Australian & New Zealand Biosolids Partnership

Biosolids Production in New Zealand

The Australian and New Zealand Biosolids Partnership
National Survey of Biosolids Production and End Use 2013

June 2013

MWH

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Contents

1 Introduction

The Australian and New Zealand Biosolids partnership commissioned this national survey to identify the main features of biosolids management. This survey catalogues the following primary parameters:

- Biosolids production
- Biosolids end use
- Biosolids stabilisation grade
- Biosolids contamination grade
- Biosolids primary stabilisation process
- Biosolids dewatering process

The results of this survey are presented on a national basis.

2 Method

The approach used to determine the biosolids production in New Zealand was to survey plants serving populations of over 25,000 people or 5ML/day. This criteria captures approximately 70% of New Zealand's population.

All classifications are made on the basis of tonnes of production.

3 Classifications

To enable relatively simple analysis and presentation of the data each area of information, such as end use, was classified into a number of broad groupings. These groupings are discussed below.

3.1 Production

Production is presented in terms of tonnes of dry biosolids.

3.2 End Use

The following classifications were used for end use:

- Agriculture – for biosolids applied to land for its fertiliser value without value added processing.
- Composting – for biosolids processed through a composting facility and used for landscaping or other horticultural use.
- Forestry – for biosolids applied to plantation forests to aid tree growth
- Landfill – for biosolids disposed to landfill, including monofill
- Ocean Discharge – for biosolids disposed of to the ocean
- Stockpile – for biosolids stored, pending future planning, processing or use.
- Land Rehabilitation – for biosolids used in the rehabilitation of land including mine rehabilitation
- Unspecified

3.3 Stabilisation Grade

Stabilisation grade was classified on the basis of and A, B, or C grading. This grading was adopted in light of the broad variation in nomenclature for stabilisation across Australia and New Zealand. The equivalent gradings are shown in the table below.

Classification	NZ
A	A
B	B
C	Un-stabilised

3.4 Contamination Grade

Contamination grade was classified on the basis of A, B, C or unspecified grading. The equivalent gradings are shown in the table below.

Classification	NZ
A	a
B	b
C	Ungraded (does not meet a or b)
Unspecified	Unspecified

3.5 Stabilisation Process

Classification of the stabilisation process was made on a basis of the primary stabilisation process following the sewage treatment process. The following stabilisation categories were used:

- Anaerobic Digestion (including mesophillic digestion)
- Thermophillic Digestion
- Incineration
- Lagoon (used for biosolids storage in liquid form)
- Thermal Drying
- Composting (including vermicasting)
- Long term storage (of dewatered biosolids)
- Lime stabilisation
- Agitated air drying
- None

3.6 Dewatering Process

Classification of the dewatering process was made on the basis of the following categories:

- Belt Press
- Centrifuge
- Drying beds or lagoon
- None

4 Results

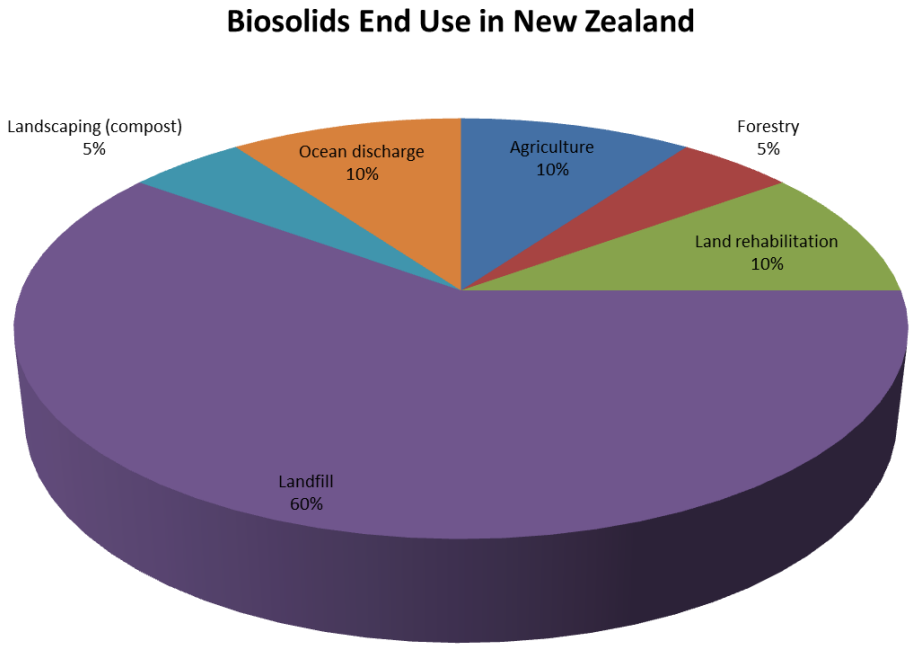
4.1 Production

The total biosolids production of New Zealand identified in the survey is approximately 74,000 tonnes per year of dry solids. The solids content of the dewatered biosolid ranges from 15% to 96%, with an average of 28%. Approximately 400,000 to 500,000 tonnes of dewatered biosolid is produced per year.

This increase from the previous survey production of 250,000 to 300,000 tonnes per year is likely related to improved information provision rather than any significant increase in Biosolids production.

4.2 End Use

The end use of biosolids in New Zealand is presented below:



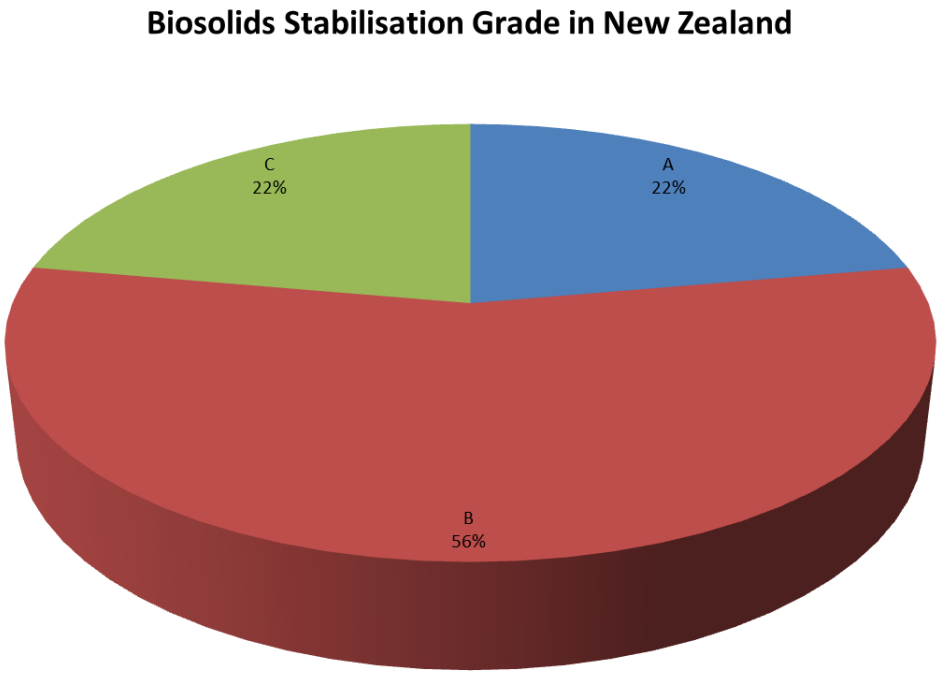
In 2011 the total percentage of biosolids sent to landfill was 78%; this has reduced to 60% in 2012. This reduction is due to an increased number of treatment plants employing ocean discharge but also a change in the variety of beneficial biosolid end uses with increased volumes of biosolids directed to land rehabilitation, agriculture, and compost products.

The percentage of biosolids applied in forestry has declined from 16% to 5%. This reduction can be attributed to a single Council changing from Forestry application to Agricultural application since the last survey. The table below shows the number of Councils employing each end-use.

End use	No.
Landfill	12
Landscaping (compost)	1
Agriculture	2
Ocean discharge	2
Forestry	1
Land rehabilitation	2

4.3 Stabilisation Grade

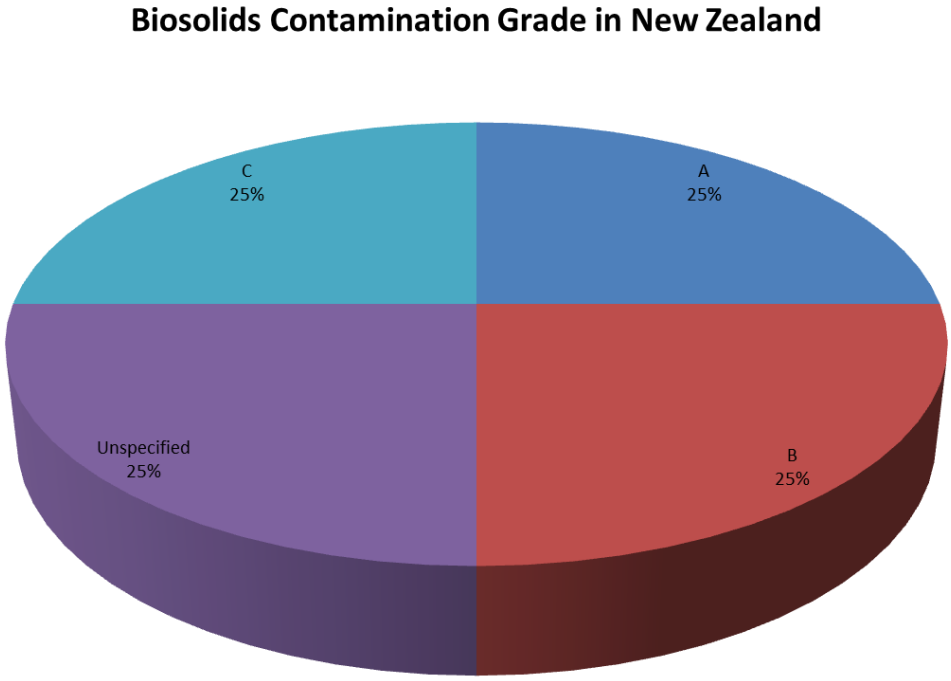
The stabilisation grade of biosolids in New Zealand is presented below:



The stabilisation grade of biosolids in New Zealand is still predominantly B; however there was a significant increase in A grades from 5% to 22%.

4.4 Contamination Grade

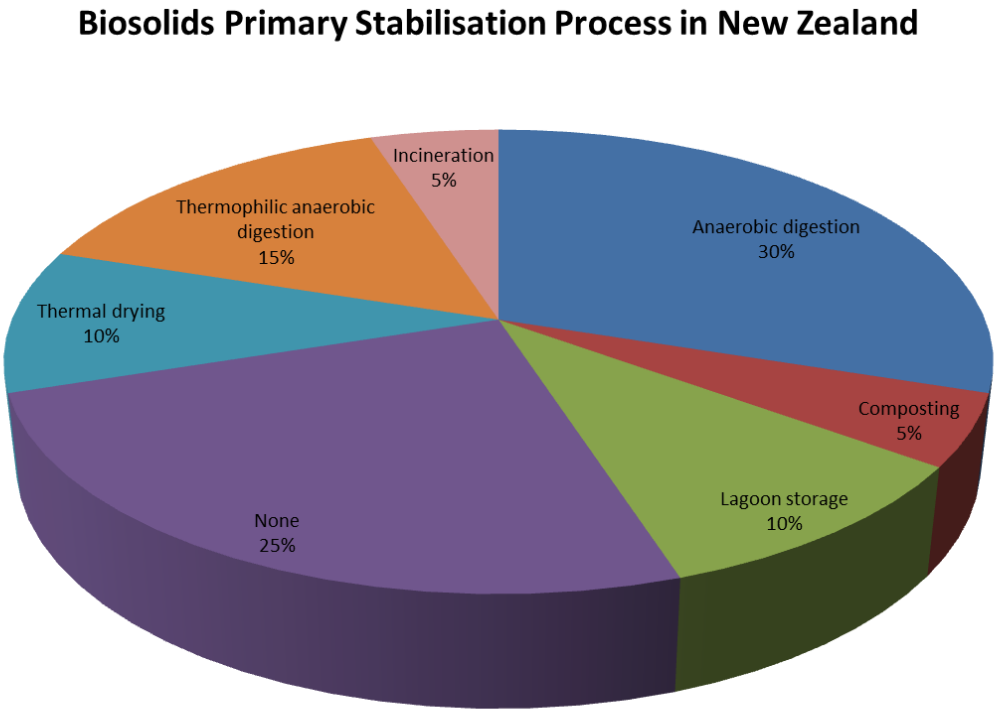
The contamination grade of biosolids in New Zealand is presented below:



The contamination grade of biosolids in New Zealand appears to be evenly split between A, B and C (ungraded). It should be noted however that 25% of plants did not specify the contamination grade of the biosolids produced.

4.5 Stabilisation Process

The stabilisation process used for biosolids in New Zealand is presented below:

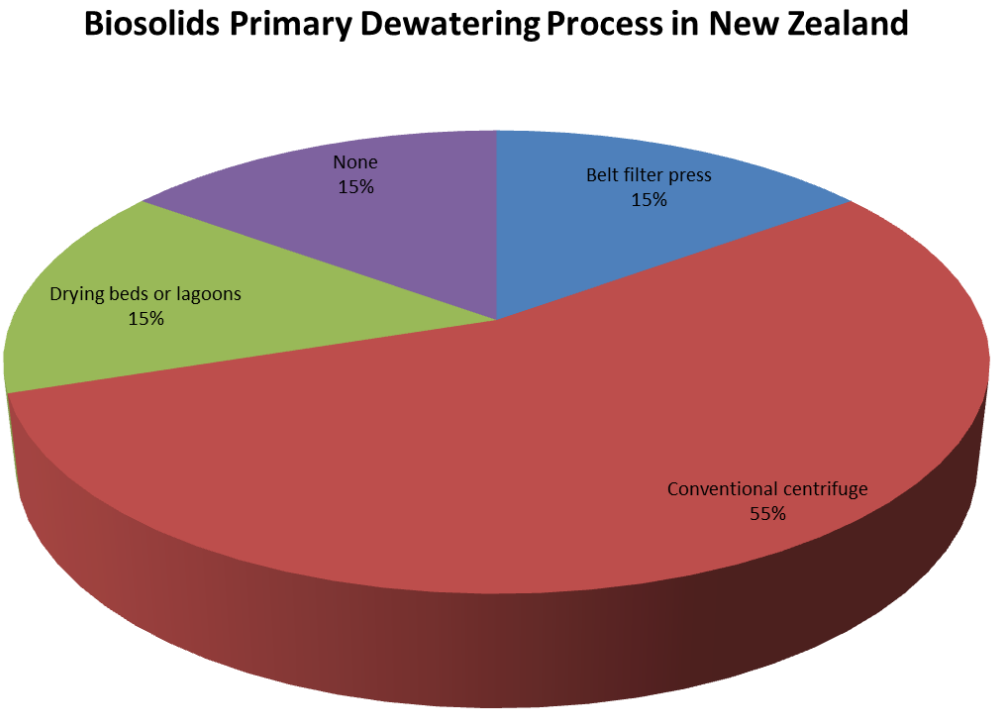


The range of primary stabilisation processes used to treat biosolids in New Zealand increased from 2011 to 2012. Increases were seen in the percentage of plants using lagoon storage, composting, and thermal drying. The number of plants not using a stabilisation process increased from 14% to 25% and the use of anaerobic digestion decreased from 80% to 45% (including both mesophillic and thermophillic digestion). The table below shows the number of Councils employing each process.

Stabilisation Process	No.
Anaerobic digestion	6
Thermophilic anaerobic digestion	3
Lagoon storage	2
Composting	1
Thermal drying	2
Incineration	1
None	5

4.6 Dewatering Process

The dewatering process used for biosolids in New Zealand is presented below:



The percentage of plants using no dewatering process, drying beds or lagoons and belt filter presses increased from 2011 to 2012 and the use of centrifuges decreased.

Dewatering Process	No.
Conventional centrifuge	11
Drying beds or lagoons	3
Belt filter press	3
None	3

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