

Apomixis: Genetics and Breeding

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*This paper is dedicated to Gian A. Nogler. Excellent reviews on apomixis have been published in the past, such as Gustafsson's (1946–47), Stebbins' (1950), and more recently Asker and Jerling's (1992), but the most referred to by far remains Nogler's (1984a) because of its clarity. Probably no one understood apomixis better than Nogler. Many of the most recent findings we report on, i.e. data published after 1984, simply conform to or confirm ideas presented in Nogler's review. Hence, it is not by accident or any personal connection that Nogler's work will be referred to here also, more than any other work. Nogler was forced to stop his research at the ETH Zentrum of Zürich over ten years ago and to go into a form of early retirement, a very regrettable decision for apomixis research worldwide. I feel we are all his students and I thank him for his outstanding contribution to the advancement of science.

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I. INTRODUCTION

To review apomixis research entails reporting on a tremendously confusing body of literature. The challenge is to present apomixis both as a very attractive field of plant genetics and as an emerging tool of revolutionary potential impact for the agriculture of the 21st century. The most widely accepted definition of apomixis (Nogler 1984a) presents this process of development as asexual reproduction through seeds. A major potential of apomixis is that it could lead to "hybrid crops that clone themselves" (Carman et al. 1985).