Developmental Phases of Grain Sorghum (*Sorghum vulgare*, Pers.) as Influenced by Variety, Location, and Planting Date

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Much information has been accumulated on yield performances of varieties of grain sorghum and on determinations of optimum planting dates as related to yield. Less attention has been given to determining effects of dates of planting on times of specific stages of development in different varieties of grain sorghum.

Information of this type has been reported by Karper et al. (3) and Martin and Sieglinger (5) who found that medium to late planting dates generally resulted in a shorter total growth period than early plantings. Results obtained by Paulson (3) generally agree. Four varieties of grain sorghum required progressively shorter periods to reach 50% full bloom as date of planting was delayed from May 1 to July 10 at 2-week intervals.

Little information is available regarding the beginning or duration of intermediate stages of development in sorghum. Chien (1) reported that the stem apex of sorghum undergoes floral transition approximately 5 weeks after germination. Paulson (3) found that the interval between planting and floral initiation ranges from 32 to 44 days in 12 varieties of grain sorghum planted the same date at Ames, Iowa. When varieties were planted on different dates, this interval ranged from 52 days for late varieties planted May 1 to 23 days for early varieties planted May 28 or June 12. A consistent difference was found between early and late varieties. Time from floral initiation to 50% full bloom, however, was not influenced by variety or planting date. It was concluded, therefore, that duration of vegetative development (planting to floral transition) is the most important factor in determining time of anthesis.

Determinations of number of days from anthesis to maximum dry-weight accumulation (physiologic maturity) in the sorghum caryopsis have varied according to variety and location. Reports have included 30 days (2), 40 to 46 days (7), and 33 to 45 days in consecutive years (4).

Three genes have been hypothesized by Quinby and Karper (6) to explain maturity differences in sorghum by controlling time of floral initiation, which, in turn, limits several processes, including duration of growth. Karper et al. (3) considered temperature during the heading period a major factor in determining optimum planting date.