SEEDING

The term seeding covers a range of practices, all of which involve the application of plant seed to a soil surface in order to establish a vegetative cover. Seeding is an important means of stabilizing soil and reducing erosion during construction as well as at the conclusion of the project. An area may be seeded as a temporary/short term erosion control strategy or as part of the final site stabilization/restoration plan.

The most common seed application methods are:

- **Broadcast** | Applying seed by hand or with a seed spreader. Because this is labour intensive it is normally done for relatively small areas or those that are not easy to access with vehicles.
- **Mechanical** | Seed applied directly into the soil by mechanical equipment such as a seed driller (Figure B1-9). Only vehicle accessible areas can be seeded mechanically.

Figure B1-9: Mechanically seeded area (left) and mechanical seeding equipment (right)

- **Hydroseeding (a.k.a. hydraulic mulch seeding)** | A slurry containing seed, mulch, water and often a tackifier, stored in a tank and sprayed onto the soil surface using a hose (Figure B1-10). The mixture may also incorporate additives to improve vegetation growth, such as fertilizer. In very large scale applications, helicopters equipped with sprayers can be used for application.

Figure B1-10: Hydroseeded area (left) and application of hydroseeding (right)

- **Pneumatic (blown) seeding with growing media** | A calibrated mixture of seed and composted soil (or other growing media) that is applied onto bare soil surfaces with a blower truck (Figure B1-11). The one-step application of seed with growing media - and various optional soil amendments - results in seed that is planted the place where it's applied, rather than close to the surface where it could be vulnerable to erosive forces. This technique can be useful for any kind of stabilization, but may be cost-prohibitive to apply where only short term stabilization is needed.

Figure B1-11: Pneumatic seeding with growing media

Application

Seeding method	Soil stockpiles	Long term inactive areas (e.g. school blocks, rear yards)	Slopes	Interceptor swales	Sediment pond banks	Permanent stabilization areas (e.g. pond blocks, front/rear yards)	Riparian zones
Broadcast	For small areas	√	√	√		For small areas	√
Mechanical		√	√			√	
Hydroseeding	√	√	√	√	√	√	√
Pneumatic seeding with growing media		√	√	Cost-prohibitive unless long term or permanent	√	√	√

Design and Installation

- In addition to the seed application method, information on the species in the seed mix and application rates should also be provided to the local Conservation Authority for review.
- Seeding or other suitable stabilization should be applied on any stripped areas of the site that are inactive for more than 30 days.
- More detailed guidance on establishing a healthy soil and vegetative cover in permanent stabilization areas is available in *Preserving and Restoring Healthy Soil: Best Practices for Urban Construction* (TRCA, 2012). Download at: www.sustainabletechnologies.ca.

Pro Tip

Applying a rolled erosion control product or mulch will help mitigate erosion, improve moisture retention and protect your seeds from drying out in the sun.

Ground preparation:

- Vehicle track and remove larger obstacles.
- Ensure that the area to be seeded is not compacted, has been roughened or scarified to create a rough and loose surface.

- For more information on assessing soil compaction and de-compacting methods, see *Preserving and Restoring Healthy Soil: Best Practices for Urban Construction* (TRCA, 2012), section 5.0.

Topsoil (where applicable):

- Ensure the topsoil does not contain materials or contaminants at levels that would be harmful to plant growth, impair drainage, or adversely impact its intended use. Topsoil should:
  - Be free of refuse, stones, wood or debris larger than 50 mm in diameter;
  - Be free of deleterious substances, plant or soil pests, undesirable grasses, noxious weeds or weed seeds.
  - Meet topsoil specifications found in *Construction Specifications for Implementing Compost Amended Planting Soil in Ontario* (TRCA, 2017), available at www.sustainabletechnologies.ca.
- Topsoil should have a pH of 6.0 to 8.0 and contain 5 to 15% organic matter (by dry weight), depending on the type of vegetation to be established. A higher organic matter content is recommended for planting beds and tree pits, since larger, deeper rooting plants need deeper and richer topsoil to thrive.
- Ensure topsoil application at a minimum thickness of 200 mm. Where a pneumatic seeding application is used, topsoil may be substituted with the pneumatically applied growing media itself.
- Total uncompacted soil depth (topsoil + subsoil) should be at least 300 mm.

Seed:

- Consider whether you need a secondary erosion barrier during seed establishment:
  - Where broadcast or mechanical seeding is being used, additional erosion protection (e.g. rolled erosion control product) is required until seed is well established.
  - If hydroseeding is being used, the area can be considered stabilized as soon as the application is successfully completed, provided that a tackifier was included in the slurry. If no tackifier was included, additional erosion protection (e.g. rolled erosion control products) should be used until seed is established, particularly in high erosion risk areas.
  - Where pneumatic seeding with growing media is used, it can prevent erosion immediately after application.
  - Regardless of seeding method used, more intensive erosion controls (e.g. hard armoring, cellular confinement system) may also be necessary in high erosion risk areas (e.g. slopes steeper than 2H:1V).

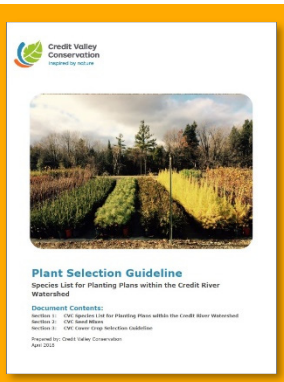
Optimal Seeding Times

April 15 – October 15

Late spring is ideal during drier conditions

Fall is best for dormant wildflower seeds

- For permanent stabilization areas (e.g. restoration areas, stormwater pond blocks), choose an appropriate seed mix based on site conditions, climate, surrounding vegetation community, topography, soil conditions, and adjacent land uses.
- Native seed mixes are required in CA regulated areas and recommended in non-regulated areas.
- For permanent stabilization areas, seed mix should be applied at a rate of 22-25 kg/ha or approximately 250g/90 m² for smaller areas.
- A nurse/cover crop should be added to every seeding application – to aid in the quick establishment of erosion and weed control – at a rate of 15-22kg/ha.



For plant lists and detailed guidance on selecting species for planting plans, seed mixes, and cover crops, see Credit Valley Conservation's *Plant Selection Guide* (CVC, 2018).

The Guide is available at www.cvc.ca or in the Sustainable Technologies Evaluation Program Resource Library at sustainabletechnologies.ca/resource-library/water.

- If cover crop is being used alone (e.g. temporary stabilization areas), application rate should be 25-60 kg/ha, depending on the density of cover needed to prevent erosion.
- For cover crops, ensure that the timing of the application coincides with appropriate growing windows as listed in Figure B1-12.
- If germination is not anticipated during the same growing season when seeding was carried out, additional erosion control measures (e.g. rolled erosion control products) are required to provide interim stabilization until vegetation is visible.

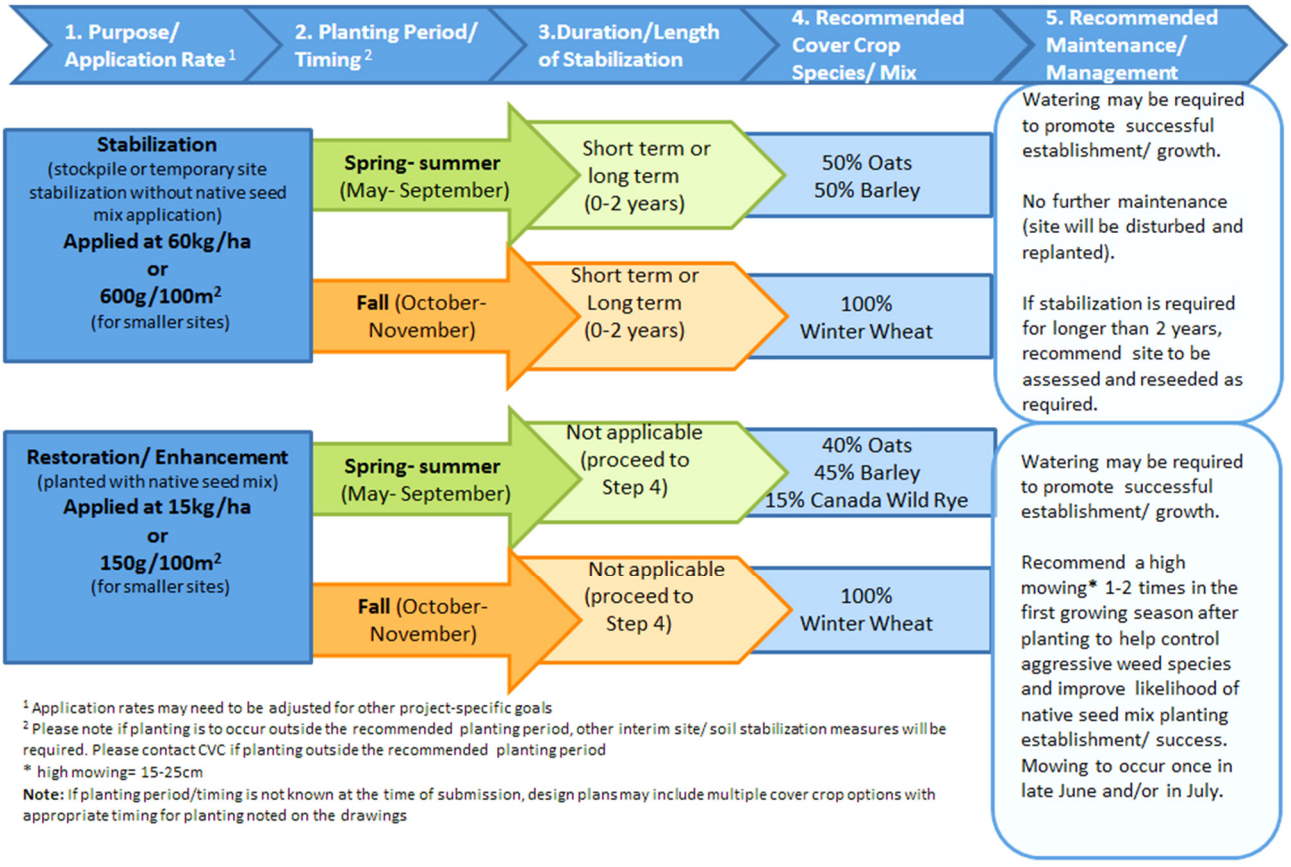


Figure B1-12: Decision guide for cover crop selection. Source: Plant Selection Guide (CVC, 2018).

Inspection and Maintenance

- During seeding, check seed tags to confirm that the correct (approved) seed mix is being applied.
- Inspect seeded areas weekly, and before and after significant rainfall (see definition in Section 10.1.2) or snowmelt events, and keep a record of the inspection. Beyond this routine inspection, additional inspections of seeded areas may be needed when the seed is newly planted as well as during periods of drought.
- Establish a plan to ensure seeded areas are irrigated as needed, particularly if application is occurring during dry weather periods.
- Ensure vehicles and equipment are not driving over areas that have been seeded. To prevent damage, seeded areas should be fenced off during vegetation establishment, particularly if it is a busy and heavily used area.
- During inspection, determine whether seed is well established with good coverage (>80%).
- Look for any evidence of erosion on seeded areas (rilling). Where erosion is occurring, determine whether a higher seed application rate is needed, if the area should be reinforced with additional erosion control measures (e.g. blankets, mats), or if flows should be re-routed around the seeded area.
- Regrade and re-apply topsoil and seed in areas that didn't take or that have been removed by erosion.
- Any repair or maintenance needs identified should be repaired within 48 hours or sooner if natural receptors are at imminent and foreseeable risk of adverse impact.
- Consider planning and budgeting for long-term as re-seeding may be required over time.