches in height,
- Pink flower variety covered 72% of the area (10 m<sup>2</sup>) and grew 3.4 inches in height,
- Both varieties remained green throughout the year with acceptable quality values of  $\geq 6$  (1=brown, 9= dark green),
- The white flower variety tended to spread more compared to the more dense, compact, and taller pink flower variety,
- No significant difference observed between 40 and 80% irrigation rates for growth and quality of Kurapia while 20% was not visibly sufficient,
- Kurapia can be grown successfully at 40% irrigation rate relative to bermudagrass.

### 2. Nativegrasses

- Nativegrasses performed at varying levels for establishment, providing surface area coverage, and overall plant quality.
- Nine out of ten species emerged and established a stand to cover the plot area ranging from 26% to 87% within 20 weeks.
- Species grew from 20 cm to 68 cm in height in 16 weeks after planting.
- *A. purpurea*, *S. aeroides*, *E. trichodes* and *B. gracilis* remained green throughout the year with acceptable quality values of  $\geq 5$  for greenness.



**Figure 1.** Establishment of white and pink flower varieties of Kurapia (left) and their area coverage (middle); and nine of the ten nativegrasses established in Litchfield Park, AZ (right) in 2019. Note: Significant flower shedding was observed in both varieties of Kurapia at 20% rates.



**Figure 2.** Area coverage (left), height (middle) and greenness of nativegrasses (right) under arid natural field conditions, in Litchfield Park, AZ in 2019/2020.



**Figure 3.** Greenness, area coverage, even growth and aesthetic value of groundcovers under three drip irrigation rates from May to September 2020. Note: the significant lack of performance of Kurapia at 20% compared to 40% and 80% irrigation rates relative to bermudagrass. No significant differences in growth and overall quality were observed between the 40% and 80% rates.

## Conclusion

- Both white and pink varieties of Kurapia established 100% from 4-liters pots and remained green throughout the year;
- Kurapia can be grown successfully at 40% irrigation rate relative to bermudagrass with drip irrigation;
- Nativegrasses performed at varying levels for establishment, providing surface area coverage, and overall plant quality.
- Uniform irrigation is required to obtain even establishment and full area coverage for both Kurapia and nativegrasses.