Effect of field margin management and slope on soil erosion control during monsoon season

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One function of field margins: Erosion control

Haean Catchment, South Korea
Study Area

Source: Google 2014

Catchment size: **64 km²**

42% agriculture area
Erosion signs

- **Rainfall**: 1500 mm / year; 70% of it during monsoon season
- **Erosion**: 3000 kg / ha (Arnhold et al. 2013, Transactions of the ASABE, vol. 56)
Study design: arrangement of maps for sediment trapping

- We placed **15 mats / site at 12 sites**
- The sites were **Natural/Flat, Natural/Steep, Managed/Flat and Managed/Steep** with **three replicates** for each
Sediment collection
Collected sediments follow rainfall amount

- **Total sediments (kg)**
- **Rainfall (mm)**

The graph shows the correlation between total sediments and rainfall events over 18 events, with peaks in sediments corresponding to higher rainfall amounts.
Sediments trapped before, within and after the field margins

- All sites received similar amounts of sediment before the field margin
- Natural field margins reduced the erosion by ca. **34%**
Conclusions

• Field margins can effectively contribute to erosion control in a Monsoon region with high levels of soil erosion.
• Field margin management should favor dense vegetation cover, particularly on steep slopes.
• Next steps:
  – Model the effects of field margin management at the catchment scale.
  – Analyze the processes within the field margin, e.g. the role of community composition and plant functional traits.

Many Thanks

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