Effects of Soil Tillage, Crop Residue, and Winter Small Grains on 0 - 2 Meter Wind Speed Profiles. (S06-vanpelt152939-Poster)

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Abstract:

The velocity of wind decreases logarithmically as it approaches the earth's surface. The rate of decrease is a function of the friction velocity (u*) and of the apparent roughness height (zo). We installed wind speed profile masts with cup anemometers at 0.5, 1.0, and 2.0 m heights and a hot wire anemometer at 0.01 m. Wind speed profiles were measured over bare surfaces with different tillage patterns and over different crop residues in 2001 and over different planting densities of actively growing winter small grains in 2002. Eroded beds and short residues on eroded beds had very little influence on estimates of u* and zo. Freshly listed beds on 0.75 and 1.0 m spacings had little influence on u* and zo estimates except when the wind was nearly perpendicular to the direction of tillage. Sparse, tall rye residue had the greatest influence on both u* and zo in 2001, but the effects degraded throughout the period of study. In 2002, planting density did not affect estimates of u* and zo and the estimates did not vary significantly from that of bare ground until the jointing growth stage.

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