

# Fire scorched Australia's ground zero on soil impacts

Written By Melissa Coleman

Out of control blazes have ravaged most of Australia since September 2019 resulting in a synchronous loss to a large area of habitat and wildlife, but the silent impact on the nutrient of soil is a major concern. With over 10 million hectares of land devastated by ferocious fires, the long-lasting effects on soil could be irreversible. Higher temperatures and reduced rainfall increases the risk of bushfires and the severity of soil impacts. Soil Science Australia President Luke Mosley said the effects will differ depending on the intensity and severity of the fire, the soil type and condition, weather and topography. "The top (0-10 cm) soil layer can be severely affected but the affected soil depth will vary according to fire intensity and soil properties." Macronutrients in soil such as organic carbon, nitrogen, phosphorus and sulfur are elements considered essential for plant growth. "Organic carbon and nitrogen loss are two major effects associated with bushfires. It can be very difficult to re-establish organic carbon levels in the soil, however many Australian native plant species are well adapted to low nutrient conditions, so may be able to re-establish." But before regeneration can occur strategies to stabilise the soil surface need to take place. Mr Mosley said seeding with grasses has been used to achieve rapid soil stabilisation but caution needs to be applied when introducing any species that may later out-compete the native species. "Determining the best timing to implement any management strategy is important because transformation of nutrients to more soluble forms can occur resulting in increased nutrient leaching following rainfall." "Initially, after a fire, soil moisture will be lost in the upper soil layers. However, soils are good thermal insulators, and with decreased plant demand, deeper soil layers will likely retain much of their moisture," he said. Another issue is water repellency which can develop when subsequent rainfall can not infiltrate the soil and replenish the moisture. This can result in water runoff and soil erosion increasing. "Post-fire strategies to reduce erosion need to be an initial focus. Controlling structures, minimising disturbance, re-establishment of vegetation, or use of mulch are critically important." "Increased hazard reduction burning, which potentially mitigates fire risk in some areas, will also have severe effects on the soil and ecology and requires careful assessment. Increased resources for fire response to contain and limit bushfires, and post-fire to aid recovery, would be beneficial in assessing a fire policy or strategy," he said. Since the devastating bushfires, the Australian population have started to change their view about climate change and Soil Science Australia supports increased action to reduce greenhouse gas emissions to support global climate change mitigation efforts. "Climate change action in Australia and globally is required to reduce the increased frequency and severity of bushfires which are driving higher temperatures and lower rainfall," Mr Mosley said. #soilscience #australia #australianbushfires #saveourplanet #letsbethethechange Images: Luke Mosley President of Soil Science Australia Images: Cudlee Creek fire affected region of Adelaide Hills, over 25 000 hectares of the district burned including homes, outbuildings, vehicles and other property on Friday 20 December 2019

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