



Effect of temperature on endogenous hormone levels and opposite phyllotaxy in maize leaf primordial

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ABSTRACT. Newly identified maize (*Zea mays*) mutants with opposite leaf phyllotaxy are important in the study of the maize crop. Previous studies have revealed the developmental mechanism of opposite phyllotaxy on the physiological, cellular, and molecular levels. However, there have been few reports regarding the effects of changes in endogenous hormone levels in maize leaf primordia under different conditions. We conducted field studies to examine the influence of different environmental factors on leaf primordia differentiation. Our results indicated that compared with other major environmental factors, temperature was significantly positively correlated with the ratio of maize plants with opposite phyllotaxy. We examined endogenous hormone levels in maize at different temperatures using an enzyme-linked immunosorbent assay. The results showed that the ratio of maize plants with opposite phyllotaxy was mainly influenced by the cytokinin/auxin ratio. In addition, at the same temperature, the ratio of cytokinin/auxin in maize with opposite phyllotaxy was significantly higher than that near isogenic lines with alternate phyllotaxy.

Key words: Cytokinin/auxin; Endogenous hormones; Temperature; Opposite phyllotaxy ratio; Phyllotaxy; *Zea mays*