Long-range approach needed for soil conservation

By Craig Turton

In February 2009 the Beechworth fire in north east Victoria burnt 12,446 hectares of private land. Landholders are still experiencing problems with soil erosion, flooding, and debris deposition from the fire and they are expected to continue for many years to come.

Most farms in the fire-affected area are adjacent to, or have boundaries with, catchments that are very steep and incised on erosive alluvial river gravels with a traditional groundcover of remnant vegetation. The high intensity burn during the fires has dramatically altered the hydrological characteristics of these areas.

The burning of vegetation and destruction of ground litter have removed the cover that protects the soil surface and acts to retain runoff. Under a catchment of eucalypt forest the canopy and groundcover act as a buffer to the effects of the rainfall event. The canopy and groundcover absorb and dissipate the energy of the rainfall. The groundcover slows runoff and promotes water infiltration into the soil and protects or armours the soil surface from being eroded by overland flow.

The removal of groundcover means that catchments affected by fire are going to experience significantly increased runoff, peak flows, flooding and erosion and deposition events. These events will continue over the next several years. Experience from the 2003 fires in the north east suggests that it will take around seven years before the vegetation recovers enough to return the rainfall-runoff relationship to a more normal regime.

The key message for private landholders in burnt catchments is to expect an ongoing increased frequency and intensity of flooding, soil erosion and sediment transport and deposition. Fences across drainage lines and dams in drainage lines will be affected.

Landholders need to plan for the fact that these events will continue to occur for some time. Careful consideration should be given to remediation works because of the increased risk of flash flooding. In small catchments with relatively low peak flows, erosion control and prevention treatments have been used very successfully. In large catchments at risk of high peak flows or flash flooding, the do-nothing option needs to be considered as any works will be at higher risk of being washed away.

Debris deposition and soil erosion caused by flash flooding in a fire-affected catchment.

Soil conservation in large catchments

- Think carefully about cleaning out farm dams which have been filled with sediment as there is still a high risk that a relatively small rainfall event will cause the dam to fill with sediment again. After the 2003 fires one farm dam was cleaned out seven times – both expensive and frustrating for the landholder.
- If a farm dam suffering from sedimentation is a strategic or key water supply, consider making alternative plans if the dam can't be protected by sediment traps or diversion.
- Construct flood gates or expendable fences in drainage lines where they are continually being washed away.
- Protect drainage lines from gully erosion by fencing to exclude livestock and revegetation to stabilise the banks.
- If physical works on waterways are planned your local CMA and Rural Water Authority may need to be consulted. For further advice contact your local DPI office.

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