

Aspen sprouting response to above ground disturbance on a reclaimed boreal oil sands site in  
Alberta, Canada<sup>1</sup>

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**Abstract:** Reclamation of an oil sands mine requires the re-establishment of a self-sustaining ecosystem, consisting of native species. Aspen (*Populus tremuloides* Michx.) are an important early successional species in the boreal region. After an above ground disturbance, aspen commonly regenerate via root suckering and stump sprouts, herein defined as sprouting. Abundant sprouting is important for successful re-establishment of aspen stands, and is seen after forest fires and harvesting. However, we do not know how abundant sprouting would be on recently reclaimed oil sand sites if they were affected by a disturbance. To determine the sprouting response of aspen growing on a reclamation site to an above ground disturbance we cut individual trees 2.5 cm from the ground in May of 2017. Trees were selected across the two soil types used on the reclamation site: forest floor-mineral mix and peat-mineral mix; as well as across three height classes: 100-199.9 cm, 200-299.9 cm, and >300 cm. In August of 2017, we returned to each cut tree to assess the type (sucker vs. stump sprout) and abundance of regeneration. Soil type had a significant effect on the amount of sprouting, with trees on peat-mineral mix producing 13 suckers and 10 stump sprouts on average per tree, while trees on forest floor-mineral mix produced 8 suckers and 3 stump sprouts on average. Taller trees tended to produce more suckers; however, height did not have an effect on the number of stump sprouts produced. Competitive effects on sprouting were also assessed, with higher amounts of competition, especially from grasses, hampering sprouting response. This could be a factor when comparing soil types, as forest floor-mineral mix tends to have much higher ground cover compared to the peat-mineral mix. Overall, the use of peat-mineral mix soil is more beneficial for facilitating aspen sprouting post-disturbance on a reclamation site.

**Key Words:** *Populus tremuloides*, root suckering, sprouting, forest regeneration, land reclamation, resiliency

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