

P-33. GROWTH REGULATOR TREATMENT OF *PINUS KESIYA* SEED FOR ENHANCEMENT OF GERMINATION AND EARLY SEEDLING GROWTH

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During recent years, a large number of growth regulators have been extensively used to hasten seed germination, seedling establishment and also for obtaining higher yield (Khan, 1977). *Pinus kesiya* Royle ex Gord is a fast growing species occurring at an altitude of 1311 m (lat. 25°—40' N and long. 91°—35' E) in Meghalaya. The seed germination and seedling growth in this species is very poor under natural conditions. In an attempt to improve seed germination and seedling growth, the pretreatment of 9 month-old seeds with various growth regulators was tried.

With IAA (25 ppm) and 2, 4-D (100 ppm) treatments, better germination was recorded during the present investigations. The extension growth was higher at 50 ppm of both the growth regulators; while 10 ppm and 50 ppm of IAA and 2, 4-D respectively, was optimum for biomass of seedlings. Higher concentrations of IAA and 2, 4-D were found inhibitory for seed germination and growth. In GA (250 ppm) etherel (100 ppm), kinetin (1 ppm), EMS (150 ppm) and ascorbic acid (25 ppm) treatments of seed showed better germination, extension growth and biomass except for GA treatment where biomass was maximum at 350 ppm. The pretreatment with

etherel resulted in maximum germination and yield as compared to other growth regulators tested. Shibakusa (1980) reported that in seeds of *Picea glehnii* stored for 10 years the germination was hastened by presoaking treatment with GA (50 ppm) and etherel (1—100 ppm), but 6-benzyladenine (1—10 ppm) inhibited it markedly in seeds stored for 9 months. EMS has been found stimulatory for seed germination in *P. sylvestris* (Terasama, 1977).

In case of *P. resinosa*, germination, extension growth and biomass were greatly suppressed by 2, 4-D (50 ppm) treatment probably due to inhibition of photosynthesis (Kozlowski and Sasaki, 1970). In the present study, ascorbic acid was found stimulatory for seed germination and growth. In this treatment extension growth was maximum as compared to others. Anon (1971) reported that pretreatment of seeds of *P. caribea*, *P. elliotii* and *P. patula* with 5% ascorbic acid for 1 h failed to improve total germination and its rate. It seems that the failure of response to ascorbic acid was due to very high concentration used in the said experiment.

It may be mentioned that the pretreatment of *P. kesiya* seeds with growth regulators is promising for fast germination and seedling survival.

References

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