Diploid-tetraploid comparisons in red clover: Seed weight effects on seedling growth. (C01-pfahler100830-Oral)

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Abstract:

Red clover (Trifolium pratense L.), a small-seeded legume, may have seedling establishment problems when adverse soil temperature and moisture conditions which are frequently encountered in the southeastern United States, are present at planting. Seeds of two populations, a diploid (2x) cv. 'Cherokee' and a first generation autotetraploid (4x) induced from Cherokee using nitrous oxide treatment, were weighed and then their length (hypocotyl, root) and diameter (hook, crown,midpoint of the hypocotyl) were measured at each of four dates (4, 7, 10, 13 d) after germination at 20C in the dark. The mean seed weight (standard error, standard deviation) was 1.54 (0.01, 0.23) mg for the 2x population and 2.28 (0.02, 0.29) mg for the 4x. Linear regression analyses relating seed weight to the various characters measured at each date indicated that the b values were different (p=<0.01) from zero within each ploidy level but there were no differences (p=>0.05) between b values of the 2x and 4x populations at each date. The results indicated the heavier seeds in each ploidy level produced larger and more vigorous seedlings but the 4x population with the heavier seeds, would have superior seedling establishment. Further generations of field selection are being conducted to improve the forage and seed production (number, total yield) of the 4x population.

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