The issue
Wind and water erosion cause significant negative environmental impacts and losses in productivity and profitably for graziers.

The most effective way of controlling erosion is by maintaining and improving groundcover.

This farmtalk describes how to assess the erosion risk of a grazing paddock by measuring groundcover using step pointing.

What we know
Groundcover is any material that covers the soil such as, live plant material (e.g. grass butts), dead plant material (litter, leaves, branches and logs), rocks, cryptogams (lichens, algae and fungi) and dung (Figure 1).

Paddocks with a minimum groundcover of 40% not only display significantly reduced erosion but are also "rain ready" that is, the vegetation is able to respond better to rain from increased water infiltration, reduced run-off and evaporation.

What to do
The best place to collect information on groundcover percentages is in a vegetation type representative of the paddock and at a point located between 1km and 1.5km from a waterpoint.

This will be close enough to register high grazing pressure, but sufficiently distant to avoid the heavily grazed and extremely disturbed zone around the waterpoint.

1. Mark the site with a steel fence post.
2. Place a pencil or pen mark on the tip of a boot.
3. Walk out 100 paces (50 observations) noting, in your notebook, each time what is under the mark on your boot (i.e. cover or bare ground).
4. To avoid bias avoid looking down until your foot is still.
5. In bush country (e.g. bluebush), include bushes in counts.
6. Once you have done this, turn around, move ten paces away from the line you have just walked and walk back 100 paces repeating the process (see Figure 2).
7. Count up the total number of observations. There should be 100 observations.

Groundcover is not:
- Bare, loose soil
- Scalds/claypans

Groundcover consists of:
- Live plants
- Sticks/logs
- Litter/dead plant material
- Rocks/stones
- Dung
- Soil crusts (able to withstand hoof impact)
- Cryptogram/lichen (usually brown, green or white)

Estimating Groundcover for Erosion Control on Low Rainfall Grazed Land

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8. Also record in your notebook the date, paddock name, vegetation type and direction walked from steel post.

9. If you have more time, doing more steps, e.g. 200 or 400, increases the accuracy of this method.

Example Calculations
\[
% \text{ groundcover} = \frac{\text{No. of times groundcover is recorded} \times 100}{\text{No. of observations}}
\]

If you counted groundcover 72 times during your 100 counts, then,
\[
% \text{ groundcover} = \frac{72 \times 100}{100} = 72\%
\]

Calculating average groundcover for a paddock
Groundcover in different parts of a paddock will vary depending on distance to water, vegetation type and previous management practices. To gain a better understanding of the average groundcover for the entire paddock, several sites need to be established.

A suggestion is to repeat steps 1-6 at three sites for each main vegetation type in the paddock (e.g. Belah-Rosewood, Bluebush, Grassland, Mallee, etc). These sites should also be located at different distances from water (for total paddock assessment some sites may have to be farther than the recommended 1 to 1.5km from a watering point) and in areas with different previous management (e.g. woody weed control area, decommissioned waterpoints, etc). See the example paddock in Figure 3.

A site located 5km or more from a waterpoint can be used to track the changes driven by climate rather than by grazing.

Start to measure groundcover at critical times of the year at your sites. For example (i) when stock go in

a paddock, (ii) when stock come out of a paddock, (iii) in March/April, and (iv) September/October. When groundcover is getting near to 40%, management options might include: removal of stock, switching off the nearest waterpoint, rabbit control, kangaroo harvesting, removal of feral goats or a mix of the above.

Where to next
Aside from recording the paddock name, date and percentage groundcover in your notebook each time you make an assessment you may find it useful to make a few other simple recordings;

1. Mark either end of your step-point path with a steel peg and record the position of the site with a Global Positioning System (GPS).
2. Take a photo of the step-point path from the peg at the northernmost end.
3. Draw a sketch of the paddock including its main features and location of assessment sites similar to Figure 3.
4. The percentage cover of plant types (i.e. weeds vs non-weeds) can also be determined by adding in one or more extra categories when recording observations.

These extras would be particularly useful where a property scale and long term monitoring system were to be developed.

Further reading
farmtalk #26 Estimating Groundcover and Soil Aggregation for Wind Erosion Control on Cropping Land
farmtalk #22 Mallee Farming: Productive, Profitable & Sustainable!
farmtalk #1 Wind Erosion Control
Glove Box Guide to Tactical Grazing Management NSW DPI 1800 028 374

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