

Improving Curly Mesquite (*Hilaria belangeri*) for Turfgrass Use in Oklahoma

► James R. Underwood¹, Dennis L. Martin¹, Justine Quetone Moss¹, Yanqi Wu²



Curly Mesquite Identification Plot 2014



Curly Mesquite Seedlings in Plug Trays 2014



Close Up of Curly Mesquite 2014

Introduction

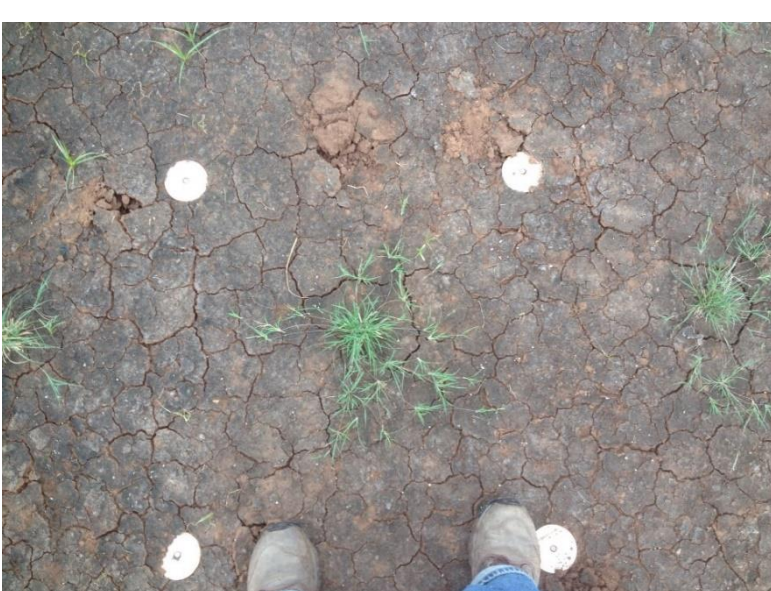
- There is a growing interest and need for drought tolerant native grasses for the turfgrass market
- Curly mesquite (*Hilaria belangeri*) is a xeric warm-season grass native to the southwestern United States that fits the drought tolerant native grass niche and has received little attention
- Turfgrass attributes of curly mesquite (Ralowicz, 1991)
 - Perennial growth
 - Low stature
 - Tolerance to defoliation
 - Fine leaf texture
 - Asexual spread by stolons
 - Establishment by seed
- Habiturf® marketed to Arizona, Texas, New Mexico and Oklahoma uses a mix of buffalograss, blue grama and curly mesquite as a native lawn option (LJWC, 2016)
- Curly mesquite has regularly winter-killed at Stillwater, OK (J. Underwood, unpublished) and herbarium specimens from USDA cold hardiness zone 7a are few (USDA-NRCS, 2016)
- No cultivars of curly mesquite have been released to the public

Objectives:

- Select for cold tolerance of curly mesquite in Oklahoma
- Select for low mowing height tolerance in curly mesquite
- Select for acceptable density in curly mesquite

Goal:

- Develop a breeding population of curly mesquite with improved winter-hardiness and turf-type performance traits



Curly Mesquite Entry Summer 2015



Curly Mesquite Trial Summer 2015



Curly Mesquite Trial Fall 2015



Curly Mesquite Trial Winter 2015



Improved Curly Mesquite Trial Summer 2016



Improved Curly Mesquite Entry Fall 2016

Materials and Methods

Location: The Botanic Garden at OSU 1.6 km west of Stillwater, OK

Greenhouse:

- Seeded August – September 2014
- 72 plug-flat trays 4 cm diameter by 8 cm depth
- 1 – 3 seeds per cell: when more than one seedling was present one was left in the cell and others were relocated to empty cells
- Trimmed weekly at 5cm height from top of plug-tray
- Fertilized 3x weekly once symptoms of low nutrients were present with a 20-20-20 [20-8.5-16.5 N:P:K] water soluble fertilizer as per label
- 15 plug-trays were used
- 1012 plants were moved into field trial

Field:

- Planted late July 2015 into a non-replicated, single space plant trial
- Plugged 61 cm off-center
- Watered frequently to maximize grow-in
- Mowed weekly at 5cm
- Fertilized 4.9g N m² from 17-17-17 [17-7.5-14 N:P:K] at time of plugging
- Fertilized 4.9g N m² from Urea [46-0-0 N:P:K] once per month of growing season

Ratings:

- Establishment: 1 – 9 scale, (9 = best) based on rapid growth characteristics and live green cover taken every two weeks of growing season
- Turf Quality: 1 – 9 scale, (9 = best) based on the cover, texture, density, and color taken every two weeks of growing season
- Winter Survival: Nov. 13, 2015 establishment rating – May 5, 2016 establishment rating; smaller number is better

Selection:

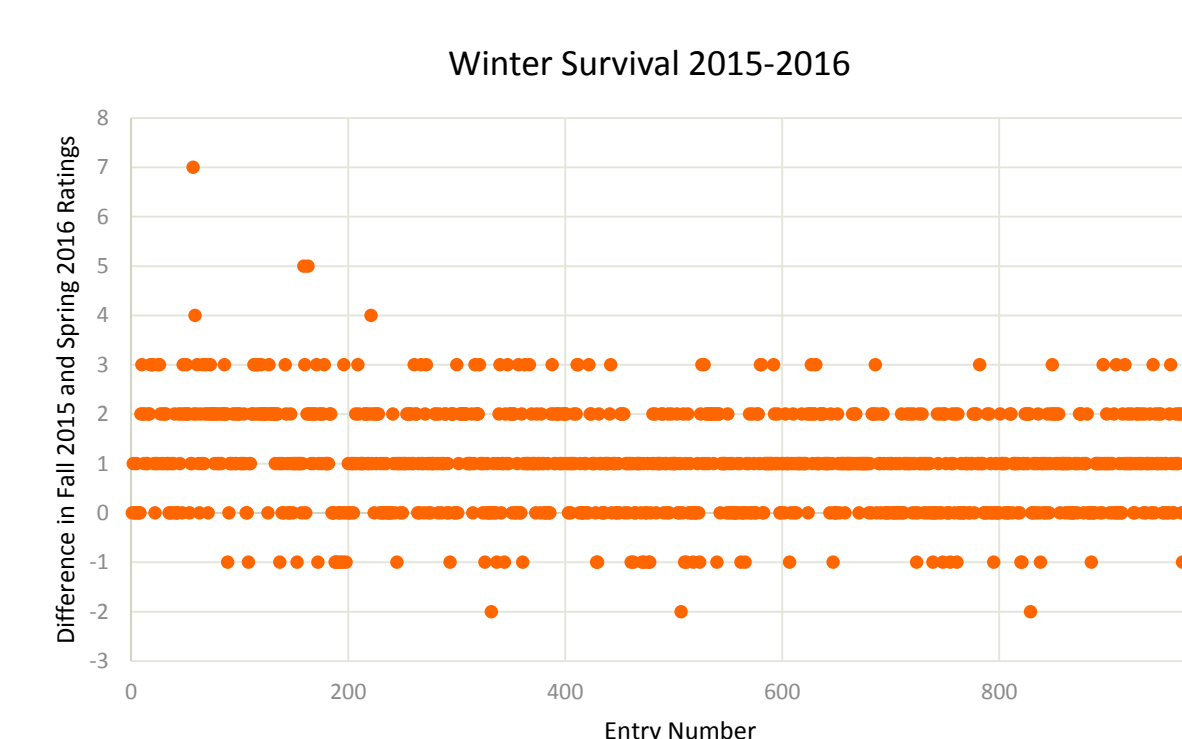
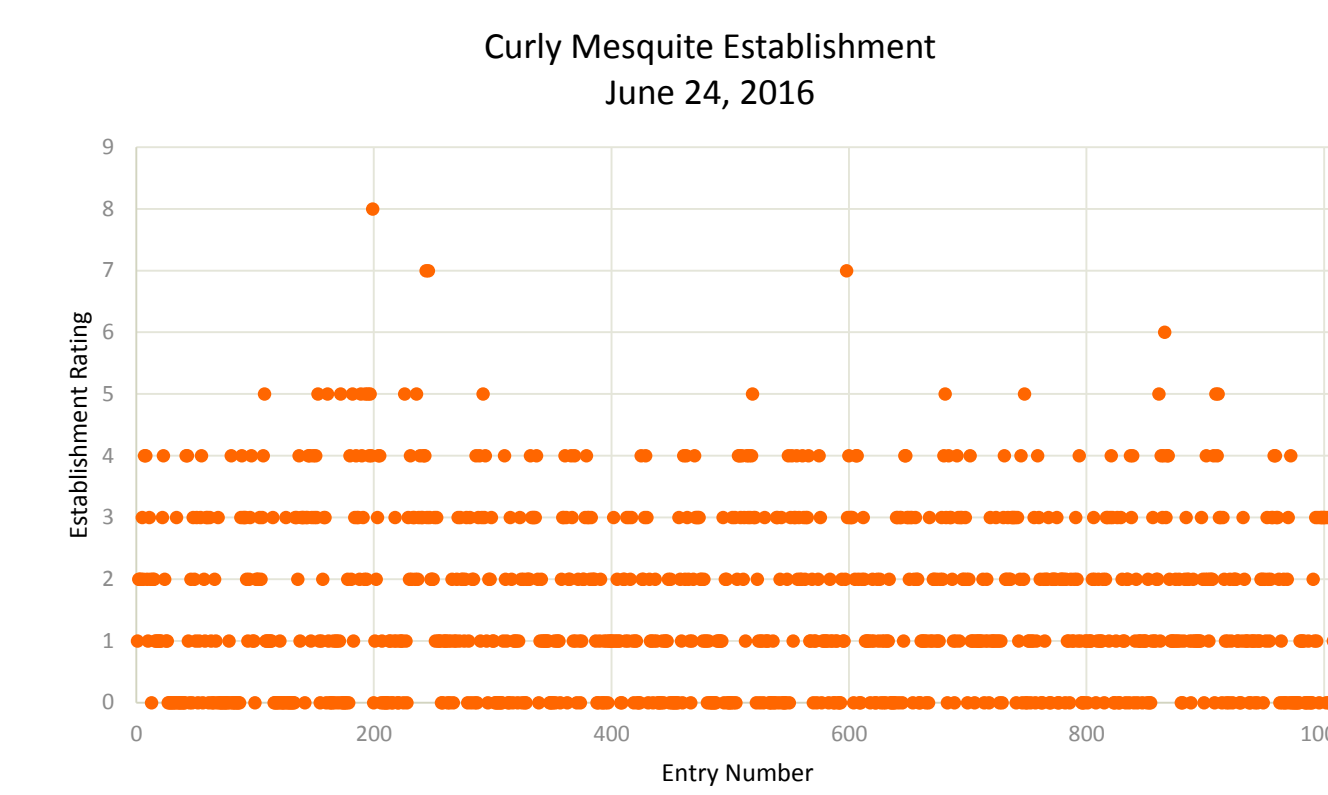
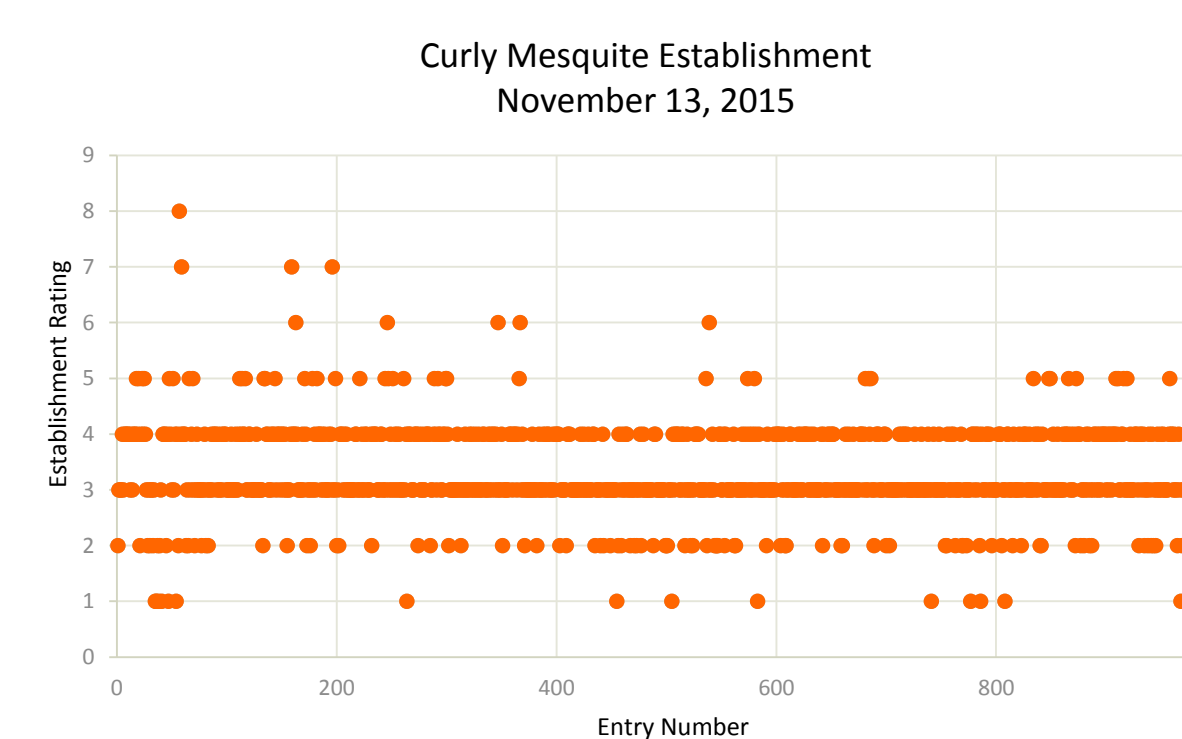
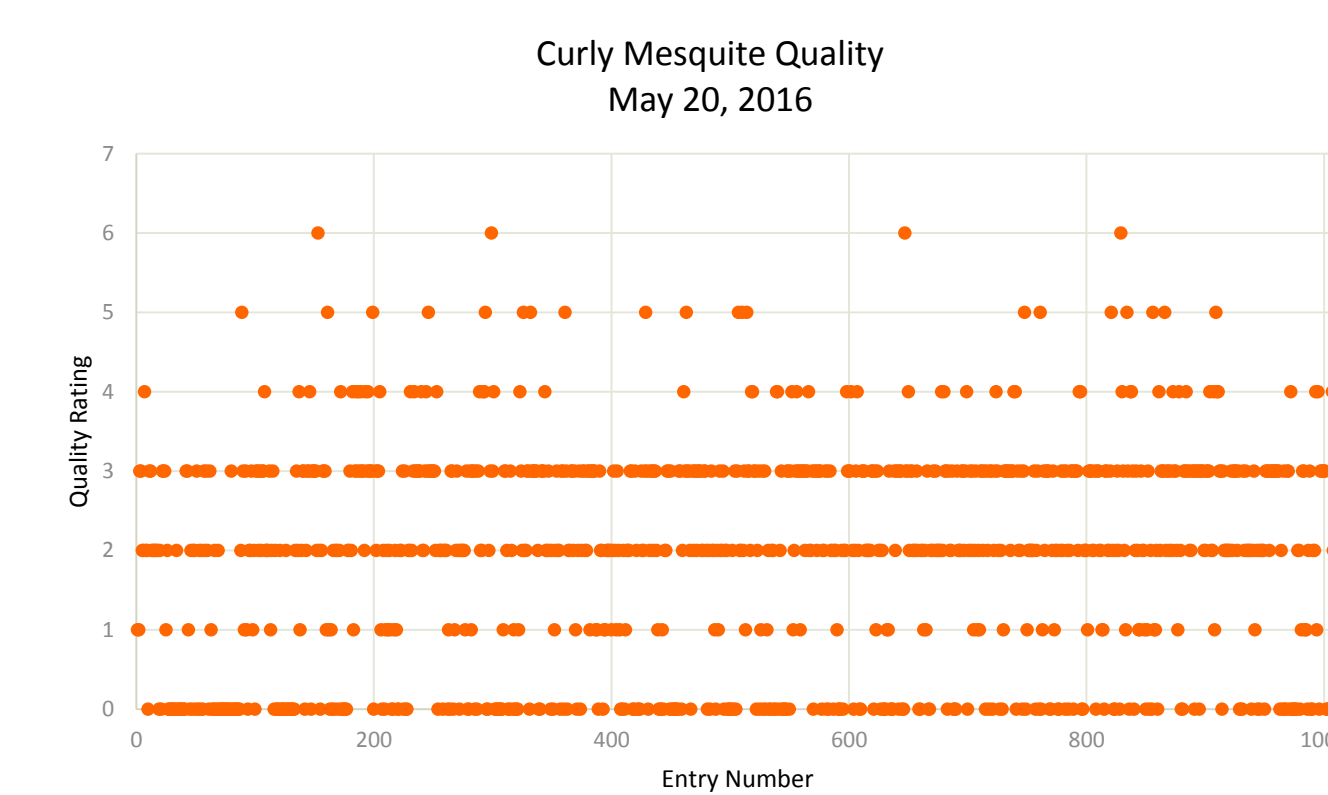
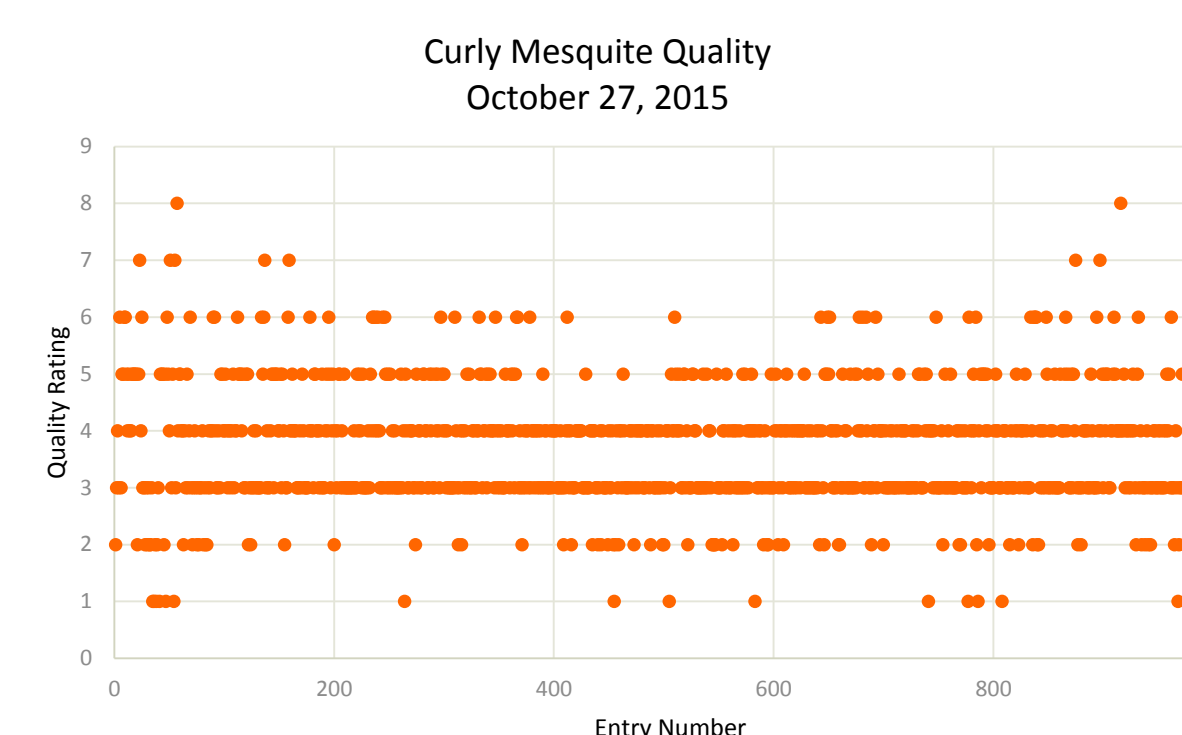
- Based on sorting data
- Best 2016 Quality Ratings (Score of 5 or better)
- Best of 2016 Establishment Ratings (Score of 5 or better)
- Best of Winter Survival Rating (Score of 0 or less)
- Entry was required to be present in 2 of 3 of these categories
- Entry could not have a difference of more than 1 unit of score below top grouping in all categories

Results:

- 40 entries made at least 1 top grouping
- 25 entries selected for advanced trial

Advanced Trial:

- Planted 2 replications of 11 cm dia x 10 cm depth plugs on June 28, 2016
- Plot size 107 cm x 107 cm
- Percent Cover evaluated visually and with Sigma Scan



Acknowledgements

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References

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