

Compost: Its Effectiveness & Use in Post-fire Recovery and Remediation

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San Pasqual Valley Soils

Toxic Flows

LA Fire



Toxic Debris Clean-up Crew - LA Fire



Tools of the Trade - Check Dams

Gravel Bags



Tools of the Trade

Straw Wattles



Compost Filter Socks - “25 yrs New”



What is a Compost Filter Sock?

- ▶ A tubular mesh filled with certified composted filter media designed to allow storm water to pass through the media to remove pollutants physically, chemically and biologically to improve water quality.



Composted Filter Media Designed for Optimum Filtration & Hydraulic-flow



Recent University Research Report funded by CalRecycle

**Straw Wattle and Compost Filter Sock Performance Report
for Retaining Stormwater Contaminants
following the 2018 Camp Fire**

Published by CalRecycle - November 2024



Key Findings from Research Report

- ▶ 1. Compost filter socks retained more contaminants than straw wattles.
- ▶ 2. Deployment and management of products are important to ensure BMPs are effective for the use of either erosion control and/or contaminant retention.

Recommendations from Research Report

- Use compost filter socks in urban areas that are typically hot spots for contamination after a wildfire (e.g., mobile home parks, commercial areas, etc.).
- Use compost filter socks near waterways to improve runoff quality.
- Use straw wattles and compost filter socks in areas needing soil stabilization and sediment retention.

Toxic Flows LA Fire



Toxic Debris Clean-up Crew - LA Fire



What Does CalRecycle's Large-scale Post-Fire Remediation Chief Say About Compost Filter Socks?



What Does CalRecycle's Large-scale Post-Fire Remediation Chief Say About Compost Filter Socks?

EROSION CONTROL MAGAZINE - From the May-2017 issue

“Having worked on many fire remediation projects, Thalhamer claims he’s tried every erosion and sediment control product on the market but now has no plans of using anything but SiltSoxx (i.e. compost filter socks) for critical applications.”

Composted Growing Media Designed for Optimum Water Absorption & Plant Growth



What Does the U.S. EPA Say About Compost Erosion Control Blankets?

“Microorganisms in compost material have the ability to degrade organic pollutants ...”

“... can be left on site after construction activity and/or seeded and planted with permanent vegetation”

Storm Water Diversion with Compost Socks



Pyramid Stacks and Sediment Traps



Compost Erosion Control Blankets (CECB)



Compost Erosion Control Blankets (CECB)



CECB - Intimate Soil Contact and Vegetative Establishment Support



Dr. David Crohn's 175 pg. Research Report

**Compost Best
Management Practices
and Benefits**



California Department of Resources Recycling and Recovery

March 2011

Contractor's Report
Produced Under Contract By:
David M. Crohn

Conclusion of Fire Damaged Soils Study

Total Runoff Volume: CECB's and incorporated compost treatments reduced runoff volume by 1.6 - 23X the control

* All compost treatments substantially reduced storm water runoff compared to the control by an overall average of 7.5 times

Conclusion of Fire Damaged Soils Study

Turbidity: Runoff water leaving the compost treated plots was 1.3 - 45 times cleaner than runoff from the control plots

Blankets were more than twice as effective as incorporated compost in reducing turbidity

(11 and 4 times)

All compost treatments reduced turbidity compared to the control by an overall average of 8.6 times

Mass Flux and Why It's Important

*Mass Flux by definition is the rate of mass flow of water per unit area (acre)

More accurate measure of amount of Total Dissolved Solids (TDS) than simply measuring the concentration of TDS in water

Research shows compost trmts. significantly reduced the TDS from entering receiving waters by 10.6 times over the control on a mass flux basis

Compost and Reduced Nutrient Runoff

Conclusion: Total Sediment,
Phosphorus, Nitrate-N and Ammonium-
N were all reduced on a mass flux basis

Sediment: 57 times reduction

Phosphorus: 15 times reduction

Nitrate-N: 50 times reduction

Ammonium-N: 132 times reduction
(Compost-biosolids)

Compost and Reduced Metals Runoff

Conclusion: Heavy metals in runoff
were all reduced on a mass flux basis

Arsenic: 1.3 times reduction

Cadmium: 8 times reduction

Chromium: 4 times reduction

Copper: 3 times reduction

Nickel: 4 times reduction

Selenium: 2 times reduction

Zinc: 2 times reduction

Molybdenum: 3 times reduction

Lilac Fire - Compost BMP's Demonstration: 2018 San Diego County



Lilac Fire - Perimeter Control Compost Filter Socks



Lilac Fire - Slope Stabilization Compost Erosion Control Blanket



Vegetated CECB Blanket 1 yr. post-fire



Compost Erosion Control Blankets

“It doesn’t take much to do the job”



Compost Erosion Control BMP's

“Working with Nature to Heal the Soil”



What Are the Most Appropriate BMP's for Post-Wildfire Burn Areas?

- ▶ BMP's that research and field observations show are the most effective in filtering out ash, sediment and pollutants from storm water run-off
- ▶ BMP's that mimic nature and require less maintenance and eliminate disposal cost
- ▶ BMP's that are the least combustible and pose minimum risk of starting and/or spreading fire
- ▶ BMP's that meet EPA and California environmental goals and mandates

Conclusion

Based on these criteria, published research, field observations and experience it is clear that **compost filter socks and blankets are the recommended Best Management Practices for Pre- & Post-Wildfire Storm Water Management** and should play a much greater role in mitigating the damaging effects of storm water run-off and pollution following a wild fire

Resources on Compost Performance in Mitigating Post-Fire Contamination of Storm Water Run-off & Soil Recovery

2024 Research Report on Compost Sock Performance
Following the 2018 Camp Fire

<https://www2.calrecycle.ca.gov/Docs/Publications/Details/1740>

<https://filtrexx.com/en/filtrexx-blog/save-paradise>

<https://calrecycle.ca.gov/organics/compostmulch/toolbox/>

Research on Compost and Soil Remediation Following a Wildfire

<https://www.biocycle.net/connections-fire-and-soil/>



grow with us

SAN PASQUAL VALLEY SOILS

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