

PRODUCING *DIEFFENBACHIA* FROM SEED

R. J. HENNY and ELEANOR M. RASMUSSEN

University of Florida, IFAS, Agricultural Research Center
Rt. 3, Box 580, Apopka, FL 32703

Although the flower structure and pollination method are known (1), difficulty in obtaining seed from selected crosses is a major reason that few hybrid *Dieffenbachia* exist. However, recent studies at the Agricultural Research Center - Apopka concerned with environmental factors affecting seed production in *Dieffenbachia* have led to greatly improved seed yields and made hybrid production easier.

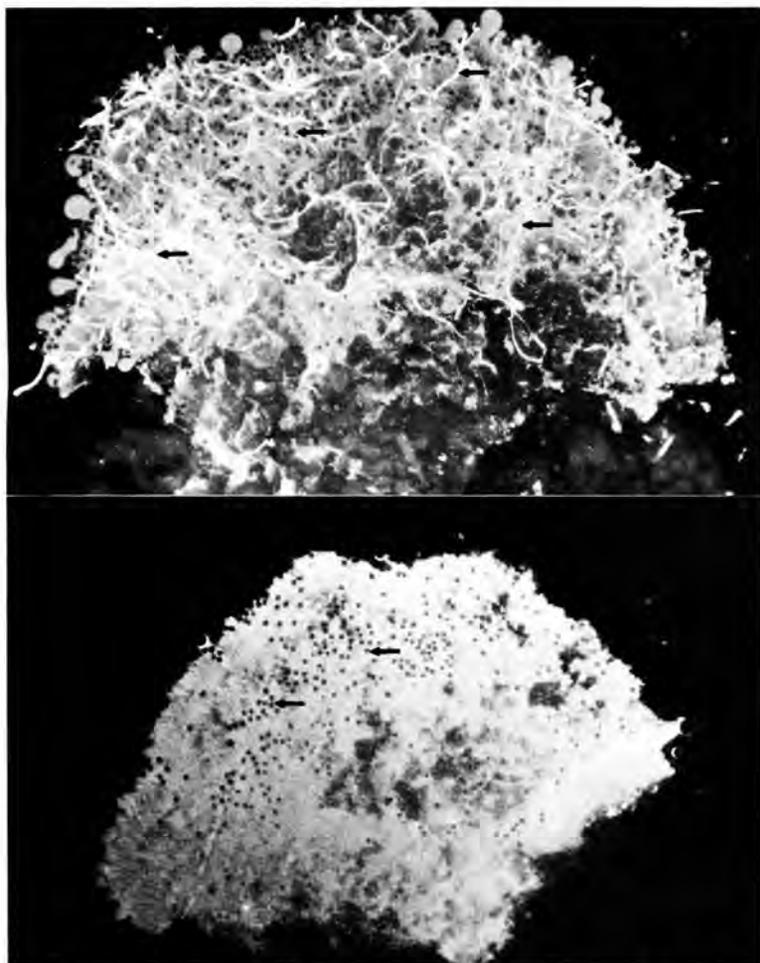
The most important step in maximizing seed set in *Dieffenbachia* is to maintain a high (100%) relative humidity around the inflorescence, beginning immediately after pollination, and continuing for 24 hours or more. To accomplish this we routinely wrap a freshly pollinated inflorescence with a wet paper towel and enclose it in a plastic bag (Figure 1). This technique enabled us to obtain over 100 times the amount of seed, when compared with seed set from the same number of crosses made in past years. Many plants yielded several inflorescences with high numbers of seeds from identical crosses which had failed previously. The difference in seed yield could be attributable to maintaining the increased relative humidity around the inflorescence after pollination. These results can be explained by the excellent pollen germination observed when flowers are pollinated and held at high relative humidity. (Figure 2).

Similarly, the lack of seed production in *Dieffenbachia* following pollination at low relative humidity (40-50%) may be explained by the failure of the pollen



Figure 1. A freshly pollinated *Dieffenbachia* inflorescence wrapped in a wet paper towel and enclosed in a plastic bag to maintain high (100%) relative humidity around the inflorescence.

grains to germinate once on the stigmatic surface (Figure 3). Pollen germination was tested, using a dissecting microscope and ultraviolet light, after flowers were fixed and stained (2). Pollen tubes appear as a fluorescing yellowish-green color which can then be distinguished from the paler blue stigmatic tissue (Figure 3). The function of the pollen tube is to carry the sperm cell through the style and deliver it to the egg so fertilization may occur. Without pollen germination and tube growth, fertilization and seed set are impossible.



Figures 2 and 3. Fig. 2 (above) Excellent pollen germination as determined by the presence of pollen tubes (→) on the stigmatic surface of a *Dieffenbachia* inflorescence pollinated at high (100%) relative humidity. Fig. 3 (below) No pollen germination on the stigmatic surface of a *Dieffenbachia* inflorescence pollinated at low (40-50%) relative humidity. Pollen grains which did not germinate are visible (→).

Even though *Dieffenbachia* breeding is still in its infancy, the increased ability to obtain seed and the many different types of plants available indicate that many new and exciting hybrids may soon be developed. We look for *Dieffenbachia* to become an even more important member of the aroid family in the years ahead.

Literature Cited

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