

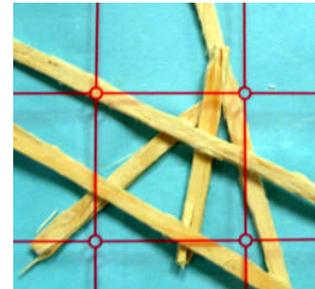
### Measuring Ground Coverage Rate for Erosion Control Mulch

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The percent ground cover is an important determinant of the initial effectiveness for long-strand erosion control materials. The percent ground cover is a dominant factor when modeling wind and rainfall erosion using programs such as WEPP.

We know that the variance of percent cover across a treated area is high with hand, machine and aerial spreading methods. A coefficient of variation (CV) of 25% or more is typical for small plots, and higher CVs are common across landscape scale projects. Thus, to obtain a reasonable estimate of the average coverage, many data points need to be collected. We recommend at least eight (8) measurements for areas of less than 1/10 acre and at least twelve (12) measurements per acre for larger areas.

The “point intercept grid” method is among the preferred ways to measure the application rate (expressed as percent ground cover) and uniformity (expressed as CV). The method requires a clear sheet of polycarbonate or similar material that is embossed or perforated with a uniform grid of intersecting lines, small diameter holes or small dots. The size of the grid sheet should be at least 200mm (8 inches) in each direction. The Forest Concepts grid sheet is small enough to carry in the field and has 48 measurement points on a 6 x 8 grid.



Using the grid sheet:

Place the grid sheet randomly on the ground in an area where mulch has been applied. From a sight-line directly above the grid, count the points on the grid that intersect with pieces of mulch. A grid point is counted if more than half of its area is above a piece of erosion-control material. (Do not count non-functional chaff since it will blow away or be incorporated into the soil within the first few minutes of rain). A point is not counted if it is above bare soil or if less than half of its area corresponds with a piece of erosion-control material. Record the number of points counted on a field data sheet.

(When training a new observer, both the grid points that correspond with mulch and the points that do not are counted, tabulated and checked against the total number of points on the grid (48, in our case) to confirm consistency and that all points are being counted.)

Mark the locations of each measurement on a site map. This will allow you to create “contour” plots of the data if that information helps explain sources of variation across the application area.

Calculate the average percent cover, standard deviation and CV (standard deviation expressed as a percentage of the mean). The average percent cover should then be compared to the contract specifications. The contract specifications may also specify allowable variance of cover by including a maximum permissible standard deviation and/or CV. Note that the CV is sensitive to the number of observations made, so a CV specification may also require specification of an appropriate sampling strategy.