



Note

Lesley Wilson
LandWISE Co-ordinator
PO Box 7295
Taradale
Mob: 025 205 7323
Ph: 06 845 9210 extn 315
Fax: 06 845 9212
e-mail:
lesley@hbrc.govt.nz

WIND EROSION - It affects your bottom line

Introduction:

Wind erosion in New Zealand has long been identified as one of the major factors limiting the profitability of cropping in NZ. The impacts of wind erosion fall usually into two categories, those that are immediately visible after an event and those that are not.

The immediately visible effects are usually quantifiable and have an instantaneous effect on the bottom line, the farmer remembers these as events, but they are usually recoverable.

The less visible effects are often not easily quantifiable and as a consequence can be either misunderstood, or worse, not recognised to their full extent. Recovering from the non-visible effects can take many years and often requires time scales beyond the generations of farming.

Effects of Wind Erosion

Visible and quantifiable

- Loss of newly planted seed
- Abrasion damage to crops
- Need to replant crops

These have an immediate effect on the bottom line.

Less visible and/or quantifiable

- Loss of topsoil and with it the valuable nutrients and organic matter.
- Destruction of the soils natural particle distribution as the smaller particles are blown away.

It is difficult to quantify the amount of soil lost over time, and by time it can mean generations. The ongoing loss of topsoil continually reduces available rooting depth and water holding capacity.

The fine soil particles that are lost hold most of the available nutrients which the farmer then has to replace to meet the plant's requirements.

What is a wind erosion event?

First we must define a wind erosion event. Traditionally the public notices wind erosion when soil is visible in the air (as air pollution) or when it has been redistributed, for example, against fence lines. To the farmer, however, a wind erosion event must be defined on a much smaller scale. A crop abraded by air borne soil particles, which have not been noticed on a larger scale, can have immediate financial impact. But many of these minor events gradually add up, with time representing huge soil losses.

Which soils are subject to wind erosion?

Traditionally it has been said that young silty or sandy soils, and soils derived from volcanic ash were prone to wind erosion. However, with the advent of more powerful machinery capable of breaking down even the heaviest clay to a fine tilth, all soils given the right (or wrong) treatment and the right environment can provide a wind erosion event. These events are capable of impacting on the environment and the farm bottom line.

How can minimum tillage cut wind erosion?

Minimum tillage reduces the soil's exposure to wind erosion and/or significantly decreases the intensity of an event. It works in several ways:

- It uses strip tillage or no-tillage practices where appropriate, lessening soil breakdown
- It keeps a residue cover, or cover crop, on the soil at all times, holding the soil together and slowing the wind.
- It maintains soil organic matter, which glues soil particles together making them less susceptible to wind erosion

Conclusion:

Wind Erosion events cause both immediate bottom line effects and long term less quantifiable damage to both farming sustainability and the environment.

Any soil, if mismanaged, can be subject to wind erosion. The traditional definition of a wind erosion event is too limiting. Small, generally unnoticeable movements of soil particles can affect both crop viability and soil health. Ignoring small wind erosion events leads to underestimation of both financial and environmental losses.

LandWISE, through its minimum tillage trials and demonstrations, is giving farmers the tools to grow crops with far less risk of wind erosion.



Strip tillage into mulched maize residue