

Growth and yield attributes of sunflower influenced by foliar application of nitrobenzene

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SUMMARY

Influence of nitrobenzene on growth, development and yield attributes of sunflower (*Helianthus annuus* L.) was studied. Nitrobenzene in 5ml l⁻¹, 10ml l⁻¹ and 15ml l⁻¹ was given as foliar spray at different phenological crop growth stages viz. vegetative, head formation, flowering and maturity stages. Observations on plant height, number of leaves, head diameter, fresh and dry weight of head, RGR, LAR, leaf area, SLW, total chlorophyll, oil content and yield components were estimated. The result inferred that nitrobenzene increased crop growth and yield of sunflower at all concentrations studied over control.

Key words : Sunflower, Nitrobenzene, RGR, SLW, Leaf area

Sunflower (*Helianthus annuus* L.) is photoinsensitive and not a season bound crop. It is the third most important oilseed crop after soybean and groundnut in the world. The area under sunflower in India is not sufficient to workout with the needs of growing population and to buildup the economy of the country. Therefore, it should be our prior effort to find ways that can increase the yield by overcoming some constraints in the path of increasing productivity.

Plant growth regulators check the excessive vegetative growth and can be used to have a proper balance between source and sink for increasing the yield of crops. In this context, nitrobenzene is used, which is an organic compound coming under aromatic nitro group. By increasing the flower forming substances like amino acids, enzymes, vitamins, hormones, etc. it alters gibberellins, auxin, cytokinin, ethylene ratio so as to increase the flowering by more than 60% and ultimately yield upto 50% (Lone, 2005). The present study was undertaken to observe the response of nitrobenzene given as foliar spray on growth and yield of sunflower (*Helianthus annuus* L.).

MATERIALS AND METHODS

The experiment was planned to study the growth and yield attributes of sunflower under the influence of nitrobenzene during *Rabi*, 2005-2006 at the screen house of Department of Plant Physiology, IGKVV, Raipur (C.G.)

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using Completely Randomized Design (CRD). Four replications and four treatments including one control and three concentrations of nitrobenzene (5ml l⁻¹, 10ml l⁻¹ and 15ml l⁻¹) sprayed at different phenological crop growth stages viz., vegetative, head formation, flowering and maturity stages were taken. Recommended dose of fertilizer NPK @ 80:60:40 kg ha⁻¹ was applied.

Morphophysiological observations:

The required morphological and physiological observations were taken at four different phenological stages of crop growth i.e. vegetative, head formation, flowering and maturity stages. Four plants of each of the four treatments were selected randomly. The observations were made on plant height, number of leaves, leaf area, leaf area ratio (LAR), relative growth rate (RGR), specific leaf weight (SLW) and total chlorophyll. Head diameter, head fresh and dry weights were recorded in flowering and maturity stages. Total chlorophyll was estimated by Anthrone extraction method.

Observations on yield:

The observations on yield attributes viz., yield plant⁻¹, 100 seed weight, total seeds head⁻¹, sterility% and harvest index were recorded at maturity stage after harvesting the crop. The oil content in seeds was extracted by Soxhlet apparatus. The data obtained were statistically analyzed adopting the technique of ANOVA (Gomez and Gomez, 1983).

RESULTS AND DISCUSSION

An increase in the plant height in nitrobenzene treated plants was recorded in all the crop growth stages. This might be due to the fact that gibberellic acid regulated growth of plant by causing cell elongation and synthesis