TRU Current Student Abstract

Student Name:

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Thesis Title:

Sterilizing Excavated Soils Contaminated with Knotweed (*Reynoutria*) Propagules using Heat and Anoxia

Supervisor:

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Abstract:

Invasive knotweeds in North America, including Japanese knotweed (*Reynoutria japonica*), Giant knotweed (*Reynoutria sachalinensis*), and Bohemian knotweed (*Reynoutria* × *bohemica*) have been attributed to significant environmental, structural, and economic damage around the world. The plants significantly reduce native plant and invertebrate diversity in natural, and costs for control of the plants in British Columbia, largely to prevent structural damage incurred as the plant grows through foundations and roads, has reached an estimated $30 million annually. These issues have led to Knotweeds being included among only 37 other plants in the International Union for the Conservation of Nature's list of the 100 worst invasive species in the world.

Given the profound impacts of *Reynoutria* species, they have become a target for research by many jurisdictions around the world, though most projects seem to focus on specific treatment techniques, rather than looking into the physiological limitations of the plants. My research aims to find some of these limitations and create publishable data that can be used to inform the use of various treatments making use of the plant's thermal and anoxic limitations. My research aims to determine the temperatures and periods required to ensure 100% mortality of knotweed rhizomes and seeds. I also intend to determine mortality rates of rhizomes and seeds subject to anoxic conditions. This information can then be used to inform treatment using incineration, composting, microwave radiation, thermal desorption technology, and novel suffocation and thermal treatments.