**Unravelling Plant-Soil Feedbacks in Arctic Permafrost Disturbances**

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Arctic plant communities are experiencing accelerated temperature rises and increasing disturbance frequency. These environmental changes accelerate the expansion of tall, deciduous shrubs and influence their productivity, structure, and functional trait expression. Disturbances like rapid ice thaw or ‘thermokarst’ increase the amount of unfrozen soil available to plants and increase the accessibility of plant-available nutrients. This spurs shrubs to grow faster and produce greater quantities of litter than their counterparts in undisturbed tundra. However, it is unknown how disturbances alter shrub functional trait expression and plant-soil nutrient cycling dynamics. This research investigates how shrub traits are shaped by the unique conditions in disturbances and explores the potential impact on nutrient cycling. Shrubs were chosen from two thermokarst types north of Inuvik, NWT. Leaf, wood, and structural shrub traits related to productivity and leaf litter quality were measured in two focal shrub genera (Alnus and Betula). We expect shrubs in disturbed sites to exhibit increases in productivity-related trait expression and that litter decomposition in disturbances is therefore faster. Increased decomposition rates could alter tundra ecosystem function by boosting plant productivity, soil litter inputs, and nutrient cycling. These changes have implications for carbon cycling, soil microbial communities, and runoff to aquatic systems.