Genetic Variability for Mineral Element Concentration of Wild Jerusalem Atrichoke Forage. (C08-seiler095328-Poster)

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Abstract:

A potential use of Jerusalem artichoke (Helianthus tuberosus L.) is as a forage crop. Information on inherent differences in nutritional quality of forage is useful if the quality is to be improved through breeding. The objectives of this study were to determine the genotypic variability of N, P, Ca, Mg, K and Ca:P ratio in the forage of nine wild Jerusalem artichoke populations at flowering over a two year period, to determine if selection within populations is feasible, and to examine interrelationships of the elements. The adequacy of Jerusalem artichoke forage at flowering for maintenance of a ruminant animal was classified as follows: N, Ca, Mg, K adequate, P inadequate, and the Ca:P ratio high. There were genotypic differences among the nine populations for N, K, P, Ca, Mg, and Ca:P ratio for both years and averaged across years. The magnitude of the genotypic variance components indicated that a substantial proportion of the total variation among populations for these elements was due to genotype, indicating the possibility of improvement through selection. Within population variation components for N, Ca, and K were high and have potential for improvement with selection within populations, while P and Mg were low, suggesting it will be difficult to improve these elements through selection. Unfortunately, P is inadequate in the forage to begin with, and our data indicated that selecting for high P within a population may not be very successful.

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