



Long-term effects of different type and rates of organic amendments on reclamation of copper mine tailing in Central Chile.

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A study was conducted to evaluate the long-term effects of a single application of organic amendments on a copper mine tailings. Seven years after seeding of a mix of herbaceous plant and planting of ten native trees, and the application of organic amendment, plant community and soil fertility was measured in replicated plots that received six different treatments of waste water treatment plant biosolids (100 ton/ha, and 200 ton/ha), olive oil waste (100 ton/ha, and 200 ton/ha) and pisco grapes waste (90 ton/ha, and 200 ton/ha). A control treatment that received no organic amendment was also measured after seven years. Field measurements demonstrated that application of biosolids and pisco grapes waste, at both rates significantly improved vegetation coverage in comparison to the control treatment (80 and 100% vs control, 25%). The high rates of pisco waste had the highest vegetation diversity and survival in comparison to the other treatments. The high rate of olive oil waste had a negative effect on vegetation development in comparison to the control treatment. The application of organic amendment improved soil fertility in the long-term. All the treatments had a significant higher nitrogen concentration in comparison to the control treatment. The high rates of biosolids and pisco grape waste had a significantly effect of soil carbon concentration. Soil macro-aggregate in the high rate of pisco grape waste were also higher than the control, showing a positive relation between soil recover and vegetation development. We can conclude assisted phytostabilization of mine tailings is likely a technically effective solution for the valorisation of organic residues.