

1919

Hybridization in Iris

M. Louise Sawyer
Grinnell College

Let us know how access to this document benefits you

Copyright ©1919 Iowa Academy of Science, Inc.

Follow this and additional works at: <https://scholarworks.uni.edu/pias>

Recommended Citation

Sawyer, M. Louise (1919) "Hybridization in Iris," *Proceedings of the Iowa Academy of Science*, 26(1), 363-364.

Available at: <https://scholarworks.uni.edu/pias/vol26/iss1/33>

This Research is brought to you for free and open access by the Iowa Academy of Science at UNI ScholarWorks. It has been accepted for inclusion in Proceedings of the Iowa Academy of Science by an authorized editor of UNI ScholarWorks. For more information, please contact scholarworks@uni.edu.

HYBRIDIZATION IN IRIS

M. LOUISE SAWYER.

In the progress of some cytological studies of pollen tube formation, fertilization and related events,¹ I became interested in the cytology of hybrids, and determined to make some crosses for the sake of material for a cytological examination of fertilization between parents of different species. Some experience with hand pollination of *Iris* suggested the choice of that genus for my experiment. A survey revealed the fact that of species at my command, there was no pair that have been reported to produce hybrids. *Iris pseudocorus* and *Iris versicolor* were available. Their near relationship made it seem likely that crossing might be effected, although, so far as I can learn, no hybrids having these parents are known. W. R. Dykes in his magnificent book on "The Genus *Iris*," which was published in 1912, makes the positive statement that he found no record of that cross having been productive.

The gross results of an attempt, made in the spring of 1918, to hybridize *Iris pseudocorus* and *Iris versicolor*, growing in the botanical garden at Grinnell, seem sufficiently interesting to bring to the Academy as a preliminary report. The cytology has not yet been worked out.

In the experiment, crossing was attempted in both ways: that is, both *pseudocorus* and *versicolor* were used as seed parent. There is nothing especially distinctive in the method employed. Inflorescence stalks were covered with cheese cloth bags before the flowers to be used had opened. The bags were taken off and the stamens removed as soon as the flowers were opened sufficiently to make it possible to reach the stamens with a pair of forceps. This was done early in the morning, say between six and seven o'clock, and the bags were replaced. During the middle of the forenoon pollen was applied to the stigmas. A small scalpel is a satisfactory pollinating instrument. It is much more satisfactory than a camel's hair brush because more manageable, and less wasteful of pollen. The grains can be scraped from a stamen and applied directly to the stigmatic surface. Even if the pollen sacs are still closed, the stiff

¹Pollen Tube and Spermatogenesis in Iris, M. Louise Sawyer, Bot. Gaz. August, 1917.
Published by UNI ScholarWorks, 1919

instrument can be inserted into the line of dehiscence and the pollen removed. Such stamens give a more generous supply of pollen than those whose sacs have fully opened.

A mature or "receptive" stigma has an appearance that is characteristic, but not easily described. It becomes somewhat moist looking but the amount of excretion which indicates the receptive stigma is by no means so lavish as in the *Lilium* species which I have pollinated. However, my experience in dissecting pollen tubes from hand-pollinated *Iris* stigmas, has convinced me that pollen may germinate when applied to a stigma before it is receptive, although the germination occurs in a shorter time if the stigma is mature when pollinated. I can see no reason why these tubes once started may not effect fertilization. Believing this, I pollinated the stigmas of all the flowers under a given bag while I had it off for the second time, even those I judged to be a little under maturity. I could detect no difference in the subsequent behavior of the individual flowers of the lot. Twenty-four hours after pollination all of the flowers were withered. In withering the blades of the "standards" and the "falls" become soft and limp. Each "fall" in curling, enfolded its stigma, the latter being at that time still turgid and fresh appearing, as can be seen if the withered "fall" is removed.

Some of the covered flowers were left unpollinated, as checks. A day or two before I left Grinnell for the summer the ovaries of these unpollinated flowers, especially those on *pseudocorus*, were no larger than when ready for pollination, were slightly yellowed and clearly withering, while those of the hand-pollinated flowers had noticeably grown and appeared vigorous. It looked as though the experiment was prospering, but on my return to Grinnell in September I found that the *pseudocorus* and *versicolor* had behaved in a markedly different manner. While there were a number of *versicolor* seed pods with ripe seeds, the promising ovaries of *pseudocorus* had nearly all dried and fallen off before maturing and those remaining yielded but one seed that appeared fully developed.

The cross seems to have succeeded with *I. versicolor* as the ovule parent but to have failed with *I. pseudocorus* in that role. It is fruitless to speculate as to the cause or causes of this difference, and the report of the accompanying cytological behavior will have to come at a future date.

GRINNELL COLLEGE.