

FEEDBACK
on Behalf of
The Fertiliser Association of New Zealand
on
Beneficial Use of Organic Waste Products on Land
December 2016

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Introduction

1. The Fertiliser Association of New Zealand (**'FANZ'** or 'the Association'), is a trade organisation representing the New Zealand manufacturers of superphosphate fertiliser. The Association has two 'member companies' – Ballance Agri-Nutrients Ltd and Ravensdown Ltd. Both these companies are farmer co-operatives with some 45,000 farmer shareholders. Between them these companies supply over 98% of all fertiliser used in New Zealand.
2. The member companies have invested significantly in systems and capability to reliably estimate and document nutrient cycling on farms, with the purpose of providing sound advice and recommendations for nutrient management to support viable economic production and environmental responsibility. The systems and procedures used are applied in the same way nationally, but recommendations are specific to farmer goals, industry targets and regional council regulation. National and in particular regional consistency in the approach and framework for nutrient management is highly desirable.
3. The Association takes a particular interest in regional and national policy statements, regulation and guidelines which support sustainable management of natural and physical resources, and seeking that any regulation of land use activities that may use fertilisers is appropriate and necessary.

4. The Fertiliser Association is an active member on the Cadmium Management Group, which addresses the long-term management of soil cadmium in agricultural land so that cadmium in rural production poses minimal risks to health, trade, land use flexibility and the environment.

Feedback: Volume 1- Guide (referred to as “the Guide” within this feedback)

Section 1: Introduction

Page 1: 1.1.1 Inclusions

Comment:

5. This section includes a list of raw organic materials which are suitable for making Organic Waste Products, and the second paragraph states that all will have notable fertilising and soil conditions properties. The Fertiliser Association (FANZ) suggests that some of the listed products such as pulp, paper and cardboard waste and biodegradable nappies and sanitary items may not have such notable fertiliser qualities. Products included should have confirmed agronomic benefits. In addition, appropriate source material for application to different land uses should be clearly identified. This consideration is addressed further under Section 4.4 Animal Health and Production.

Recommendation:

6. The characterisation of products listed in Section 1.1.1 could be amended to address comment above, for example;

“Such products may have useful fertilising and/or soil conditioning properties as a result of the nutrients and organic materials they contain, and as a result of their physical characteristics. Increasing organic matter can improve soil structure, water storage and microbial health.

Product source material must be appropriate for the land use to which they are being applied. This requires consideration of legal, social, cultural, industry and trade perspectives.”

Or similar wording this this effect.

Comment:

7. The third paragraph of this section states that discharge of dairy effluent is a permitted activity.
8. This is no longer the case everywhere under increasingly stringent Regional Council regulation where consented activity status can apply. In addition, dairy shed effluent is, in general, reapplied to dairy pasture. This paragraph would be more accurate to state that the justification for

excluding dairy effluent is that it is controlled by regional council regulations under the Resource Management Act (RMA). [permitted activity is usually subject to conditions and so is still a regulatory control].

Recommendation:

9. This paragraph could be amended to more accurately reflect the justification for not including dairy effluent, for example:

“Dairy shed effluent (DSE) is not covered by this *Guide*. The responsible management of DSE is well understood, its discharge is regulated by regional councils under the Resource Management Act, and in addition, there are a number of good management practice guidelines available from the Dairy NZ website (<http://www.dairynz.co.nz/>)”.

Or similar wording this this effect.

Page 1: 1.1.2 Exclusions

10. The Exclusion section includes reference to an Envirolink Tools Grant Documents C09X1402 alongside the National Environmental Standard for Assessing and Managing Contaminants in Soil for the Protection of Human Health.

Comment:

11. While the NES is a statutory document which currently applies under regulation, the Enviro-link documents referenced alongside it, do not provide any ratified guidelines or agreed recommendations. The guideline documents referenced under this Enviro-link grant are draft documents for discussion purposes.

Recommendation:

12. As these guidelines are yet subject to scrutiny and change, the Fertiliser Association considers it premature and inappropriate to include reference to these Draft Enviro-link documents in this Guide.

The bullet at the bottom of page 1, should be deleted. i.e.

“For rural non-residential areas (agricultural land) refer Envirolink Tools Grant: C09X1402. Refer <http://www.envirolink.govt.nz/envirolink-tools/>”

Section 2: What has changed and Questions to Consider

Page 3: 2.1 Key Changes Proposed

Comment:

13. While accurately stated as a key change; The Fertiliser Association questions the use of nitrogen application limits as the primary land application control. Regional council regulations are increasingly stringent in addressing the potential adverse effects of nitrogen loss. A nitrogen application (input) limit as proposed is relatively arbitrary, not necessarily consistent with those regional council regulations which are output based (addressing system losses), and the nitrogen application limit is not effects based. Furthermore, a second tier of controls is required to address loading of undesirable trace elements, microbial pathogens and hazardous substances as these are not directly related to nitrogen content. Using nitrogen as a primary control is further discussed later in this feedback.

Page 3: 2.2 Some Questions to consider

14. Comments and concerns on the proposed approach are addressed in this feedback under the various section headings.
15. The final question on this page asks if the NES for Assessing and Managing Contaminants in Soil to Protect Human Health is an acceptable means of protecting human health in the urban environment? The question seeks alternatives?

Comment:

16. Other than being referenced in the exclusions under section 1.12, the Guide's relationship to the NES and the application of the NES for Assessing and Managing Contaminants in Soil to Protect Human Health is not addressed in this Guide. Therefore, comment on the NES is not appropriate.
17. The Fertiliser Association understands the NES for Assessing and Managing Contaminants in Soil to Protect Human Health will undergo a comprehensive review in its own right.
18. The Fertiliser Association considers that this question is entirely inappropriate within the context of this draft document for consultation on Beneficial Use of Organic Waste Products on Land.
19. Responses on the NES as a result of this specific consultation document are necessarily going to be limited and constrained. Questions on the NES arising from this discussion document will very likely create confusion and mixed messages. Furthermore, the question is in error in implying that the NES for Assessing and Managing Contaminants in Soil to Protect Human

Health only applies to urban land, or is in error to imply it should be under question only in urban land.

Recommendation:

20. The Fertiliser Association believes the question on NES for Assessing and Managing Contaminants on Soil to Protect Human Health will create confusion and mixed messages, and as such will not provide reliable information. This should be taken into account when considering feedback.

Section 3: Overview of Proposed Requirements

Page 4: 3.1 Overview of Requirements

21. The second bullet on a Page 4 identifies that nitrogen loading is the primary limit on Organic Waste Product application to land. The second sub-bullet point states that when applied to “contaminated land” the nitrogen loading should be constrained more (to 150 kg N/ha/yr instead of 200 kgN/ha/yr).
22. The third bullet on this page acknowledges that in fact Nitrogen load is not related to contaminant load and a second tier of controls is required based on contaminant concentration

Comment:

23. The application of a guideline based on contaminant concentration and contaminant loading is supported.
24. However, as briefly discussed in paragraph 13 above, the selection of a nitrogen loading limit as the primary limit on product application is somewhat arbitrary, and not an effects based measure. Regional council regulation is increasingly stringent in controlling the risk of unacceptable nitrogen loss to the environment and so while Regional Councils are fulfilling their obligations under the RMA, there is no express need to set arbitrary nitrogen loading limits, which may or may not be appropriate for protection from adverse effects due to nitrogen loss.

Recommendation:

25. Should the nitrogen loading limits be retained, it should be acknowledged clearly in the document as an arbitrary limit expressly introduced as a mechanism to limit the volume of Organic Waste Products applied to land, and it is dependent on a second tier control based on contaminant concentration and loading.
26. That is, nitrogen loading limits should not be presented as ensuring protection from adverse environmental effects due to nitrogen loss and providing protection from the addition of contaminants to the environment.

Section 4: Risk Management Issues

Page 7: 4.2.2 Risks from Metal Content

27. The final paragraph on page five makes a definitive statement that sludge or slurry related cadmium in agricultural soil cannot result in exceeding food standards (humans are protected), where it says:

“Cadmium can accumulate in crops, however in practice, humans are protected from sludge or slurry-related cadmium toxicity because the high ratio of zinc to cadmium in most organic sludges inhibits the uptake of cadmium in plants.”

Comment:

28. While it is widely accepted that high organic matter in the soil and maintaining adequate soil zinc levels are mitigations to reduce cadmium uptake by plants, the uptake of cadmium by plants is highly variable, and known to be influenced by a great many factors and interactions relating to soil characteristics and to plant species and variety.
29. To this end The Fertiliser Association considers it is inadvisable to imply food standards are protected by zinc:cadmium ratios in sludges and slurry, regardless of soil concentration and loading rate. Indeed, it is contrary to the Guides Section 6.8 which recommends monitoring to ensure contaminant limits in Type 1A and Type 1B products are low enough to prevent significant rates of accumulation.

Recommendation:

30. Amendment to this final a paragraph on page 7 is recommended; for example:

Cadmium can accumulate in crops, and this provides a pathway for potential human health effects where dietary intake standards are exceeded over the very long term. (Recommended tolerable monthly intake limits are protective over a life time's intake at these levels). To some extent plant uptake of cadmium in sludge or slurry-related applications to soil may be mitigated by a typically high ratio of zinc to cadmium in most organic sludges, as this can inhibit the uptake of cadmium in plants.

Or similar wording this this effect.

Page 8: 4.3.4 Soil organisms and soil fertility

31. The final paragraph on page 8 states:

“Evidence to-date has shown that limiting the nitrogen loadings is a practical control (refer Volume 2 - Technical Manual section 5).

32. Volume 2 -Technical Manual Section 5, provides a link to a separate report CIBR Publication 011 Contaminants Review, August 2014.

33. Page 4 of this document addresses the justification for nitrogen loading rates. It includes the comment:

When using biosolids to rebuild degraded land or low-fertility soil, biosolids are often applied at greater than agronomic rates to build up soil organic matter and improve soil fertility. The required high application rates can exceed guideline values for nutrients, which were set to avoid excessive leaching or run off into lakes and streams causing eutrophication (Tian et al., 2006). The Organic Materials Guidelines should take into account these application scenarios with recommendations for the safe application of biosolids. However, the impact and accumulation of TEs after application to either agricultural or degraded land has to be assessed.

Comment

34. The Fertiliser Association considers that the Guide using a nitrogen limit of 150 to 200 kg N/ha/yr as the definition of an agronomically appropriate limit, presents a philosophical argument for nitrogen loading as primary control, rather than a scientific argument. Depending on circumstance, agronomic requirements can be very different to these limits.

35. The argument for nitrogen loading rates does not recognise the statutory obligation of regional councils to control the adverse effects of nitrogen loss from land use activities. Furthermore, the paragraph from the report acknowledges that assessment of the impact of accumulation of Trace Elements (TEs) is required, and the Fertiliser Association considers this should be acknowledged as the key consideration in managing contaminants in soil, not nitrogen.

Recommendation:

36. If nitrogen loading is retained as a primary control mechanism, it should be acknowledged clearly in the document as an arbitrary limit expressly introduced as a mechanism to limit the volumes of Organic Waste Products applied to Land, and it is dependent on a second-tier control based on contaminant loading. (see paragraph 46 of this feedback)

Page 9: 4.3.5 Plant Health and Crop Yield

37. The topic of Plant Health and Crop Yield singles out cadmium specifically, identifying it is unlikely to affect plant health and yield at the soil levels expected to occur. i.e.

“Cadmium, while not apparently phytotoxic, can accumulate in plant tissues and present a potential health concern to humans and/or grazing animals. The levels given for cadmium in this *Guide* are designed to prevent this from occurring.”

Comment:

38. It is not clear why cadmium should be singled out specifically to address human health under the heading of Plant Health and Crop Yield. Cadmium and human health has already been addressed at Section 4.2.2. This section may be better to single out and address those contaminants which do potentially present an increased risk to plant health and crop yield.
39. Furthermore, the current soil cadmium levels in agricultural soils are well below levels which might cause any adverse effects on human health or the environment and added security for the long term is provided by implementation of the Cadmium Management Strategy. If anything, the occasional mild exceedance of food standards in any one product presents a trade risk rather than a human health risk. It would be more appropriate to address cadmium under the ‘Trade Risk’ heading than ‘Plant Health and Crop Yield’. However, this argument should not be restricted to cadmium as the trade risk is real for a very wide range of potential contaminants, as was demonstrated recently with the Russian ban on beef and sheep meat, alleged due to ‘ractopamine’ residue.

Recommendation:

40. The Fertiliser Association recommends deleting entirely the second paragraph in Section 4.3.5 Plant Health and Crop Yield.

Page 9: 4.4 Animal Health and Production

41. This section addresses recommendations for animal production systems and includes, for example, comment on procedures to apply if human waste derived products are applied to land to be re-sown to pasture.

Comment:

42. Advice in this section and or Section 4.2 Managing Risks to Human Health should include discussion on application of blood and bone products to land being grazed by ruminants, being prohibited.

Recommendation:

43. Additional commentary or a table with clear guidance on regulatory requirements such as occur with this specific example in the paragraph above, could be helpful. Legal requirements could be addressed in conjunction with a table of social, cultural, industry or trade considerations on

the type of source material being applied to different land uses by including additional information in Table 9-1 or as a separate Table.

Section 5: Product Standards and Processing

Page 14: 5.1.1 Product Grading System

44. The top of page 14 states:

“Given that nitrogen loading is the primary means of limiting the amount of contaminants applied to land, there need not (theoretically) be a maximum contaminant concentration. However, a maximum concentration is required for management controls and to reinforce the differentiation between a quality organic waste product and an unknown or noncompliant waste material.”

Comment:

45. As presented above in Paragraphs 13, 24, and 34-36 it seems disingenuous to suggest that nitrogen is an appropriate measure to control contaminants in waste products. If retained as a control on application rates it should be acknowledged as an arbitrary control, for limiting application volumes, with a second tier of control targeting contaminant concentration and soil loading rates.

Recommendation:

46. In consideration of the above the first paragraph on page 13 of the Guide could be amended as follows:

Nitrogen loading [*if not nitrogen loading, then insert the appropriate mechanism*] has been selected as the primary means of limiting the amount of Organic Waste Products applied to land. However, a maximum concentration of contaminants is required for management controls and to reinforce the differentiation between a quality organic waste product and an unknown or noncompliant waste material.

Or similar wording this this effect.

Section 6: Monitoring and Sampling Standards

Comment:

47. Support is given to the importance of monitoring and sampling standards.

Page 24: 6.8.1 Soil Sampling

Comment:

48. Support is given to nationally standardised soil sampling and monitoring protocols as presented in this section. A small complication arises where sampling protocols may vary for different contaminants, or where sampling and monitoring is conducted for different purposes.
49. Regional Councils conduct 'State of Environment' soil sampling and monitoring for different contaminants using a range of soil depths.
50. The Tiered Fertiliser Management System has approved protocols for monitoring soil cadmium, as a screening process to a soil depth of 75 mm in uncultivated soils, such as pasture soils, and a definitive sampling process to a soil depth of 150 mm in cultivated soils, such as cropping soils.
51. Section 6.8.1 describes soil sampling up to a maximum of 200 mm where organic products are incorporated, and 200mm where there is no soil incorporation. For contaminants such as cadmium which in general accumulate in the surface soil, sampling depth can have an impact on the soil concentration derived, and so it can be important that sample depth is documented.
52. As an additional consideration, and it may have been missed when reading the document, apart from requiring soil tests at least every 5 years after the initial application, there is no guidance on how long after application to wait before conducting a soil test. Such guidance might be helpful where applications are regular.

Recommendation:

53. The Fertiliser Association recommends that provision be made for following established national protocols for specific contaminants where they available, and where no specific national protocols apply, to follow those in this Guide.
54. The Guide should explicitly recommend that the soil sampling depth is recorded.
55. It is also suggested consideration is given to providing guidance on the waiting period after application before soil sampling for monitoring purposes.

Section 7: Quality Assurance Requirements

Comment:

56. Support is given to the importance of quality assurance requirements.

Page 30: 7.3 Nutrient Management Plan

Comment:

57. Support is given to the use of Nutrient Management Plans. Nutrient Management Plans, incorporating a Nutrient Budget, are an integral part of the Code of Practice for Nutrient Management (with emphasis on fertiliser use) published by the Fertiliser Association.
58. However, as discussed above, the role of nitrogen management for environmental protection when addressing contaminants is not entirely clear. As a results the role of the Nutrient Management Plan for when addressing contaminants is not entirely clear in the is Guide.

Recommendation:

59. The section on Nutrient Management Plan should be retained, but could be expanded to explain more clearly the roles of Nutrient Budgets, Nutrient Management Plans and management of contaminants, for example:

Many organic products may have useful fertilising and/or soil conditioning properties as a result of the nutrients and organic materials they contain. To ensure appropriate consideration and management of the nutrients applied a Nutrient Management Plan (NMP) is recommended.

A Nutrient Management Plan is a written plan that describes how the major nutrients and any others of importance to specialist crops will be managed to achieve the farms objectives and goals while avoiding, remedying or mitigating adverse effects on the environment. It will typically include a nutrient budget (NB) often using Overseer, SPASMO or any other recognised nutrient planning tool. The NB should document all inputs and outputs, for the farm system. It includes information on climatic and soil conditions and estimates the potential for nitrogen and phosphorus losses.

The NMP then documents actions which will help achieve the farms objectives and minimise any loss of nutrients from your production system. These actions may fall into one or several of the following categories:

- Fertiliser management
- Effluent management
- Soil management
- Pasture management
- Production and stock management
- Riparian management
- Cropping management
- Management of waterways risk from hot spots: silage pits, offal holes and farm dumps

The NMP provides for monitoring and review of the identified actions and goals.

Some regional councils require a specific NMP to demonstrate compliance with fertiliser application rules and consent conditions.

Contaminants

The Nutrient Management Plan also provides for the documentation of additional identified risks, and any regulatory or industry requirements.

In addition to documented management of major nutrients, a Nutrient Management Plan can provide for documented management of contaminants as a risk factor, where this has been identified as providing for good management practice or as a regulatory or industry requirement.

Section 8: Transport and Storage

Comment:

60. While it is identified that regulations for transport and handling apply under Land Transport Act, it might also be recommended to consider that local authorities may have specific regulatory requirements for transport and/or storage.
61. Under storage recommendations, bunding may not be necessary if storage is short term or covered, and the product is not liquid.
62. There appears to be an anomaly between the recommendation for bunding if stored for more than 24 hours for Grade B products, as described at the bottom of page 34, and the specific bunding recommendations at page 36 Section 8.2.4, which indicates bunds should be constructed if material is stored for longer than 30 days, or the stockpile is located on a slight slope (>3 percent).

Recommendation:

63. Look into adding comment or recommendations to consider local authority regulatory requirements for transport and storage.
64. Delete the sentence at the bottom of page 34 which says:

“If more than 24 hours storage is expected, Grade B products should be located within a specifically designed and built storage structure called a ‘bund’ ”

and address the requirements of bunding more consistently in section 8.2.4

Section 9: Application to Land

65. The large text box advice note that introduces this section states that for this Section:

It applies to biosolids and specific bulk product manufacturing.
It is good practice for all organic waste products but only required for manures if they are applied to salad crops.

Comment:

66. It is questioned whether it is helpful to restrict the advice and application of this section only to biosolids and bulk product manufacturing. It is also questioned whether it is appropriate to advise this section only applies to manures if they are applied to salad crops. It is noted the advice in the section applies to stock exclusion periods where organic matter of human origin is applied to land, and Table 9-1 addresses not just salad crops, but among others, applications to public amenities, fodder crops and pasture.

Recommendation:

67. In the opening text box for Section 9 Application to Land, delete the lines;

It applies to biosolids and specific bulk product manufacturing.
It is good practice for all organic waste products but only required for manures if they are applied to salad crops.

And insert: as additional bullets;

- *Pathogen content and background levels*
- *Application strategies*

Page 37: 9.1 Nitrogen Content and Application Rates

68. The opening paragraph states that:

The product nitrogen content, proposed application rate and soil characteristics influence the amount of benefit as well as the potential for soil and/or ground water contamination.
Therefore the maximum product nitrogen application rate for the Type/Grade of product needs to be used as the primary means of control.

Comment:

69. As discussed in 13, 24, 34-36 and 45 above, increasingly stringent regional council regulations provide controls for managing the potential adverse environmental effects of nitrogen applications. The input limits based on nitrogen application rates as proposed, are arbitrary limits which are not necessarily effects based. They are expressly introduced as a mechanism to

limit the volume of Organic Waste Products applied to Land. A second tier of control is necessary to address the effects of contaminants.

70. For these reasons the Guide should acknowledge that if limits are to be introduced based on Nitrogen application rates, when applying below these limits, nitrogen application should match plant requirements, and the controls on contaminants should still apply.

Recommendation:

71. Amend the first paragraph under Section 9.1 Nitrogen Content and Application Rates as follows:

The product nitrogen content, proposed application rate and soil characteristics can influence the amount of benefit as well as the potential for soil and/or ground water contamination.

Therefore the maximum product nitrogen application rate for the Type/Grade of product should not exceed plant requirements, and product management engaged such that potential adverse effects are avoided, mitigated or remedied. In addition, the potential risks introduced by contaminant concentrations and loading should be provided for. Maximum nitrogen loading rates are recommended to limit the volume of organic waste material (and contaminants) applied to land.

Additional general comment

72. Embedded within the document are references to the relationship of the management practices within the Guide to legislative instruments, such as the Health Act, Biosecurity Act, Resource Management Act, and Land Transport Act.
73. This raises the question as to whether an additional (new) section to the Guide would be helpful, to introduce the relationship and application of various regulatory requirements. For example, in addition to those already mentioned, Health and Safety at Work Act, Hazardous Substances and New Organisms Act, Agricultural Compounds and Veterinary Medicines Act, Animal Products Act, and the associated regulations which apply. Local authority regulation could also be included.

Concluding comment

74. Thank you for the opportunity to present this feedback and comment on the document “Beneficial Use of Organic Waste Products on Land - Volume 1”

End

DATED: 31 March 2017

A handwritten signature in black ink, appearing to read "G. Sneath". The signature is fluid and cursive, with a long horizontal stroke at the end.

Greg Sneath

Executive Manager, Fertiliser Association of New Zealand