

Mythbusters!

B. Vetiver

Vetiver (*Chrysopogon zizanioides*) has a very strong marketing narrative around deep roots and slope stabilisation—but the research (including NZ-specific observations) paints a more nuanced picture.

The claims (often repeated)

- Roots get to **2–3 m deep in the first year**, eventually 4–6 m or more!
- Often presented as a kind of “living soil nail”

These figures come mostly from tropical trials and ideal soils.

What NZ evidence shows

- In NZ trials, roots were:
 - ~700 mm depth after 2 years (with good density)
 - Present but much lower density at 1.0 m
- Root growth was temperature-limited at depth (cooler soils slow penetration)



That’s a big reality check –

NZ conditions do not equal tropical performance

Even where roots *can* go deep:

- The **vast majority of root mass is in the top 0–0.5 m**
- Reinforcement effect **drops off rapidly with depth**:
 - 90% strength increase at 0.25 m
 - 40% at 0.5 m
 - 12% at 1 m

So even if a few roots reach deep:

- They’re sparse
- They contribute little to structural stability



Does vetiver actually stabilise slopes?

Vetiver is genuinely effective for:

Surface erosion control

- Dense hedges slow runoff and trap sediment
- Improves infiltration and reduces rilling

Shallow soil reinforcement

- Fine roots increase near-surface shear strength
- Can significantly stiffen the top 300–500 mm

Where it's often oversold

Wet / failure-prone slopes

- Most slope failures in NZ are:
 - Rainfall + pore pressure driven
- Vetiver doesn't:
 - Drain soil deeply
 - Prevent slip planes forming below root zone

Deep-seated slope stability

- Root reinforcement is strongest near surface only
- Deep roots are too sparse to act like anchors

Consistency

- Root depth varies hugely with:
 - Soil type (clay vs sandy)
 - Temperature
 - Compaction
- In clay soils, roots often follow cracks rather than penetrate uniformly

Vetiver is great for erosion control and shallow stabilisation, **but not reliable for true slope stability in NZ conditions**—especially for slip-prone sites.



Where you could still use vetiver:

- Contour hedges on lifestyle blocks
- Gully erosion / runoff control
- Protecting batters and cut faces
- As part of a mixed planting system

Where you shouldn't rely on it:

- Known slip areas
- Steep clay slopes
- Anything needing engineering-level stability