

## Sediment traps in hill country

A farmer led study to investigate the effectiveness of sediment traps to improve water quality



**Figure 1.** Sediment trap at one of the properties in the study (left) and example of an upstanding riser trialled in the study (right).

### What are the best sediment traps in hill country?

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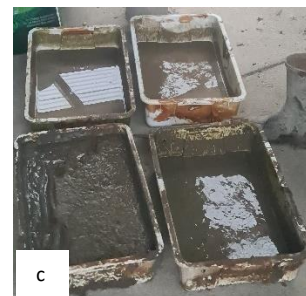
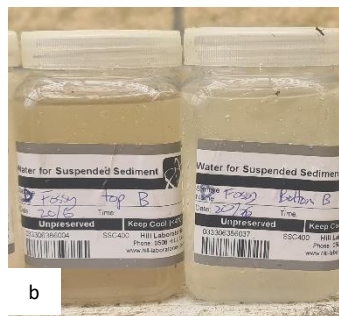
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### Project aim

- The farmers have been involved in riparian fencing and planting but saw a need to try and reduce the sediment load of water channels that appeared during larger rainfall events in small catchment areas on their hill country sheep and beef farms.
- This project examined the effectiveness of 3 different sediment traps on three neighbouring properties in the lower Mokau sub-catchment.

### Technical information

- Samplers were built to capture water at 3 different heights as it flowed into and out of the sediment traps (Fig. 2a)
- Sediment in water samples was measured from 7 different rainfall events at a range of heights (Fig. 2b)
- Sediment trays were placed in the base of the traps to measure the weight of sediment captured by the traps. (Fig. 2c)

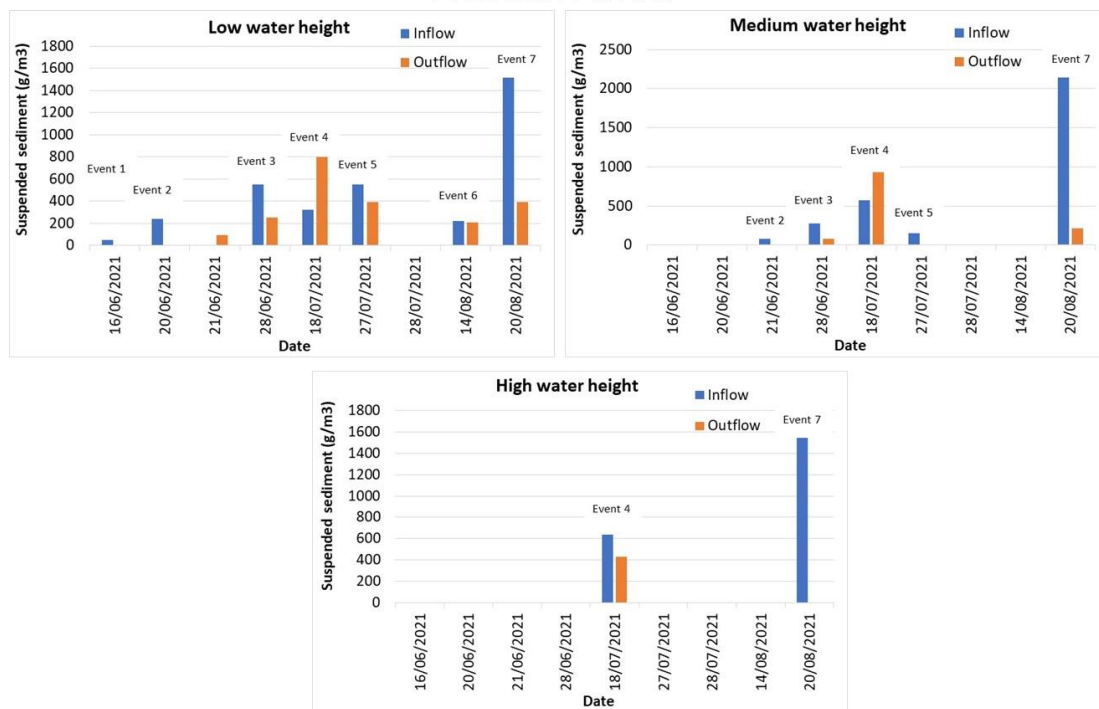


**Figure 2.** a) Sediment water sampler built as part of the project, b) example of water samples collected at the inflow (top) of the sediment trap and the outflow (bottom) and c) sediment collected in sediment trays placed in the base of the sediment traps.

**Findings**

- Sediment concentrations tended to increase with the height sampled (Table 1).
- Sediment concentrations were highly variable, but generally decreased between the inflow and the outflow, suggesting that the sediment traps were generally improving water quality (Fig. 3).
- The sediment trays showed that sediment settled in the base of the trap which means less sediment flowing downstream.
- The farmers faced challenges adapting the riser design to their environment and more work is needed to find a design that works in this environment.
- Maintaining pasture cover within the sediment trap/pond area will help reduce sediment loss even further.

### Nelson site



**Figure 3.** An example of the suspended sediment concentrations in the inflow and outflow to a sediment trap on the Nelson’s farm, measured at low, medium and high water heights across 7 different rainfall events.

**Table 1.** Average sediment concentrations (g/m<sup>3</sup>) measured in water from all rain events with the sediment trap efficiency in parentheses.

	Low water height		Medium water height		High water height	
	Inflow	Outflow	Inflow	Outflow	Inflow	Outflow
Proffit	42	41 (2.3%)	335	200 (40.3%)	35	- (100%)
Nelson	513	356 (30.6%)	690	406 (41.2%)	1140	430 (62.3%)
Foss	202	53 (73.8%)	329	301 (8.5%)	669	724 (+8.2%)

