

BUDGET COMMITTEE REQUEST:

- What is our tree planting failure rate?
- Are these trees included in our annual stats?

RECOMMENDATIONS:

- That the information be received.

KEY FACTS:

- Average mortality rate for street and parks tree planting measured in our recent i-Tree study in 2025 is 3.8%. Dead trees are replaced preferably at the same location. There is one year warranty for the planted trees and 2 years inspection to ensure trees survival.
- Average mortality rate in woodlands is 30%. This is acceptable due to the town's afforestation and reforestation practices in woodland regeneration (see details below). There is a one-year warranty and 5 years "free to grow inspection" (a process to determine if an area has met its mandated reforestation requirements) to remove the invasive species ensuring the newly planted trees are successfully going through the natural succession.
- Forestry generally will not replace dead trees in woodlands. Hence there is no impact on annual stats provided to Council. Maintenance efforts are focused on competition control of seedbank buckthorn that does arise, and nature takes the path of natural succession.
- Tree planting and replacement practices in the woodland regeneration program are different from tree planting and replacement in street and parks tree planting.
- Single tree planting and replacement in street and parks tree planting aim to use available growing space for each tree while trying to eliminate or minimize the above ground and below ground competition between trees.
- Competition in afforestation and reforestation practices in woodland regeneration, are the common practice and driving force that helps native species fighting for survival in competition with invasive species and encourages natural succession in woodlands.
- A higher density planting with saplings and seedlings is used to address a few different goals in the woodland regeneration program.

- Achieving 90% canopy cover in our woodlands and natural heritage system as well as overcoming the growth and establishment of invasive species, especially invasive buckthorn, are the two main objectives in woodland regeneration.
- As woodlands mature and establish, the absolute number of trees decrease, but the average size of trees remaining increases.
- Afforestation Guide for Southern Ontario – 2019 provides guidance on the initial planting amounts ranging from 1,534 trees/ha to 4,444 trees/ha.
- Forestry plants 2,400 tree/ha in prime sites, where the site is covered with invasive buckthorn and there is not any existing mature native species for natural regeneration.
- Forestry plants 600-1400 tree/ha in enhancement sites, where there are a few mature native species in woodland to assist natural succession.

Comments:

Woodland Regeneration plans are authored by a Forest Ecologist, who is a Registered Professional Forester, and take into consideration invasive species presence, any residual native canopy cover, the physiography, soil and water characteristics of the site.

Higher density initial planting allows us to increase the variation, size and number of species we are able to plant as a part of our strategy. We only plant native trees in our woodlands such as red oak, white pine, and silver maple including a list of over 15 different species. By increasing the diversity of our native plantings, it contributes to the resilience of the woodland in case a new invasive pest or disease arises that targets a specific species.

Species planted within a high-density area will express different structure and form when they mature. For example, shrubs plantings are included to help support understory development and food for birds. They are more shade tolerant and will complement the larger stature trees that will establish the upper canopy.

High density planting is also used to combat the establishment of invasive species. Many invasive plants, such as buckthorn, are very opportunistic when colonizing new areas. They start in open pockets within or along the edges of a woodland. Once invasive plants establish, they can overtake and halt the natural succession and renewal of the woodland – resulting in a severe decline of the diversity. By accelerating coverage of these areas through higher density planting, we can reduce the opportunities for these invasives to establish.

A higher initial density is also planted to account for a certain amount of mortality arising from transplant shock or sites with particularly challenging conditions.

Other issues affecting the mortality rate include severe compacted clay soils, extreme soil moisture regimes and drought/floods can challenge the success of plantings.

With these approaches factored into the design of the woodland regeneration program – even with some mortality, replanting is usually not needed for previous sites. Maintenance efforts are focused on competition control of seedbank buckthorn that does arise.