

EFFECT OF PLANT GROWTH REGULATORS ON NODULATION, NITROGEN FIXATION, PHOTOSYNTHETIC RATE AND NUTRIENT UPTAKE IN PARANODULATED WHEAT

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Abstract: Nodule like outgrowths were introduced under laboratory condition using plant growth regulators 2, 4-D, IBA and NAA in nitrogen free Hoagland solution in wheat variety C-306. These were then inoculated with bacterial cultures of *Azorhizobium caulinodans* (ORS 571) and *Nostoc*. After induction of nodules and bacterial inoculation seedlings were transferred to pots (50 x 50 x 50 cm) under natural conditions. The nodule induction with 2, 4-D (0.5 ppm) was better than I B A (8 ppm) and NAA (8 ppm). The nitrogenase activity was relatively more in 2, 4-D + *Azorhizobium* in nitrogen free Hoagland solution than any other treatments. The colonization of nodule by *Azorhizobium caulinodans* was more than *Nostoc*. After transplanting to pots the IBA treated plants showed higher chlorophyll content, photosynthetic rate and stomatal conductance. Treatment with IBA + *Azorhizobium* showed more growth than treated with 2,4-D and NAA. However the protein content was more in 2,4-D treated with *Azorhizobium*. The enhanced NPK content in grain and straw due to inoculation confirms the nitrogen fixation and its remobilizations to different plant parts.

Keywords: Synthetic auxin, *Azorhizobium caulinodans*, *Nostoc*, Nodulation, Photosynthesis.

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