

PHYSIOLOGICAL STUDIES OF POLLEN TUBES IN THE STYLE*

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The effects of temperature, style receptivity, pollen variability, pollen population, and colchicine upon pollen tube growth in stylar tissue of flowers of *Nicotiana tabacum* L. were investigated.

The stylar dissection methods as developed by Buchholz (1931), Eigsti (1937), and Rinehart (to be published) were used.

At given constant temperatures (Eigsti and Rinehart, 1941), such as 18.4°C., 22°C., and 24°C., the rate of growth of the pollen tube in the style was found to be constant. For example, at 18.4°C. the rate of growth was .64 mm per hour over a 48-hour period; at 22°C. the rate of growth was .86 mm per hour; and at 24°C. the rate of growth was 1.19 mm per hour. These data do not support the finding of East and Park (1918) who showed that the rate of pollen tube growth in related species of *Nicotiana* increases as the pollen tubes approach the lower portion of the style.

The rate of pollen tube growth did not vary with the different plants, even though flowers from plants in the garden had a longer style than those from flowers grown in the greenhouse.

Flowers kept in the refrigerator for 22 days yielded styles which were receptive to pollen; however, the percentage of pollen germination on such styles decreased considerably.

The number of pollen tubes in any one style does not affect the rate of growth until at least 1000 pollen tubes are present in the style.

Colchicine, when absorbed by the style, caused a decrease in the rate of growth of pollen tubes in that style. The tips of pollen tubes in styles treated with colchicine showed abnormal enlargements and breakages.

LITERATURE CITED

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