Planting Quality Inspection Guide

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Natural Resources Canada - Canadian Forest Service - Atlantic

Effective February 2023

Introduction

Planting quality inspections are carried out to ensure that planting contractors meet the agreed-upon contract specifications, and to determine contractor payment for each planting unit. These inspection procedures standardize the process and thereby enable a fair and equitable evaluation. This guide is designed to assist planters, contractors, and inspectors in understanding the planting quality inspection procedure.

Contract Requirements

Once notified of the starting date, the Contractor will commence work according to the provisions outlined in the Contract. Failure to commence work on time may result in contract cancellation. The contractor will maintain a high-level of planting quality, achieve planting densities within specified limits, complete the contract on time and abide by all other contract requirements. The contractor is also responsible for completing internal quality inspections and must provide proof if requested by the project authority.

The prescribed contract spacing establishes the maximum number of plantable spots per plot and can be found in the table below:

Planting Density (trees/ha)	Contract Spacing (m)	Allowable Plantable Spots (3.99 m plot)
5,000	2	25
7,500	1.5	37
10,000	1	50
20,000	0.5	100
40,000	0.25	200

Survey Methods

Planting quality inspection plots should be established as soon as planting starts to address problems with the Contractor as they occur. Inspections are based on systematic sampling methods using a 3.99 meter radius sample plot. A 3.99-meter radius plot represents 1/200th of a hectare. The plot multiplier is 200. A pre-determined grid pattern allows both full coverage of the area and maintains the requirement for random plot location. Sample plots must be located within the area to be reforested and must not be on roads or landings. The minimum intensity required for the inspection must have 2 plots per hectare on the overall work area.

Equipment

- GPS / Camera with Photo Location Services ON - camera must be oriented landscape to avoid post image processing.
- Field Cards / Notes / Resources / References
- Flagging / Tape Measure
- Compass / Clinometer

Assessing the Plot

The process of locating and assessing a planting quality inspection includes five steps.

1. Locate the plot.
   - Plot centers must be marked on the ground in such a way that they may be re-located for monitoring or auditing purposes.
2. Count the number of trees planted.
3. Identify the number of plantable spots and excess seedlings.
   - A plantable spot is a planting location that is both an acceptable microsite and correctly spaced from other planted or acceptable natural trees.
   - The maximum plantable spots per plot (M) is derived from the planting prescription and is equal to the planting density divided by the plot multiplier.
   - If all seedlings are planted within the contract spacing specifications, the number of plantable spots generally equals the number of seedlings planted.
   - If more trees are planted than "plantable spots", the extras are coded "excess trees".
4. Credit satisfactorily/unsatisfactorily planted seedlings. For a planted seedling to be credited as satisfactory, it must meet the following criteria:
   - Be planted on an acceptable microsite for that species
   - Be properly planted and not damaged in the process
   - In order to determine if trees are properly planted on acceptable microsites, and because most faults occur ground, the inspector must excavate a sample of seedlings within the plot.
5. Adding comments which may include:
   - Damage to Seedlings
     - Broken, cut or damaged roots
     - Broken top
     - Scarred stem
     - Wasted tree
     - More than one in a hole

- Planting Spot Selection
    - Too close
    - Too wide
    - Overhead obstacles
    - Planting medium too shallow
    - Too dry
    - Too wet
    - Poor microsite selection
- Planting Quality
    - Inadequate planting spot preparation as defined in the contract
    - Tree improperly positioned on a prepared spot or mound
    - Improper root or plug placement - J or U - roots
    - Exposed roots or plug
    - Tree not straight
    - Air pockets
    - Too loose
    - Too shallow
    - Too deep
    - Unacceptable backfill

Planting Inspection Report

Plot data is recorded and summarized on the Planting Inspection Report. Calculations at the bottom produce the planting quality percent and excess results.

$$Planting\ Density = \frac{Total\ number\ of\ trees\ planted}{Total\ number\ of\ plots}$$

$$Planting\ Quality = \frac{Total\ number\ of\ satisfactorily\ planted\ seedlings}{Total\ number\ of\ plantable\ spots}$$

Tally Sheets

Date	Surveyer(s)	Training Area	Unit	Plot No.	Planting Spots	Seedlings Planted	Dropped or Wasted Seedlings	Satisfactorily Planted Seedlings	Excess Trees	Comments