



Kika de la Garza Plant Materials Center

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A GERMINATION STUDY OF EIGHTEEN ACCESSIONS OF TEXAS KIDNEYWOOD

ABSTRACT

Texas kidneywood (*Eysenhardtia texana*) is also known as 'bee brush' and 'vara dulce'. It is a warm-season, perennial shrub that is native to parts of Texas and Mexico. In Texas, it can be found in the Trans-Pecos, Edwards Plateau, Southern Coastal Prairie and Rio Grande Plains regions. It has sweet-smelling white flowers and its leaves are browsed by white-tailed deer. Eighteen accessions of Texas kidneywood are currently being evaluated at Kika de la Garza Plant Materials Center in Kingsville, Texas. This study evaluates germination for each of the eighteen kidneywood accessions. Germination for seed from individual accessions ranged from twenty-six percent to ninety-four percent, with a species average of approximately fifty percent germination.

INTRODUCTION

Texas kidneywood (*Eysenhardtia texana*) is a warm-season, native, perennial, unarmed shrub that grows 2-3 meters in height (Correll & Johnston, 1996). Also called 'bee brush' (Jones, 1982) and 'vara dulce' (Everitt & Drawe, 1993) it is a member of the legume (leguminosae) family. It grows in Texas and south into Mexico (Correll & Johnston, 1996). In Texas, it can be found in the Trans-Pecos, Edwards Plateau, Southern Coastal Prairie and Rio Grande Plains regions (Correll & Johnston, 1996; Hatch, Gandhi, & Brown 1990). It tends to prefer calcareous soils and is found as part of brushy, chaparral vegetation (Correll & Johnston, 1996; Everitt & Drawe, 1993). Its spiky white flowers are sweet-smelling (Jones, 1982). The vegetative parts of the kidneywood give off a citrusy odor when crushed (Nokes, 1986). Its leaves are browsed by livestock (Whisenant & Ueckert, 1982), white-tailed deer (Everitt & Drawe, 1993) and mule deer (Krausman, 1978). Steve Nelle (1984) considered it an "ice cream" plant for deer diet in South Texas, meaning that the Texas Kidneywood is both highly palatable and highly nutritious. It is also of ornamental value (Nokes, 1986). This is a good plant for use in deer food plots, and for native plant restoration projects.

In the summer of 1993, an initial evaluation plot was planted in Block C at Kika de la Garza PMC in Kingsville, Texas. It contained two replications of

eighteen Texas accessions. The plot has been evaluated over the years, but it has been difficult to select a particular accession because of the high degree of variability of the plants within each accession. The objective of this study is to evaluate seed germination for each of the eighteen Texas kidneywood accessions that are currently being evaluated at the PMC.

MATERIALS AND METHODS

Eighteen different accessions of Texas kidneywood seed from the original collection were used for this germination study. Most of the seed was collected in 1983 and 1984; however one accession was collected in 1964, two in 1985, one in 1987, and one in 1993. For each test, fifty seeds from one of the eighteen accessions were placed on two sheets of germination blotter that had been premoistened with deionized water. The blotters were then set into separate plastic trays with lids, and the trays were labeled with the appropriate accession number. The trays were then placed in a germination chamber, which was set at 68^of for twelve hours of darkness, and 86^of for twelve hours of light. Trays were checked daily for germination for 21 days, and the blotter paper was remoistened as needed. Seeds were considered germinated when the radicle extended at least ½ the length of the seed.

The study was conducted in two segments due to limited space in the germination chamber. Each segment consisted of fifty seeds from each of the nine accessions that had been randomly selected from the original eighteen accessions to be tested as part of that segment. Segment one began on July 5, 1999 and continued until July 26, 1999. It consisted of accessions: 9045792 (Hebbronville, TX), 9038759 (Georgetown, TX), 9038785 (Rock Springs, TX), 9045794 (Burnet, TX), 9038767 (Temple, TX), 9038784 (Victoria, TX), 9038765 (Seguin, TX), 9045777 (San Marcos, TX), and 9045808 (Austin, TX). Segment two began on July 26, 1999 and continued until August 16, 1999. Segment two accessions were: 9045768 (Victoria Cty., TX), 9045787 (Edinburg, TX), 9038810 (Tilden, TX), 9045767 (Seguin, TX), 9045776 (San Marcos, TX), 9009369 (Crystal City), 9038803 (Lampasas, TX), 9064429 (Starr Cty., TX), and 9055736 (Kenedy, TX).

RESULTS AND DISCUSSION

Statistical analyses were run using SPSS 9.0 for Windows. A table of descriptives and a one-way ANOVA was run to determine if there was a significant difference in germination between segments. No significant differences between segments were found. Segment one had an average germination of 48.22 percent, while segment two had an average germination of approximately 50.00 percent. Average germination for all eighteen accessions was 49.11 percent.

Germination in the kidneywood seed occurred from day two of the study until day eighteen, with most of the germination occurring between day two and day twelve. Germination for the study ranged from a low of twenty-six percent germination (#38767) to a high of ninety-four percent (#45794). Most of the accessions had germination rates between forty and sixty percent. Table 1 shows the germination rate for each of the eighteen accessions.

Table 1

**GERMINATION RATES FOR EIGHTEEN ACCESSIONS OF TEXAS
KIDNEYWOOD**

Accession #	Test Segment	Germination %	Original Collection Location in Texas	Collection Year
9045794	1	94	Burnet	1985
9045792	1	68	Hebbronville	1984
9038810	2	60	Tilden	1983
9055736	2	60	Kenedy	1987
9045776	2	58	San Marcos	1984
9038765	1	52	Sequin	1983
9045767	2	50	Sequin	1984
9064429	2	50	Starr County	1993
9038785	1	46	Rocksprings	1983
9045787	2	46	Edinburg	1984
9038803	2	46	Lampasas	1983
9045777	1	44	San Marcos	1984
9045768	2	44	Victoria County	1984
9045808	1	40	Austin	1985
9009369	2	36	Crystal City	1964
9038759	1	32	Georgetown	1983
9038784	1	32	Victoria	1983
9038767	1	26	Temple	1983

Several things impressed us during this germination study. First, the seed from one accession, #9009369, was collected twenty-five years ago (1964), and still had thirty-six percent germination. This indicates that the seed from the Texas kidneywood can remain viable for a long time when stored in cool, dry, conditions. The high germination rate (94%) of accession # 9055794 also offers support for long-term seed viability. Additionally it is a good indication of the high germination potential for this species. The overall germination average of the

eighteen accession composite (49.11%) was also promising, especially when you consider that the seed was six to twenty-five years old. In addition, this seed germinated very quickly. Within two days, eleven of the eighteen accessions had some germinated seeds. By the third day, all eighteen accessions had seeds germinated. Finally, when seeds are removed from the pods, no prior treatment is needed for seeds to germinate.

REFERENCES

Correll, D. S., and Johnston, M.C., (1996). *Manual of the Vascular Plants of Texas*. Richardson, TX: The University of Texas at Dallas.

Everitt, J.H. and Drawe, D. L. (1993). *Trees, Shrubs, and Cacti of South Texas*. Lubbock, TX: Texas Tech University Press.

Hatch, S. L., Gandhi, K.N., and Brown, L.E. (1990). *Checklist of the Vascular Plants of Texas*. College Station, TX: Texas Agricultural Experiment Station.

Jones, F. B., (1982). *Flora of the Texas Coastal Bend*. Sinton, TX: Welder Wildlife Foundation.

Krausman, P. R. (1978). Forage relationships between two deer species in Big Bend National Park, Texas. *Journal of Wildlife Management*, 42, 101-107.

Nelle, S. (1984). *Key Food plants for Deer – South Texas*. From the proceedings of the International Ranchers Roundup, San Angelo, TX, 281-289.

Nokes, J. (1986). *How to Grow Native Plants of Texas and the Southwest*. Houston, TX: Gulf Publishing

Whisenant, S.G., and Ueckert, D. N. (1982). Germination responses of *Eysenhardtia texana* and *Leucaena retusa*. *Journal of Range Management*, 35 (6), 748-750.

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