

Biosolids usage:

The biosolids revolution

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Biosolids are the nutrient rich organic material resulting from the treatment of wastewater, also known as sewage sludge. Biosolids were previously disposed of into the ocean, incinerated and landfilled. In 1989 Sydney Water ceased these operations and now beneficially uses biosolids in the agricultural, forestry, landscaping and rehabilitation markets as a fertiliser and soil improver.

How the story has changed

Initially, in conjunction with two major composting contracts, 700 product tonnes were applied by sub-surface injection to 10 farms in the Camden area. Operations have now expanded in the agricultural sector to include over 80 farms spread throughout the Southern Tablelands and Central Western districts. Of the 200 000 product tonnes of biosolids now produced by Sydney Water annually, 140 000 are applied to land, allowing Sydney Water to achieve 99% beneficial use of biosolids.

Biosolids are produced in 3 forms suitable for use in the agricultural sector; liquid, dewatered and lime amended. Liquid biosolids are injected below the soil surface in the Sydney basin.

Dewatered biosolids (DWB) are between 20-28% solids. The product contains a range of plant nutrients, but its main benefit to agriculture is its N, P and organic matter levels, which has valuable effects on the soil structure. DWB contains between 2.5-4.0% N and 2.5-3.5% P. The N and P are in organic forms and are released slowly. DWB is usually applied at the rate of 10 dt/ha.

Lime is added to DWB and can be used as a substitute for agricultural lime. It is low in nutrients and consequently has limited fertiliser value. LAB contains significant quantities of organic matter and gives similar results in plant growth to agricultural lime. Lime amended biosolids are applied at rates ranging between 5 - 10 dt/ha to raise soil pH.

Throughout the last 11 years Sydney Water has spent \$11 million on biosolids research, in conjunction with NSW Agriculture, State Forests of NSW and CSIRO Forestry and Forest Products. The research has had a significant influence on the soon to be released NSW EPA Environmental Management Guidelines for the Use and Disposal of Biosolids Products and has shown that there is little risk to the environment, humans and livestock if these guidelines are followed.

The results from the research to date have been very encouraging and has demonstrated biosolids to be significant fertilisers and soil ameliorants. When land applied and incorporated biosolids increased infiltration and water holding capacities with a corresponding reduction in surface water runoff.

In a grazing trial at Goulburn at 30 dt/ha there was increased plant tissue concentrations of plant essential nutrients, increased amounts and duration of green feed production, with the result being increased sheep stocking rates.

Monitoring of streams and dams has shown no significant environmental impact of biosolids application on water or soil quality.