

CURRENT INFRASTRUCTURE PROTECTION PROJECTS USING VETIVER SYSTEM IN VIETNAM



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Landslides commonly occur on rural and major roads in the mountainous region, disrupting traffic

Coastal road at Son Tra near Da Nang





**Normal solution is to
build concrete
retaining walls which
are ineffective and
costly**



**Following slope reparation,
vetiver is planted on
contour lines**





Vetiver is planted on contour lines or random pattern, depending on topography





Vetiver is planted on contour lines on very steep and very hard surface





Vetiver is thriving 3 weeks after planting with adequate watering



**A major Highway in
Quang Nam Province,
Central Vietnam**



**A major Highway in
Quang Nam Province,
Central Vietnam**



**One month after
planting with
adequate watering**



First cut after six months



Extreme slope in Thua Thien Province



Vetiver was using in combination with concrete block



Vetiver solution gives better result in comparison with untreated slope nearby



Without Vetiver reinforcement, concrete blocks by themselves could not protect slope in long term



No Vetiver

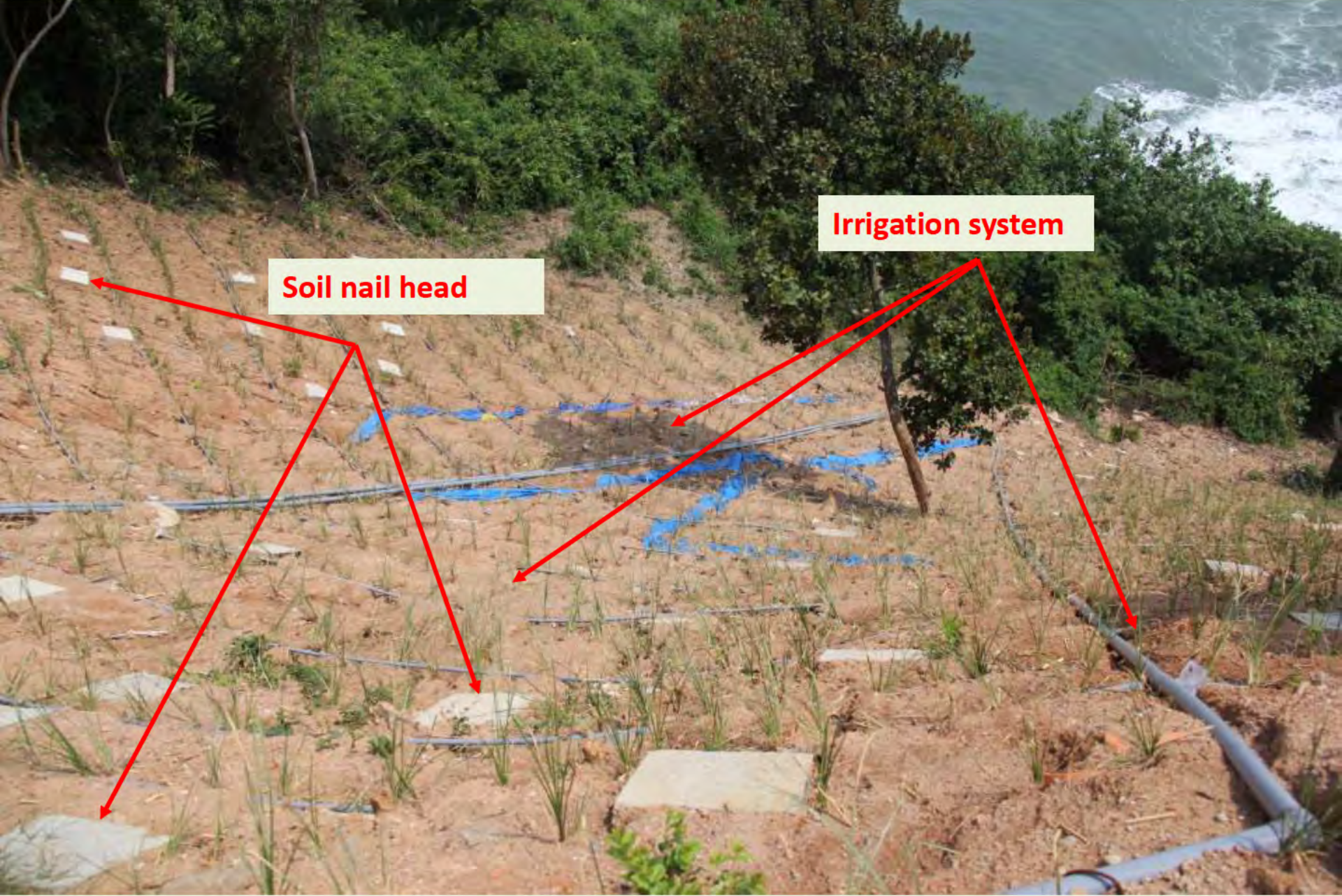
Vetiver

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Vetiver grass in combination with soil- nail in Laguna resort, Hue



Soil nail head

Irrigation system

3 days after planting



Slope protection for the road to Bana Hill, Danang



**Vetiver protects bank
of fish pond in Mekong
Delta**



River Bank Stabilisation, Quang Binh Vietnam



This is the bank of a coastal river mouth, subjected to full tidal fluctuation. Rock basket was used below high water level and Vetiver planted above to protect the bank from tidal surge during storms and typhoon season.

Under high speed flow, riverbank will fail if the toe is not protected



Vetiver planting above riprap on tidal brackish water





**River bank
stabilisation,
Central
Vietnam**

THANK YOU

**Two years after planting, note the
return of endemic species**

