Interspecific Fertility of Two *Lotus* Species and Their F$_1$ Hybrids

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**METHODS**

Clones of 'Viking' (*L. corniculatus*), diploid generation ("raw") 4x *L. tenuis*, advanced generation 4x *L. tenuis* and *F*$_1$ interspecific hybrids of 4x *L. tenuis* × *L. corniculatus* obtained from a previous experiment (6). Only self-compatible clones were used in the study. Attempts were made to cross tetraploid *L. tenuis* and autotetraploid *L. corniculatus* (2n=24) and diploid *L. tenuis* (2n=12). Crosses of *L. corniculatus* (both initial and advanced generation) were also made to determine the compatibility.

Five *F*$_1$ interspecific hybrid genotypes, a clone of initial generation 4x *L. tenuis* and a clone of advanced generation 4x *L. tenuis* were pollinated reciprocally in all possible combinations. Five flowers of each clone were pollinated on each of the other 6 days giving a total of 300 pollinations of each clone. Pods obtained from these pollinations were stained with potassium iodide.

**RESULTS AND DISCUSSION**

Crosses of *L. tenuis* (2n=12) × *L. corniculatus* (2n=24) were attempted using the diploid species as the female parent, Table 1. Pod formation was higher (65.2%) but no plump seeds were obtained. Crosses were made reciprocal in all possible combinations. Pods were stained with acetocarmine, and a detailed study of the meiotic behavior of the interspecific hybrids was conducted on the 42 crosses, and individual comparisons were made on the fertility of each clone when used as the pollen parent (cross 2), percent pod formation (cross 1), and the pods contained numerous shrunken, nonviable seeds. No plump seeds, however, were obtained. In a cross with a clone of advanced generation autotetraploid *L. tenuis* used as the pollen parent (cross 2), percent pod formation was higher (65.2%), but no plump seeds were obtained. The fact that no viable seeds resulted in this cross probably was due to the unfavorable conditions of the developing seeds.

Recent studies (6) have shown that *L. tenuis* and *L. corniculatus* possess complementary genomes. Therefore, initial generation 4x *L. tenuis* (2n=24) and *F*$_1$ interspecific hybrid *L. tenuis* × *L. corniculatus* (cross 4) to determine...