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Effect of Gibberellin and Uniconazole on Mesocotyl Elongation of Dark-Grown Maize under Different Seeding Depths

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Abstract: Seeds of five maize inbred lines, including 3681-4, were treated with gibberellin A₃ (GA₃) and uniconazole (UCZ) under deep seeding and shallow seeding in order to elucidate the physiological mechanism of maize mesocotyl elongation under different seeding depths. GA₃ was the most effective at 10⁻⁵ M and the mesocotyl elongation of 3681-4, 178, Zong 3, Huang C, Han 21 was promoted at this concentration by 60.4%, 44.6%, 42.5%, 24.2% and 44.2% under 20 cm seeding depth, respectively. Under 2 cm seeding depth, however, there were no significant differences between mesocotyl length of all inbred lines at any concentration. UCZ treatment at concentrations higher than 10⁻⁵ M, significantly inhibited mesocotyl elongation in all inbred lines under seeding depths of both 20 cm and 2 cm. Interestingly, mesocotyl elongation of only 3681-4 was significantly inhibited at the concentration of 10⁻⁷ M. These results suggested that mesocotyl elongation was more sensitive to gibberellin A (GA) under deep seeding than under shallow seeding, and that 3681-4 was more sensitive to GA than the other inbred lines. Endogenous gibberellin A₁ (GA₁) contents in the mesocotyls of 3681-4 and 178 treated with GA₃ and UCZ were accordant with their morphological responses. GA₃ promoted cell elongation rather than cell division, and that UCZ inhibited both cell elongation and cell division in 3681-4 and 178.

Keywords: [Gibberellin](#), [Maize](#), [Mesocotyl elongation](#), [Uniconazole](#)

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