

# REVEGETATION OF GOLD MINE TAILINGS IN NOPIMING PROVINCIAL PARK, MANITOBA

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**Abstract:** It has been estimated that over 10, 000 abandoned/orphaned mine sites are present in Canada with 149 sites in the province of Manitoba. Nopiming Provincial Park in South-eastern Manitoba contains a number of abandoned gold mines that are part of the Archean Rice Lake Greenstone Gold Belt. The gold extraction (by cyanidation) from the quartz veins resulted in the formation of large volume of tailings (11 ha) on the Gunnar mine site. Small scale field experiments were designed in 2006 and 2007 to test the effects of tilling, fertilizing, microbial inoculation and tailings amendment with paper-mill sludge on plant establishment and growth. Microbial inoculation of some plants, such as jack pine (*Pinus banksiana*) with rhizobacteria, has improved their survival rates in tailings in absence of paper-mill sludge. The addition of paper-mill sludge (5.6 kg m<sup>-2</sup>) to tailings in the 2006 experiments increased the growth of red fescue (*Festuca rubra*) and alfalfa (*Medicago sativa*). However, the results of the 2007 experiments showed that although amendment of tailings with paper-mill sludge and fertilizer improved the growth of willow (*Salix sp*) and tamarack (*Larix laricina*), there was no significant effect of paper-mill sludge on plant survival and grass/legumes cover. The results suggest that the wet conditions in spring 2007 partly diminished the beneficial effects of tilling, paper-mill sludge and fertilizer on plant growth. These preliminary results suggest that paper-mill sludge amendment following tilling could be beneficial for plant growth in gold mine tailings if drainage of tailings is taken into account during revegetation. These results also lay the groundwork for larger scale revegetation studies at the Gunnar mine tailings.

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