Barley Response to Defoliation by Grasshoppers (Melanoplus sanguinipes) under subarctic conditions. (C03-begna171208-Poster)

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Abstract:

Grasshoppers are common pest of barley (Hordeum vulgare L.)in Alaska, but there is no information about its response to herbivory by grasshoppers. In two growth chamber experiments, we studied the effect of 4 densities of Melanoplus sangunipes F., equivalent to 0, 25, 50, 75 grasshoppers m2, on barley plant growth and carbon to nitrogen ratios of plant parts. Plants were exposed to 3rd to 4th instar grasshoppers in 3rd to 4th leaf stages (experiment1) and in 1st to 2nd leaf stages (experiment 2). Generally, a significant reduction in above ground dry matter (DM) occurred only at the highest grasshopper density. The reduction in DM due to grasshoppers was greater for early than later plant stages. Root length and surface area were significantly affected by grasshoppers only in plants at an early stages. Grain vield, averaged over experiments, was reduced at 50 (18%) and 75 (36%) grasshoppers m2. The C:N ratio of above ground plants, averaged over experiments, was significantly higher, for the control than any of the other densities, whereas the C:N of seeds was affected only by the highest density. The results indicate that greater or equal to 50 grasshoppers m2 could cause significant damage in barley production under cool subarctic growing conditions, especially in younger plants.

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