**Chromosome Numbers, Morphology, and Fertility in Poa pratensis L. from Southeastern Norway**

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Breeding of pasture plants was started at the Farm Crop Institute of the Agricultural College of Norway in 1934. As a first step, collections were made from good pastures in the southeastern part of the country. Münzing (5) had just at that time proved an apomictic mode of reproduction in Swedish Poa pratensis L., and this was confirmed by Rancken (10) of Finland. One of the objectives was therefore to learn whether the Norwegian Poa pratensis also reproduced apomictically. Another objective was to study the genetic variation in morphological characters and fertility, and especially to investigate possible correlations between these characters and the chromosome numbers. A similar investigation of correlations between chromosome numbers and morphological characters has been carried out by Kramer (4).

Comparisons between high and low chromosomal Poa pratensis have also been published by Akerberg (15), and Muntzing (8) has compared morphological characters in triploid twin plants and their normal sister plants. The results of these investigations will be discussed later in connection with the discussion of the similar characters in this report.

**Material and Methods**

In order to get only indigenous plants the collections were made from pastures which were not seeded, at least not with any of the typical pasture species. Both ripe seedheads and sod pieces were collected. The sod pieces were broken down to single tillers, and only one tiller was kept from each piece. In order to reduce the chance of getting seedheads or tillers from the same plant more than once, the collections were made with a minimum distance of several meters. From 80 locations a total of about 250 plants from tiller collections and 150 families from seedhead collections were planted, and a new number was given to each tiller or to each seedhead collection. Both seeds and tillers were first planted in flats, and transplanted to the field in the spring of 1935 in two replications. One of the replications was grazed by sheep five times during each of the years 1935 and 1936, and the plants were evaluated as pasture plants before each grazing. This evaluation was purely subjective, with grades 0–1–2–3, the grade of 3 being given only to exceptionally good plants. The other replication was harvested for seed in 1936. Seeds from 24 of the best strains (based on the evaluation) were planted in flats and transplanted to the field in the fall of 1936. A design with four randomized blocks, a row about 1 m long and being single rows, 5 m long. Two of the four blocks had an extra nitrogen application in the spring of 1937. Seeds were 0.6 m (ca 24 inches) apart, and the spacing between rows was 0.1 m (4 inches). Most of the measurements were made on this experiment in 1937. For some characters, data were also available from the field harvested for seed in 1936, in these cases it has been possible to calculate the standard error within year in the 1937 experiment.

**Chromosome Numbers**

Somatic chromosome numbers were fixed by root tips in a number of seedlings of these plants during the fall of 1936. Most of the counts were made on normal seedlings. From some of the strains, however, counts were also made on twin seedlings. The frequencies of twin seedlings in this material will be discussed in detail later.

Fixations from two of the strains were made from countable plates. The results obtained from the remaining 22 strains are given in Table 1. Members of the twin seedlings pair are here called a and b, a being the most vigorous plant. In two members were separated. The chromosome numbers in Table 1 vary from 36 to 123, the plants from one strain have the same number within the assumed accuracy, but the numbers were considerably different. The plants are of three kinds:

1. Approximately triploid plants presumably originated by fusion of an unreduced female gamete with a reduced male gamete from the same strain or from another strain about the same chromosome number.
2. Approximately haploid plants, presumably originated by a parthenogenetic development of a reduced male gamete.
3. Plants with other aberrant chromosome numbers are presumably originated by fusion of a "reduced" female gamete with a "reduced" male gamete from another strain.