Organic Matter and Elemental Allelopathy Influence on the Sustainability of Invasive Weeds. (S07-bottoms155014-Poster)

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Abstract:

Invasive weeds, such as Russian knapweed (Acroptilon repens L.), have interference mechanisms that contribute to their robustness. Knapweed infested areas in Central Wyoming were evaluated 10 years following renovation treatments with picloram and interseeding grasses no-till. Organic matter and soil-Zn at the 0-1.25-cm depth in knapweed-infested areas were nearly double the 0-2.5-cm depth, and 9- to10-fold greater than in areas of native grasses that were not infested. At 7.5-15 cm depth they were 3- to 5-fold greater. An invasive knapweed monoculture that developed over 40 years had accumulated large amounts of plant duff and had increased the organic matter and soil nutrient values in the upper soil profile. Knapweed yielded 2526 kg/ha compared to 322 and 863 kg/ha, respectively, for areas of native grass and plantings of 'Bozoisky' Russian wildrye (Psathyrostachys juncea Fisch. Nevski). Soil, tissue and duff nutrient values under knapweed were compared with those in the seeded grass 10 years after renovation. Calculations indicate pre-invasion nutrient levels can be recovered in 14 to 38 years following renovation treatments that suppress elemental allelopathy influences.

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