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THE SPATIAL AND TEMPORAL DISTRIBUTION OF AUXIN AND GIBBERELLINES IN SUNFLOWER (*Helianthus annuus L.*)

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Indole-3-acetic acid (IAA) and gibberellins (GA) are principal plant growth hormones. Early research gave important information on IAA and GA synthesis, degradation, physiological function and genetic determinism. Recently, the possible relationship between IAA and GA was discussed and it was demonstrated that IAA promotes GA biosynthesis. To define more accurately the temporal and spatial distribution of free IAA and $GA_3$ and their relationship during ontogenetic development, phytohormone levels in vegetative and generative organs were determined. The occurrence and dynamics of free IAA and $GA_3$ in different organs of *Helianthus annuus* were investigated at various developmental stages. The results demonstrated the spatial (roots, leaves, inflorescences, and flowers) and temporal distribution (diverse ontogenetic phases) of dominant centers (sink organs) in relation to IAA concentrations in sunflower. The highest IAA concentration was found in aerial organs, whereas its concentration in roots was much lower. In addition, genotypic variation was determined. The percentage of free IAA was higher in the roots, leaves, inflorescences, and flowers of the hybrid $F_1$ than in inbred lines. The data demonstrate a direct correlation between auxin and hybrid vigor.