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ATTEMPTS ON BREAKING SELF-INCOMPATIBILITY IN GINGER (*ZINGIBER OFFICINALE* R.)

Ginger *(Zingiber officinale* Roscoe.) is propagated vegetatively and is found to be never seed setting. Hooker (1894) described ginger as a species very rarely flowering and never setting seed. East (1940) and Fryxell (1957) considered ginger as a self-incompatible species. Pillai *et al.* (1978) reported that one of the reasons for failure of seed set in ginger was due to defects in micro or megasporogenesis. They further suspected that the lack of seed setting was due to incompatibility.

East (1934) reported that in some plants the inhibitory substance that prevents pollen germination on stigmatic surface was absent prior to 24 hours of flower opening, but later developed before flower opening. In some other species the inhibition was reported to be lost if stigmatic surface was removed (Allard, 1960).

In the present investigation attempts were made to break the self-incompatibility and to induce seed-setting by artificial pollination in ginger variety Rio-De-Janeioro. Under the climatic conditions prevailing at Vellayani (1977) it flowered profusely. Inflorescence is a scape, bearing many bisexual flowers having one fertile stamen with two larger anther lobes filled with plenty of pollen grains. Ovary is inferior, tricarpellary. syncarpous with many ovules in axile placentum. The ovule is bitegmic and anatropus Flcwers open between 1.30 to 3-30 P. M. Pollen shedding almost coincides with the flower opening. The following methods were tried in 200 flowers each during the months of October and November:

(1) Flowers at anthesis were hand pollinated with mature pollen grains of the same flower. (2) Flower buds which were to open in 24 hours were opened and hand pollinated with mature pollen collected from the flowers at anthesis of the same plant. (3) Flower buds which were to open in 24 hours were opened and hand pollinated with pollen collected from the same flower bud. (4) The stigmatic surface of the flowers at anthesis were removed and pollinated with mature pollen grains of the same flower. (5) Stigmatic surface was smeared with sucrose-boric acid germination medium and mature pollen grains from the same flower were dusted over it- Large quantities of pollen grains were used to pollinate. Out of 200 flowers pollinated 100 were protected with butter paper cover after pollination. Flowers were observed after the treatment.

In none of the flowers seed setting *was* achieved. The failure of seed setting in ginger does not seem to te due to lack of pollinating agents ES suggested by Pillai *et al.* (1978). Hence it may be presumed that the failure to set seeds is due to some incompatibility reactions. From the studies it appears that the self-incompatibility reaction in ginger cannot be broken by bud pollination, removal of stigmatic surface before pollination or by application of the sucrose-boric acid germinating medium to the stigma followed by pollination. The inhibitory reaction seems not to be localised at stigmatic surface. The reason for self-incompatibility appears to be genie and further studies are required to confirm this.

സംഗ്രഹം

ഇഞ്ചിച്ചെടി അപൂർവ്വ സാഹചര്യങ്ങളിൽ പുഷ്പിക്കുമെങ്കിലും വിത്തു് ഉല്പാദിപ്പിക്കുന്നില്ല. ഇതു് ഇഞ്ചിച്ചെടിയിലെ സ്വവന്ധ്യത്വം എന്ന പ്രക്രിയകൊണ്ടാണു്. ഇതിനെ മറികടന്നു് വിത്തു് ഉല്പാദിപ്പിക്കാൻ പല പരീക്ഷണങ്ങളും നടത്തിയതിൽ നിന്നു് അവ ഇഞ്ചിയിലെ സ്വവന്ധ്യത്വം തരണംചെയ്യാൻ പര്യാപ്തമല്ലെന്നു് തെളിഞ്ഞു. ഈ തരത്തിലുള്ള സ്വവന്ധ്യത്വം 'ജീൻ'കളാൽ നിയന്ത്രിക്കപ്പെടുന്നു എന്നു് സംശയിക്കുന്നു.

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