# Critical Area Planting

## *Vermont Conservation Practice Job Sheet* *342*

## Definition

Establishing permanent vegetation on sites that have or are expected to have high erosion rates, and on sites that have physical, chemical or biological conditions that prevent the establishment of vegetation with normal practices.

## Purpose

This practice is applied as part of a conservation management system to support one or more of the following:

- Stabilize areas with existing or expected high rates of soil erosion by water,
- Restore degraded sites that cannot be stabilized through normal methods.

Additional conservation practices may be needed to achieve the desired level of treatment for soil, water, air, plant, and animal resources while meeting the objectives of the land user.

## Where used

Critical area planting is applied on highly erodible or critically eroding areas. These areas usually cannot be stabilized by ordinary conservation treatment and management; and if left untreated can cause severe erosion or sediment damage. Examples include: small concentrated flow areas, dams, dikes, levees, cuts, fills, surface mined areas and denuded or gullied areas
where vegetation is difficult to establish by usual planting methods.

## Considerations

- Species selected for seeding or planting shall be suited to current site conditions and intended uses.
- Species selection should be based factors including: Climate, soil condition and pH, slope, wetness of the site, plant characteristics, resistance to diseases and the ability to achieve an adequate density to address the problem within an appropriate time frame and permit suitable uses with ordinary management activities.
- Utilize seed that is of high quality and meets state minimum standards or is certified.
- The timing of site preparation, seedbed preparation, fertilization, planting, and mulching should be done at a time and manner that best ensures survival and growth of the selected species.
- Any necessary federal, state, and local permits must be obtaining prior to implementation of this practice.
- Erosion must be reduced or maintained at acceptable levels.
- All tillage operations should be performed on the contour to the extent possible.
- Livestock must be controlled or excluded to allow for the establishment and maintenance of the desired vegetative cover.
- Additional practices such as water control and

sediment retention structures may be required for control of excessive erosion or sedimentation.

- For the establishment of trees and the enhancement of wildlife, refer to practice Standard 612 – Tree/Shrub Establishment and Standard 645 – Upland Wildlife Habitat Management.

## Site preparation

When conventional planting is proposed (normally on slopes with a 3:1 ratio or flatter), the area should be graded or shaped to permit the safe use of equipment associated with the establishment of vegetation and maintenance.

The soil surface should be roughened lightly to a depth of 3 inches by heavy equipment or suitable farm tillage implements just prior to seedbed preparation.

If feasible, no-till seeding may also be used.

Slopes steeper than 3:1 will normally need to be planted by hand, or with a hydroseeder. The slope surface should be left in a loose, friable, and slightly roughened condition. If additional roughness is desired, stair-step grading, grooving, furrowing, or tracking may be required by heavy equipment. Grooves or furrows should be at least two inches deep. However, tracking may cause severe surface compaction, and may not be as effective as other forms of roughening. On clayey soils, use this method only if there is no other alternative.

Grading of slopes should be performed only to the extent necessary to ensure stability.

Any surface debris that may interfere with conventional cover establishment or maintenance operations should be removed.

## Topsoil

Wherever feasible, topsoil should be salvaged, stockpiled and utilized. Topsoil should not be added to slopes steeper than a 2:1 unless good bonding can be achieved.

It should also be added to sites where adverse soil properties or conditions exist which will prevent the successful establishment and where it can be applied properly and safely. It should be free of trash, stumps, roots, large rocks, noxious weeds, toxic substances, etc.

The sub-layer below the topsoil should be scarified to a depth of about 3 inches and the stockpiled topsoil spread evenly over the area.

## Seedbed preparation

All required seedbed preparation should be performed just prior to, and in conjunction with planting. If rainfall occurs between the initial seedbed preparation and the planting, the site may need to be reworked.

Seedbed preparation may not be required on newly disturbed areas. If needed, firm the seedbed with a cultipacker or other suitable implement prior to broadcasting seed and/or plants to insure good seed to soil contact and to prevent seeds or plants from being deeply buried.

Where site conditions will not permit normal seedbed preparation, loosen the soil surface by tracking and/or back-blading with a bulldozer or other suitable earthmoving equipment.

Sites which prohibit the use of conventional equipment should be prepared in such a manner that the soil surface remains in a loose and friable condition. This may be accomplished with heavy equipment during, and as a part of site preparation.

Soil disturbance can also be accomplished with the use of a chain harrow, hand tools, or similar equipment. When hydro-seeding, seedbed preparation may not be necessary if adequate site preparation was performed.

On sites where the use of conventional equipment is proposed, prepare a proper seedbed by disking, harrowing, or using other suitable tillage implements.

Incorporate lime and/or fertilizer into the top 3 to 6 inches of the soil as a part of the seedbed preparation. If hydro-seeding, incorporate the appropriate amount of lime and/or fertilizer in the slurry mix.

## Soil amendments

Soil fertility and pH level should be amended to the needs of the plant species planned.

Application of all soil amendments should be based on recommendations from a qualified soil testing laboratory, such as the University of Vermont Soils Testing Laboratory. Soil samples should be collected from the area to be seeded. If a sample is not feasible or practical, an all-inclusive fertilizer recommendation may be used as shown in Table 1.

| Species | N (lbs/ac) | $P_2O_5$ (lbs/ac) | $K_2O$ (lbs/ac) |
|---|---|---|---|
| Cool Season Grass | 50 | 90 | 90 |
| CS Grass & Legume | 0 | 90 | 90 |
| Temporary Cover | 30 | 25 | 25 |

**Table 1.** Acceptable fertilization recommendation in absence of a soil test.

## Mulching

Refer to the conservation practice standard (484) Mulching and/or associated job sheet for information regarding the use and application of various kinds of mulch.
Depending on site conditions, additional protective measures may be deemed necessary. Examples include jute mesh, silt fences, bale barriers, and soil stabilization blankets or mats.

## Operation and maintenance

Check new seedings and plantings every few days during the first month to assess progress and apply the needed care (irrigation, reseeding, remulching, etc.). Water sod establishments as needed for the first 30 days after placement.

After the first month, the planting should be inspected at least twice in the establishment year and then at least annually. Evaluate the site within several months of seeding. If the stand is uniform but too thin (50 to 80% ground cover), apply additional seed during the next optimum seeding period with a no-till drill, grain drill, or hydro-seeder as site conditions dictate. Sites with an establishment rate of less than fifty percent (50%) should be reseeded in accordance with the original planting plan. Determine the reasons for planting failure and corrective measures should be incorporated into the remedial planting.

The planting must be restored and protected from adverse impacts such as vehicular and pedestrian traffic, pest infestations, pesticide use on adjacent lands, livestock damage and fire.
Vegetation damaged by machinery, herbicides, or erosion should be repaired promptly.

The area must be protected from livestock grazing until the vegetation is well established and the site is stabilized.

If soil moisture becomes critically deficient, irrigate the site if practical and feasible.

Weed competition must be controlled by mowing or with herbicides. Use caution when spraying chemicals on lands that are adjacent to the site.

Replacement of failed vegetation should be continued until the area progresses to a fully functional condition. For forage, manage and maintain according to the standard and specifications for (528) Prescribed Grazing or (511) Forage Harvest Management. Occasional grazing and/or haying may benefit the stand.

Soil amendments should be applied as required to maintain ground cover density at the desired level (usually 90% or greater). Application of soil amendments will be based upon soil testing laboratory recommendations. At a minimum, test the soil at least once every five years or more often if indicated by periodic inspections of the practice.

Maintenance practices and activities are not to disturb cover during the primary nesting period from May 1 to July 15 for grassland species. Activities may occur during this period only in the establishment year.

To benefit insect food sources for grassland nesting birds, spraying or other control of noxious weeds should be done on a "spot" basis to protect forbs and legumes that benefit native pollinators and other wildlife.

Remove temporary diversions, silt fences, etc. after the area is stabilized.

Additional operation and maintenance requirements may be required to be developed on a site-specific basis to assure performance of the practice as intended.

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## Critical Area Planting – Job Sheet

# Specifications

Site-specific requirements are listed on the specification sheet. Additional provisions are entered on the job sketch sheet. Specifications are prepared in accordance with the Vermont NRCS Field Office Technical Guide and the Critical Area Planting practice standard (342). Information on this job sheet is considered to be part of the conservation plan.

| | | | |
|---|---|---|---|
| Client Name: | | Farm #: | |
| Field(s): | | Tract #: | |
| Designed By: | | Date: | |

| **Purpose:** Check all that apply | |
|---|---|
| ☐ Stabilize areas with documented high rates of sheet, rill or gully erosion | ☐ Restore degraded sites that can not be stabilized through normal methods |
| ☐ Stabilize areas with expected high rates of soil erosion by water | ☐ Improve wildlife habitat and visual resources |
| ☐ Minimize sedimentation on and off-site | ☐ Other: |

| **Seeding Type:** | |
|---|---|
| ☐ Temporary cover seeding | ☐ Permanent Seeding |

| **Specifications** | **Field_____** | **Field_____** | **Field_____** |
|---|---|---|---|
| Site Slope [1] | | | |
| Seedbed Preparation Method [2] | | | |
| Seedbed Preparation Date | | | |
| | | | |
| Selected Species #1 | | | |
| Species #1 Rate [3] | | | |
| Species #1 Planting Date | | | |
| | | | |
| Selected Species #2 | | | |
| Species #2 Rate [3] | | | |
| Species #2 Planting Date | | | |
| | | | |
| Selected Species #3 | | | |
| Species #3 Rate [3] | | | |
| Species #3 Planting Date | | | |
| | | | |
| Topsoil Salvage [4] | | | |

[1] Indicate the approximate site slope. **NOTE:** Machinery should only be operated on slopes flatter than 3:1.
[2] List the site/seedbed preparation method to be used: Farm Equipment, Heavy Equipment, Manual, or Other.
[3] Specify seeding rates in quantities of lbs/acre or lbs/1000 $ft^2$.
[4] Indicate whether topsoil is present and feasible to be salvaged, stockpiled and utilized. NOTE: Topsoil should not be added to slopes steeper than a 2:1 unless good bonding to the sub-layer can be achieved.

**Note: Inoculate Legumes**

| **Lime and Fertilizer** (Specify rates in quantities of tons/acre or lbs/1000 ft2) | | | | |
|---|---|---|---|---|
| **Area / Field** | **Lime** | **Nitrogen (N)** | **Phosphate ($P_2O_5$)** | **Potash ($K_2O$)** |
| | | | | |
| | | | | |
| | | | | |

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**INSTALLATION OF STRAW BALES OR SILT FENCE TEMPORARY BARRIERS**
(Show areas on the Sketch Map)

The following area(s) shall have a temporary straw bale barrier(s) installed. Bales shall be placed on the contour, placed on their sides, tight end-to-end. Two wooden stakes (30-36 inches long) shall be driven through each bale and at least 12 inches into the soil. _____

The following area(s) shall have a silt fence installed per the manufacturer's recommendations on the contour. _____

Remove the temporary barriers after the area to be vegetated is stabilized.

**Tree / Shrub Planting :** Plant the following trees and/or shrubs at spacing specified.
See Sketch for layout .
**Planting Period ( from _____ to _____ )**

| Area / Field | Species #1 / Spacing | | Species #2 / Spacing | | Species #3 / Spacing | |
|---|---|---|---|---|---|---|
| | | ft **X** ft | | ft **X** ft | | ft **X** ft |
| | | ft **X** ft | | ft **X** ft | | ft **X** ft |
| | | ft **X** ft | | ft **X** ft | | ft **X** ft |

**SODDING:** Area / Field _____ Sodding Period: _____
Carefully place (specify species type) _____ sod on the prepared seedbed and press into place. Thoroughly soak the sod with water to a depth of 4 inches after placement. Additional anchoring will be required in the following areas _____ . Never place sod on frozen soil. Where additional anchoring is needed, anchor the sod with stakes or netting. Use ½ " X ¾ " X 12 " stakes spaced 4 feet apart in each strip of sod and stake each end; or use netting according to the manufacturer's recommendations.

**MULCHING**

Uniformly mulch all the seeded areas immediately after seeding (or seedbed preparation for a dormant seeding) with _____ or _____ @ _____tons/acre or _____lbs/1000 $ft^2$.

Clear Form Fields

Print Document

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## Critical Area Planting – Job Sheet

If needed, an aerial view or a side view of the practice can be shown below. Other relevant information, complementary practices and measures, and additional specifications may be included.

Recommendation: Import digital photographs to indicate practice before and after effects. For instructions regarding importing graphics to this doc go to: ftp://ftp-fc.sc.egov.usda.gov/VT/Technical/Help/Adobe_PDF_Help_1.pdf

Scale 1"=_____ ft. (NA indicates sketch not to scale: grid size=1/2" by 1/2") ↑N

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