

Effect of salicylic acid and gibberellic acid on seed germination and growth of pea

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SUMMARY

Significant increase in seed germination and seedling growth of pea due to seed soaking treatment of salicylic acid and gibberellic acid was recorded in the field experiments conducted during *Kharif* 2009. Highest values for plant height, number of leaves, branches, root length, number of nodules and seed yield were recorded with 400 ppm salicylic acid and 100ppm gibberellic acid. Higher concentrations of the growth hormones were found to cause adverse effect.

Key Words : Seed germination, Salicylic acid, Gibberellic acid, Pea

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Pea (*Pisum sativum*) is an important legume crop known for its seeds to meet protein and crude fibre requirements. Efforts are being made to raise its yield by adopting modern agricultural practices. Since the modernization over the last several years depending heavily on chemical fertilizers which are cost intensive and have adverse effect on soil fertility and environment. Many workers had investigated the effect of growth regulators on various crops (Deotale *et al.*, 1998; Singh, 2001). Salicylic acid, a secondary metabolite which act as analogue to the growth hormones (Wain and Taylor, 1965) has been found to play paramount role in the improvement of crop yield (Singh, 2001; Reddy *et al.*, 2002; Maity and Bera, 2008). In context of the above, the present investigation was under taken to assess the effects of seed soaking in various concentrations of salicylic acid and gibberellic acid on morpho-physiological parameters in pea.

MATERIALS AND METHODS

The locally purchase seeds of *Pisum sativum* var. Azad P-1 were grown in earthenware pots containing sandy clay

loam soil and farm yard manure (1:1). The experiments were conducted during Nov – Jan., 2010. The seeds were first washed thoroughly with tap water and soaked for eight hours in different concentrations of salicylic acid (200, 400,600 and 800 ppm) and gibberellic acid (25, 50, 100 and 200 ppm) in Petridishes. The soaked seeds were sown in earthen pots. After germination which took about 7-10 days, five seedlings were retained in each pot for further studies. The spraying treatment of an equal volume of salicylic acid (SA) and gibberellic acid (GA₃) were given separately to the foliage of all pots at an interval of 15 days after germination. The pots were supplied with 500 ml of tap water daily and were kept under normal conditions of light and temperature in the garden.

The experiments were laid out in completely randomized design with five replications. Morpho-physical observations like plant height, number of branches, number of leaves, root length, nodule number and yield were recorded on 10 randomly selected plants in each treatment at 30, 45, 60 DAS. Yield was recorded at physiological maturity.

RESULTS AND DISCUSSION

Data in respect to seed germination are presented in Table 1. Seed germination increased with the increased concentration of growth regulators. Maximum seed germination (90.1 and 98.0%) was recorded on 600 ppm salicylic

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