

Effect of an Interspecific Neighbor During Selection: Alfalfa for Intercropping Systems

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Intercropping, or growing two crop species together in time and space, has reported benefits including supporting insect biodiversity, improved soil health and regulatory functions, and greater resource use efficiency/productivity compared to monocultures. To exploit the benefits of intercropping while offering new market options to growers, we are evaluating a dual-purpose system of alfalfa grown with the perennial grain intermediate wheatgrass (*Thinopyrum intermedium*, ®Kernza). To optimize alfalfa for intercropping, our research goal is to evaluate alfalfa populations selected for survival in an intercrop system (with either corn or intermediate wheatgrass) for performance when intercropped with intermediate wheatgrass. In an ongoing study planted in Wisconsin, New York, and Kansas (planted in 2023 and 2024), we compare intercropping-selected populations to unselected parent populations as well as additional alfalfa varieties with unique characteristics such as *M. falcata* populations and populations with fibrous branching roots or increased nodulation. Data collection includes: stand counts, winter survival, vigor, plant heights, lodging, regrowth vigor, summer and fall biomass harvest (alfalfa and weed biomass). Analysis of Year 1 and 2 data will be presented.