

# History, Status and Management of Lehmann Lovegrass

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Southern Arizona displays a dry, hot climate with much of the vegetation being desert or desert grassland. Because of past land uses, rangelands were degraded with a resulting loss of native perennial grasses. This gave many non-native species an opportunity to invade the rangelands and displace native grasses. One such non-native grass is Lehmann lovegrass.

The presence of Lehmann lovegrass in southern Arizona has an interesting history. Lehmann lovegrass is a native of South Africa. It is an early successional species and is short lived in plant communities due to the competitiveness of other plants, including other lovegrasses.

Lehmann lovegrass was introduced to Arizona in 1932. Maria Wilman, a museum curator and botanist from South Africa, sent a series of seeds to F.J. Crider at the Boyce Thompson Arboretum in Superior, Arizona. Crider set up a series of screening tests that evaluated the establishment and persistence of the seeds. One group of seeds matured quickly and produced seed heads within one growing season. This group of seeds was selected for future use in revegetation projects.

The search for a species that could be used for revegetation was initiated for several historical reasons. Between 1890 and 1930, wet periods with abundant forage were followed by overstocking.

These periods were each followed by a severe drought season. With each cycle perennial grass productivity declined and grasslands supported fewer livestock. In the mid-1930's attempts were made to restore grassland productivity with native grasses, but most plantings failed because the native grass seedlings could not compete with shrubs. In 1937 Lehmann lovegrass was identified in an international search for grasses that would revegetate degraded areas. The seeding of Lehmann lovegrass was strongly promoted and used on rangelands in Arizona, New Mexico and Texas. Early uses of Lehmann lovegrass in the United States were primarily for forage production and erosion control. It is now established on more than 350,000 acres of Arizona rangeland.

In 1965 the Arizona Department of Transportation also began to seed Lehmann lovegrass along highways and pipelines. Between 1965 and 1985 the Department seeded over 4,000 acres. The area seeded along highways and pipelines represents a small portion of the total area seeded but contributes greatly to the natural spread of Lehmann lovegrass.

In 1971 it was predicted that Lehmann lovegrass would spread beyond seeded areas regardless of conditions and management practices on adjacent lands. Opposing views predicted that 90% of the favorable habitat for Lehmann lovegrass in Arizona was already occupied by 1984 and subsequent spread would result primarily from removal of shrub competition. Specialists estimated that Lehmann lovegrass could establish best between elevations of 3,000 feet and 5,000 feet and that it would need an average of 10-14 inches of annual precipitation. In 1991 information on the potential pattern of Lehmann lovegrass spread was analyzed from data collected over a period of 37 years on the Santa Rita Experimental Range near Tucson, Arizona. The data showed continued spread and increase of Lehmann lovegrass. It had outstepped the boundaries it was believed to be restricted to. The continued spread suggests that the exact limits for Lehmann lovegrass habitat remain unknown. However, its absence on the driest area of the Santa Rita Experimental Range suggests a minimum of rainfall inhibits the spread. Lehmann lovegrass spread aggressively from intentional seedings and increased to dominate perennial grass composition. It also increased biomass production by 4 times that of native grasses.

It is interesting to note that while Lehmann lovegrass is an early successional species in South Africa, it is an aggressive competitor that stays in a plant community well past the early successional stages in southern Arizona. Lehmann lovegrass easily spreads naturally in Arizona because of its favorable establishment characteristics. Mature Lehmann lovegrass plants can produce more than one crop of seeds in a year. They produce a large amount of small seeds, 6 million seeds per pound, which enable them to be distributed easily by the wind and water. This unique feature also eliminates seed predators because the seeds are too small for animals and insects to eat. Another characteristic that helps in the spread of Lehmann lovegrass is that not all of the seeds germinate at the first sign of moisture. Instead, some seeds have a longer germination period and wait until there is sufficient moisture to establish. A portion of Lehmann lovegrass seeds lay dormant while the others emerge, providing a reserve seed supply. This gives Lehmann lovegrass an advantage over native grasses whose seed supplies are depleted in instances of drought or fire.

One of the primary reasons for seeding Lehmann lovegrass was to increase forage production. Because of its widespread presence Lehmann lovegrass has become a major part of cattle diets. It produces more herbage during the spring and winter than native perennials. Cattle prefer Lehmann lovegrass during this time of year because it greens up early. Contrary to common belief, studies show that

grazing has little effect on the spread of Lehmann lovegrass. There is still much that is unknown about the effect of grazing on Lehmann lovegrass and this makes it difficult to develop grazing management guidelines.

When planning management of Lehmann lovegrass ranges, several things must be considered. First, cattle use Lehmann lovegrass primarily in the spring and it may constitute more than 50% of their diet. It contains more crude protein than native grasses at this time so it is an important forage source for lactating cows. Second, Lehmann lovegrass is used as a source for revegetation because it matures quickly and provides quick soil cover, improving watershed conditions. Third, studies have shown fires increase the spread, density and germinability of Lehmann lovegrass, so management of wildfires may control the spread.

Lehmann lovegrass has come a long way. From its origins in South Africa to becoming a major species in southern Arizona, it has improved watershed conditions and forage production for livestock. Lehmann lovegrass has also reduced the diversity of native vegetation. Complete understanding of the extent and impacts lovegrass will have still await further study. Until then, individuals and government agencies should remember "If Lehmann lovegrass is planted, it should be with the expectation that it will eventually developed into a nearly pure stand, and will spread to adjacent range".

## Bibliography

### Interview:

**Ruyle, George, 10/5/93.** Santa Rita Experimental Range, Range Management Specialist, Cooperative Extension Service of the University of Arizona.

### Articles:

**Anable, Michael, Mitchel McClaran and George Ruyle 1991.** Spread of introduced Lehmann lovegrass *Eragrostis lehmanniana* Nees. in Southern Arizona, USA. Biological Conservation. 1992, Vol. 61, 181-188.

**Cox, Jerry. 1992.** Maria Wilman-An Outstanding Contributor to Rangeland Improvement. Rangelands, Vol. 14, No. 5.

**Cox, Jerry, George Ruyle, and B.A. Roundy. 1990.** Lehmann lovegrass in southeastern Arizona: Biomass production and disappearance. J. of Range Manage., Vol. 43, No. 4.

**Robinett, Dan. 1992.** Drought and Recovery in the Upper Sonoran Desert. Rangelands, Vol. 14 No. 4.

**Robinett, Dan. 1992.** Lehmann Lovegrass and Drought in Southern Arizona. Rangelands, Vol. 14, No. 2.

**Ruyle, George. 1985.** Managing Lehmann lovegrass for livestock. Arizona Farmer-Stockman, Vol. 64, No. 5.

**Ruyle, George and Jerry Cox. 1985.** Lehmann Lovegrass a naturalized citizen. Arizona Farmer-Stockman, Vol. 64, No. 4.

**Ruyle, G., Roundy, B., and Cox., J. 1988.** Effects of burning on germinability of Lehmann lovegrass. J. of Range Manage., Vol. 4, No. 5.

# 1994 High School Youth Forum - A Report

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The SRM High School Youth Forum, which began in 1966, was held once again during the Society's Annual Meeting, February 13-18, 1994, in Colorado Springs, Colorado. While each of the 21 SRM Sections were given the opportunity to send up to 3 delegates, a total of twenty-nine youth representing 14 Sections participated in this year's Forum which included the current President and paper winner, selected from the previous year.

As an activity specifically designed for those high school students selected to attend, the Forum's goals were to: 1) provide insight for these delegates concerning the function and workings of the Society; 2) provide opportunities to meet Society members; 3) provide a format that encourages thinking and enhancement of communicative skills; 4)

provide an opportunity to learn about range management and future careers through interaction with Society professionals; 5) provide an opportunity to learn about the characteristics of the area of the Annual Meeting site; and 6) provide an atmosphere that fosters camaraderie, friendship and lasting relationships. To achieve these goals, various activities were conducted throughout the week which began with an orientation session on Sunday night. Activities at this session included introduction of special guests, a review of the week's activities, and various interactive games to help the delegates get to know each other better. In addition, each delegate was given the opportunity to introduce themselves with a 1-2 minute presentation. All of the delegates got involved in the activities and began making friends. The evening ended with a short workshop on presentation information and skills, and a chance to practice their talks in a live format.

On Monday, the Forum attended the SRM membership

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