

STUDIES OF THE BIOCHEMICAL AND FLOWERING RESPONSES
OF DOUGLAS FIR TO NITROGEN FERTILIZATION

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ABSTRACT

A six-acre experimental area for cone stimulation studies was prepared in a 20-year-old natural stand of Douglas fir. Treatments in 1964 consisted of 0, 50, 100, 200, 400, 800, and 1600 lbs. of nitrogen per acre as ammonium nitrate, with provision to test the effect of no retreatment, annual, and biennial retreatment at the optimum initial rate. A second experiment in 1965 will test the effects of nitrate vs. ammonia nitrogen at 200 lbs. nitrogen per acre, applied at the time of flowering, vegetative bud break, and rapid shoot elongation. Foliage and twig samples for laboratory studies were obtained at the time of fertilization and at weekly intervals throughout the period of bud differentiation. Additional trials were conducted in 1965 to assess the effect of rate, formulation and site on cone production responses on an 11-year-old plantation, and the effect of rates of nitrate nitrogen on 2-year-old seed orchard grafts. Foliar nitrogen responses and cone production responses to the 1964 rates experiment, and twig growth and bud development responses to the 1964 and 1965 treatments are discussed.

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