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FLOWERING OF EMERALD SWEETCLOVER IN TEXAS

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Background. Hubam annual white sweetclover was one of the most popular forage legume species in central Texas in the early 1900s because of its excellent drought tolerance and adaptability to neutral and alkaline soils. One limitation of Hubam sweetclover, however, was a thick main stem that had low digestibility and required a long drying period when cut for hay. Another disadvantage of Hubam was a high coumarin content which caused animal health problems. We initiated a sweetclover improvement program in 1999 at the TAMU Agricultural Research and Extension Center at Overton to combine the desirable multi-stem trait from Emerald with the low-coumarin trait from Denta, a biennial sweetclover. Emerald was divided into 11 maturity groups (M1-M11) that started to flower from mid-March to mid-May under greenhouse conditions. Seedlings of M2, M4, M7, M10/11, and Hubam were transplanted in south (Beeville), central (Thrall), and north (Bristol) Texas in early November 2002 to determine the optimum sweetclover maturity for these locations. Plant height and growth stage were recorded monthly.

Research Findings. Plant elongation was most rapid at the southern location at Beeville because of the milder winter temperatures followed by Thrall and latest at the northern Bristol location. In March, average plant height of all entries was 26 in. at Beeville, 13 in. at Thrall, and 10 in. at Bristol (data not shown). The influence of month on plant height of the entries is represented by the data from Thrall (Fig. 1). There was a moderate increase in plant height of all entries from January through March followed by a rapid increase in April except for M10/11. Entry M10/11 plant heights were more typical of a biennial growth habit than an annual. Location, or latitude, also influenced percentage of plants reaching the reproductive stage. In February, plant development was most rapid at the southern location in Beeville with from 78 to 92% of the plants in Emerald maturity groups 2, 4, and 7 reaching the bud or flower stage. At the central location at Thrall, differences among M2, M4, and M7 began to occur and were very pronounced at the northern location of Bristol. Essentially none of M10/11 plants reached the reproductive stage in February. Only 22% of the M10/11 plants reached the reproductive stage at Beeville by April (data not shown). Maturity of Hubam sweetclover was between M7 and M10/11. The effect of month on the percent of plants reaching the reproductive stage is represented by the data at Thrall (Fig. 2). Eighty percent of the M2 plants were in the reproductive stage from January through April before reaching 100% in May. Percent of plants reaching the reproductive stage of Emerald maturities M4, M7, and Hubam increased about 30%

from January to February with a second major increase to 100% from April to May. Entry M10/11 remained vegetative until April and than increased to 66% of the plants reaching the reproductive stage by May. There was still variation in flowering within maturity groups.

Application. Emerald M7 appears to be the optimum maturity for pasture and hay in Central Texas, and M2 is early enough to be used as a winter cover crop in a crop rotation system. The late 10/11 maturity has no potential in Texas but might be used in the northern US.

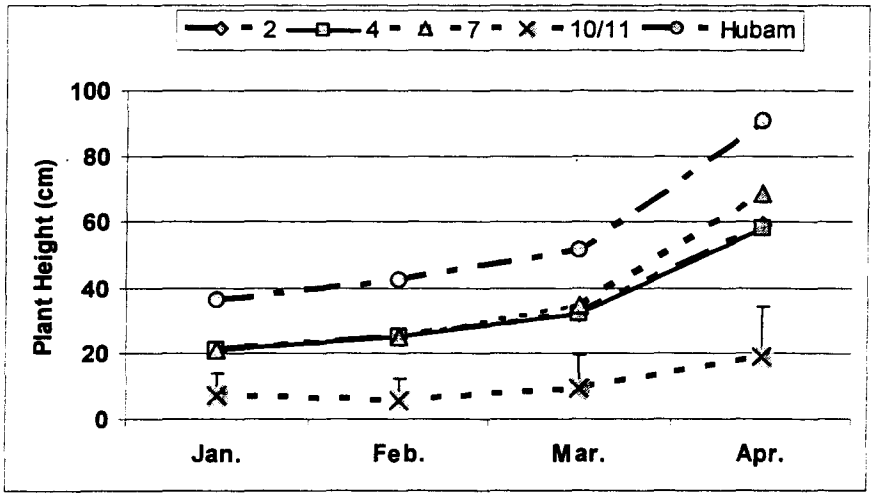

Figure 1. Plant height of sweetclover entries from January to April at Thrall. Vertical bars indicate LSD value (P = 0.05) within months.

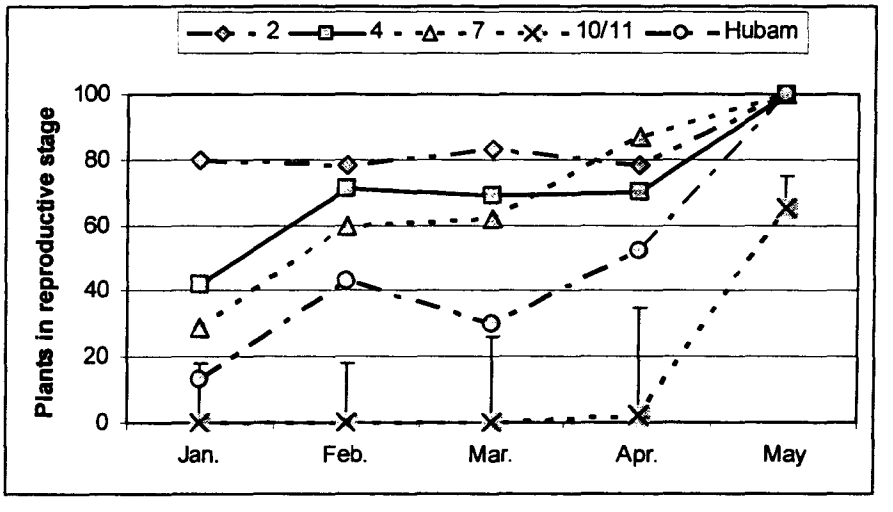

Figure 2. Percent of plants reaching the reproductive stage from January to April at Thrall. Vertical bars indicate LSD value (P = 0.05) within month.