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1. Introduction

The present investigations form part of a study which aim has been to obtain a picture of the speciation trends within *Cardamine pratensis* s.l. Variation in morphological and cytological characters, reproduction and breeding behaviour, isolation barriers as well as geographical distribution and ecology were investigated. *C. pratensis* frequently occurs in meadows remaining under human influence; the problem of the origin of taxa living in such biotopes has been of a particular interest for the authors.

The *C. pratensis* complex has previously been investigated from various parts of its range (SENJANINOVA cit. acc. to ILJINSKIJ 1926, LAWRENCE 1931, MANTON 1932, FLOVIK 1940, LÖVE and LÖVE 1944, GUINOCHE 1946, LÖVKVIST 1947, 1953, 1956, HOWARD 1948, HUSSEIN 1949, MATTICK cit. acc. to TISCHLER 1950, BANACH 1951, KUZMANOV and KOZUHAROV 1969, DERSCH 1969, SOUCHON 1971, SOUCHON and TOMASSONE 1971, MATTFIELD - personal communication). However, only some fragmentary reports were hitherto known from the Alps.

Our preliminary results have recently been published (LANDOLT and URBANSKA-WORYTKIEWICZ 1971). Remarkable karyological differentiation has been found in the studied material; of a particular interest proved to be the diploid taxa which showed diversified patterns of geographical distribution and different ecological requirements. It seemed advisable to pay them a special attention as the diploids apparently constitute a basis for speciation within the group of *C. pratensis*. Our collection has notably grown in the meantime; thus, we have decided to pursue the investigations by passing successively through various levels of polyploidy represented in our material.

It should be mentioned that some diploid taxa were found quite recently; apart from the chromosome counts and preliminary morphological observations no studies could have been carried out on these plants. Hence, they are briefly mentioned in the present paper, yet will be investigated in further course of our program.

Acknowledgements

A number of persons have contributed to our collections; they have mostly sampled the polyploid populations of *Cardamine pratensis*. The authors should like to express their gratitude to Dr. F. SPETA, H. RANNER, R. STEINWENDTNER (Linz), F. GRIMS (Taufkirchen), Dr. J. PFADENHAUER (Munich), Dr. E. SULGER-BÜEL (+), PROF. Dr. H. HESS, Dr. E. LANDOLT-STADLER, W. ENGET-SCHWILER (Zurich) as well as to our colleagues and friends from the Geobotanical Institute: E. BRÄM, J. BURNAND, P. BOLLIGER, E. BROUILLET, Dr. A. GIGON, Dr. F. GROSSMANN, Dr. M. HAUSER, A. HEITZMANN-HOFFMANN, PD Dr. F. KLÖTZLI, Ch. LEUTHOLD, CH. ROTH, H. SIGG and S. ZÜST.

The floristic information given to us by Dr. A. BECHERER (Lugano) has been of great benefit. Thanks are also due to the Directors and the Keepers of the Herbaria for loan of specimens.

Our ample material could not have been fully investigated without help of the technical staff of our Institute. Special attention is due to the gardener, Mr. E. BROUILLET and to Mrs M. JONSEN who have taken care of the collected plants and kept them in experimental garden. Technical assistance of Mrs M. SIEGL, Mrs A. HEGI and Miss U. BODMER is greatly appreciated. Drawings and graphs were faultlessly made by Miss E. BRÄM to whom the authors present their sincere thanks. The photos were made by Mr. H. SIGG.

2. Material and methods

Plants for the present study have been sampled in 1969 - 1974, mostly by the authors. A number of other persons have also contributed to the collection which actually comprises 900 populations. The diploids were found in 224 populations out of which 208 (1637 plants) are dealt with in the present paper, (Tables 1-6). A relatively high percentage of the diploids doesn't exactly reflect the pattern of geographical distribution of the whole group of *Cardamine pratensis*; at the present phase of our investigations a special attention has been payed to the diploid taxa.

Plants for the investigations were chosen at random within their populations. As a representative sample, 8-15 plants were collected; subsequently they were transferred to the greenhouse and, later on, into the experimental field of the Geobotanical Institute.

The studied region was principally confined to the Alps; however, for comparative purposes, the neighbouring areas were as well included in our program. In general, the boundaries of the investigated area can be traced along the following lines: Landsberg (Bavaria) - Innsbruck - Bolzano - Lecco - Turin - Chambéry - Nantua - Besançon - Epinal - Colmar - Rottweil - Landsberg. Rather intensive collections were made within this area and one can assume that a general pattern of distribution of the diploid taxa has