

# TECHNICAL NOTES

## Stoloniferous Blue Grama

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**Highlight:** *Stolons were observed on blue grama under natural conditions and in greenhouses. Some stolons reached 70 cm with as many as 12 internodes. Stolons were induced in an environmental chamber by controlling the temperature, shortening the photoperiod, and reducing the light intensity.*

Blue grama (*Bouteloua gracilis* (Wild. ex H.B.K.) Lag. ex Griffiths)<sup>1</sup>, a native perennial, warm-season grass, is important throughout the Great Plains. It tends to be a bunch grass in the southern portions of its range and a sod former in the central and northern portions (Allred, 1950).

Growth habits of blue grama are often compared with those of buffalograss (*Buchloe dactyloides* (Nutt.) Engelm.), a common associate. Blue grama has many structural features that closely resemble buffalograss; but blue grama, lacking runners or stolons, spreads vegetatively only by tillers and short root stalks (Pool, 1948; Allred, 1950).

### Discovery and Observations

Stolon-like culms were found in 1968 in dormant plant material growing in a dense clone on the north side of a fence

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post near Lincoln, Nebr. The stolon-like structures consisted of rather stiff, elongated, vegetative internodes at the base of the clone. The internodes averaged 8 cm long on eight shoots that were measured. A series of nodes with leaves, axillary buds, and tillers was at the top of each elongated internode.

Similar structures were observed later on blue grama transplanted to a greenhouse at Lincoln, with as many as five of the elongated internodes in a series. Nodal roots were formed when nodes were placed in contact with moist soil. Figure 1 shows a blue grama plant with a series of two elongated vegetative internodes. The last node, placed in contact with moist soil, had rooted.

Many stolons developed on blue grama plants from North Dakota grown in Lincoln under greenhouse conditions, but few developed in Nebraska material and rarely any in plant material from Texas.

Stolons developed in Texas on plants originating from Kansas; some extended 70 cm and had as many as 12 internodes



Fig. 1. *Stoloniferous blue grama showing rooting of terminal group of nodes.*



Fig. 2. *Stoloniferous blue grama with stolons of up to 70 cm in length.*

<sup>1</sup> Nomenclature follows Gould, 1969.

(Fig. 2). Growth and development of stolons apparently resulted when light quantity and/or photoperiod were decreased.

### Procedures and Results

Plants from North Dakota, South Dakota, Nebraska, and Kansas were grown in a greenhouse in Kansas under 8- and 12-hour photoperiods for approximately 9 weeks. Plants from Texas and Mexico were grown under the same conditions for approximately 5 weeks. Greenhouse temperatures were not controlled, except that the maximum was kept below 105 °F. No stolons developed on any plant. The only visible differences between the short- and the long-day plants were shorter culms and more aborted second and third spikes on plants grown under the 8-hour photoperiod.

Plants from North Dakota, Nebraska, Kansas, Texas, and Mexico were then grown in environmental chambers under a constant temperature of 77° F, photoperiods of 8 and 12 hours, and light intensities of approximately 2,400 and 8,000 ft-candles. Stolons developed only on plants from North Dakota, Nebraska, and Kansas grown at the 8-hour photoperiod and low light intensity. Stolons appeared under those conditions after 5 weeks, but none had developed under the other treatments after 12 weeks when the experiment was terminated.

### Conclusions

Presently it is not known if there are stoloniferous ecotypes of blue grama as have been found in hairy grama (*B. hirsuta* Lag.), sideoats grama (*B. curtipendula* (Michx.) Torr.), and slender grama (*B. repens* (H.B.K.) Scribn. & Merr.) (Gould, 1959; Morrow et al. 1954). Stolons may develop on blue grama grown under optimum temperature, reduced photoperiod, and reduced light intensity.

Further studies of this species may reveal ecotypes that will produce stolons under natural conditions. A stoloniferous type of blue grama would be valuable for accelerating stand establishment and ground coverage.

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