Calculation of Element to Oxide for N, P & K

See July 2017 analysis report & RB209 (Section 2, Organic Matter) for values

Liquid Waste (02 03 01)

Total Solids = 1670mg/l

Application Rate (in meters cubed) = 23.5m^3/ha

Phosphorous to Phosphate

25.5mg/l Dry Weight

25.5/1000 = 0.0255 kg/m^3

0.0255 x (1670/100) = 0.42585 kg/m^3

0.42585 x **23.5** (spreading rate) = 10.007kg/ha

10.007 x 2.291 = **22.927 m^3/ha P_2O_5**

Potassium to Potassium Oxide

128mg/l Dry Weight

128/1000 = 0.128 kg/m^3

0.128 x (1670/100) = 2.1376 kg/m^3

2.1376 x **23.5** (spreading rate) = 50.2336kg/m^3

50.2336 x 1.205 = **60.531m^3/ha K_2O**

Sulphur to Sulphate

59.1mg/l dry Weight

59.1/1000 = 0.0591 kg/m^3

0.0591 x (1670/100) = 0.98697 kg/m^3

0.98697 x **23.5** (spreading rate) = 23.1937 kg/m^3

23.1937 x 2.5 = **57.9845m^3/ha SO_3**

Fields with index 4 for phosphates are; 2368, 9466, and 9060.

Fields with index 3 for phosphates are; 1515, 9995, 4984, 3478, 4470, 0865, 1865, 7992 9977,6856,5560

4470, 3478, 2368 and 9466 are grass fields, usually cut once or twice for silage.

Using RB209, page 10 of Grassland & Forage, the offtake for silage at a 25% DM is 1.7kg of phosphate per tonne of fresh material.

Using table 3.3, page 10 of RB209, the expected yield of this silage is 23 tonnes per hectare of fresh material.

Phosphate offtake for silage (one cut), is 23 x 1.7 = 39.1kg/tonne of phosphate.

The addition of phosphate from the waste is 11.46kg/ha (OXIDE), so the additions will NOT exceed the offtake of phosphate.

Fields **1515, 9995, 4984 and 9060** are grazed grass fields.

Using RB209, page 10 of Grassland & Forage, the offtake for fresh grass at 15-20% DM is 1.4kg of phosphate per tonne of fresh material.

RB209 does not give the offtake of phosphate when the grass is grazed by sheep. We estimate the offtake to be half of what the offtake is when cutting the grass for silage.

Therefore, at a removal rate/yield of 12 tonnes per hectare of fresh material the offtake is:

12 x 1.4 = 16.8kg/tonne of phosphate.

The addition of phosphate from the waste is 11.46kg/ha (OXIDE), so the additions of phosphate will again NOT exceed the crop offtake.

7992, 9977 and 6856 are arable fields (Spring Barley and Spring Barley whole crop)

Using Arable Crops RB209, table 4.11 on page 20, Spring Barley has 8.6 kg of phosphate per tonne of barely (fresh material).

At a standard yield of 5.5tn/ha for Spring Barley would bring the phosphate offtake to;

5.5 x 8.6 = 47.3kg/tonne of phosphate

The addition of phosphate from the waste is 11.46kg/ha (OXIDE), so the additions will NOT exceed the offtake of phosphate.