Canonical Discriminant Analysis of Phenotypic Characteristics in Field-Grown Hairy Vetch. (C01-yeater134927-Oral)

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Abstract:

Frequent winterkill of fall-seeded hairy vetch (Vicia villosa Roth) used as a cover crop is a likely occurrence in the Midwestern U.S. This study was conducted to determine how V. villosa accessions in the USDA-ARS germplasm collection differ in their phenotypic characteristics and to analyze how these factors might attribute to increased winter survival. Forty-two accessions of V. villosa were grown under field conditions in Urbana, IL for two years. The factors of stem length, stem width, leaf length, and leaf width were measured from 20 individual plants of each accession during the fall and spring. Additionally, seed weight, germination, winter survival, biomass accumulation, organic carbon, and total nitrogen of each accession were measured. The data was analyzed by canonical discriminant analysis. Canonical variates 1 and 2 were significant ($p<0.0001$) and accounted for 94% of the variation. Non-hierchical clustering of the significant variates reveals that the accessions can be grouped into four distinct clusters. These clusters indicate which accessions are favorable and unfavorable for increased winter survival utilizing several phenotypic factors.

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