BUSINESS MANAGEMENT SYSTEM

(Insert Company Name)

Table of Contents

Confidentiality

This manual is the confidential property of *(Insert Company Name)*. All information contained within this manual and its associated documents is strictly confidential to the staff of the company.

Scope and Authorization

This document is the quality management system of *(Insert Company Name).*

The purpose of the document is to define the various activities that we will use to ensure that customer needs and Spreadmark standards are reliably met.

…… ……..
(Signed) (Date)

Management

We will update this quality management system as our business systems change over time.

The person with overall responsibility for quality assurance in the company is *(Insert Name of responsible person)*

Management will ensure that an annual internal audit is carried out.

Customer Needs

We will record customer instructions completely and communicate them reliably so that there is a reduced chance of a misunderstanding and so that reconciliations between individual orders and deliveries can be made.

We will record customer instructions into *(describe how company instructions are recorded)*. Where customers require Spreadmark certified spreading (either by specifying or by our understanding of their needs) then this will be recorded in the customer instructions.

Customer instructions will be communicated to spreader operators *(Explain how orders are communicated to the drivers)*. *(Explain how orders are communicated to drivers and how drivers record them once on the road).* Once the orders have been delivered by the drivers *(Describe how driver records and reports delivered orders)*.

Records of orders delivered will be kept *(describe what records are kept and how).*

Environmental Policy

In order to be an environmentally responsible company we will do the following:

- In the event of fertiliser spillage that affects a waterway the Regional Council shall be advised,
- Care will be taken to prevent fertiliser being spread or blown onto waterways,
- Spreaders will not operate on soils that are so wet that serious soil damage or runoff risk are produced,
- Spillages of fertiliser are to be avoided. If spillages occur they are to be cleaned up in a way that minimizes environmental damage and complies with such legal requirements as may apply,
- When on public roads all loads will be covered, whether empty or full, to prevent fertiliser dust blowing over following vehicles or on to roads,
- The wash down of spreaders will be done under controlled conditions and with measures in place to prevent wash water flowing into waterways, and
- A hazards sheet for the fertiliser being carried should be available within the company.

Spreading Equipment

All Spreadmark Spreader Performance Certificates will be kept in the spreader and a copy kept in a company file.

A register of company Spreadmark Certified Spreaders will be maintained. For each certificate the register will show the date of issue of the certificate and the date of its expiry. The log for doing this is found at the end of this manual.

Spreaders which hold current Spreadmark certification will be clearly identified as such. They will have Spreadmark markings on them and carry copies of their Spreadmark Spreader Performance Certificates.

Spreadmark Spreaders will be checked annually. There are a number of different ways that this can be done. Options include all or some of the following:

- using Approved Spreading Equipment Testers annually.
- using Approved Spreading Equipment Testers on a two-yearly basis and a competent person checking the performance of the spreader between Approved Tests, or
- using the self-checking system described in Section 4.9 below.

In order to be considered as Spreadmark Certified Spreaders, machinery will hold a current Spreadmark Spreader Performance Certificate.

Only spreaders with a current Spreadmark Performance Certificate will be used on jobs where the customer requires Spreadmark certified spreading. Where customers require a quality job to Spreadmark standards (either by specifying it or by our understanding of their needs) it will have been noted on their order. In addition, the record of the job done will show the spreader identification. This will enable checks to be done.

When jobs are being done to the Spreadmark standard, spreading machinery will operate at a bout width that is within the limits defined by its Spreadmark Test Certificate for the fertiliser being spread.

Spreadmark certified spreaders will have a sieve box provided so that loads of fertiliser can be checked. The sieve box will be kept with the spreader.

Operators

All of our fertiliser spreader operators will be trained and competent. There will be training records for each person to show what training they have received. The training register that will be used for each person is found at the end of this manual.

There will also be a formal assessment of the competence of each staff member. This will record the competence of each person to do the tasks that are assigned to them.

Only spreader operators with a current Spreadmark training certificate will be used on jobs where the customer requires Spreadmark certified spreading. Where customers require a quality job to Spreadmark standards (either by specifying it or by our understanding of their needs) it will have been noted on their order. In addition, the record of the job done will show the spreader operators name. This will enable checks to be done.

Work Instructions

Work Instructions will be provided for spreader operators which detail how the standard tasks involved in fertiliser spreading shall be done.

The companies Work Instructions are found at the end of this manual.

Customer Complaints

Customer complaints will be taken seriously. They must be handled carefully so that:

1. Customers are not lost,

2. The company's reputation is not tarnished, and

3. Improvement opportunities are not lost.

When customers complain the complaint is to be recorded and investigated. The customer will be advised of the outcome and (if appropriate) any remedial action that is proposed. After this, the real cause of the problem will be identified and any appropriate changes will be made to the company's systems to try to stop the problem reoccurring. The Companies customer complaint register can be found at the end of this manual.

Spreader Certification Log

Spreader Identification	Certificate Date	Expiry Date

Training Register

This is a record of the training received by each staff member.

Drivers	Training Received	Date

Competence Register

Once a driver is deemed to be competent at a key task then they need to be signed off by the companies approved trainer.

Key Tasks	Drivers									
	Trainer	Date	Trainer	Date	Trainer	Date	Trainer	Date	Trainer	Date
Knowing what spread widths and settings to use for various fertilisers and rates										
Knowing and judging ground conditions										
Driving at correct distances										
Maintaining equipment										
Cleanliness of machines and delivery slots										
Use of sieve boxes										
Communicating well with customers										

Work Instructions

Work Instructions are lists of tasks that need to be done in a particular way to get a particular end result. Where there are different ways of doing a job that may affect the end result then Work Instructions may help get the correct result. Basically explain how you want your key tasks carried out.

It may be desirable to provide Work Instructions for jobs that are not carried out on a regular basis.

Some Work Instructions may already exist as diagrams, list of tasks, procedures or in some other form.

Typical Work Instructions for a spreader driver might include:

- *Knowing and judging ground conditions*
- *Knowing what spread width and settings to use for various fertilisers and rates*
- *Driving at correct distances*
- *Maintaining equipment*
- *Communicating well*

A useful format can be:

Action	***Key Points***
1.	
2.	
3.	
4.	

Spreader Wash Down

Purpose

The purpose of the spreader wash between farms is to prevent the spread of pests/disease from one farm to the next. **When requested** by a farmer the following wash down will be carried out.

Method

1. Prior to spreading fertiliser on any farm the spreader is to be thoroughly washed down to ensure no dirt is carried between farms

2. If you are already spreading on one farm and moving to another farm then the spreader must be washed down prior to leaving the farm or prior to starting the next spreading job.

3. If heading straight out to a farm then ensure the spreader has been washed thoroughly.

4. When washing down all dirt must be removed from the tyres and spreader under carriage

Organic Fertiliser Application

Preparing equipment for applying organic fertiliser

- Prior to going on to any **Organic Farm** all equipment e.g. spreader, loader and truck are to be washed down with a High Volume water pump. The reason the high volume water wash is to ensure all residues are removed.

Organic Fertiliser Cartage

- All **Organic** fertilisers must be carted separately and the vehicle transporting the fertiliser must be clean and free of any residues.

Organic Fertiliser Storage

- All **Organic** fertiliser are stored separate to conventional fertiliser and clearly labeled
- The fertiliser must be stored in the Shed area marked **"Organics Store Only"**
- Any fertiliser picked up for **Organic Farms** must be stored this way.
- All Organic Fertiliser stored in the Organic shed must be recorded into the Day Book. Information must include licensee, farm, date of application, tonnage and Supplier

Work Instructions for using the Sieve Box

Purpose

The purpose of a sieve box is to get an objective measure of the distribution of particle sizes in a sample of fertiliser.

The distribution of particle sizes along with the bulk density – are important to ground spreaders as these characteristics affect spreading performance. The

mean particle size (expressed as a Size Guide Number – SGN), the range of particle sizes (expressed as a uniformity Index – UI) and the bulk density (BD) are the three most important physical characteristics for spreaders. For more information of these characteristics, see the Definitions part of this Code (Section 5).

Sieve boxes work by separating the fertiliser into different size categories so that the SGN (average particles size) and UI (representing the range of particle sizes) can be estimated or calculated.

Description

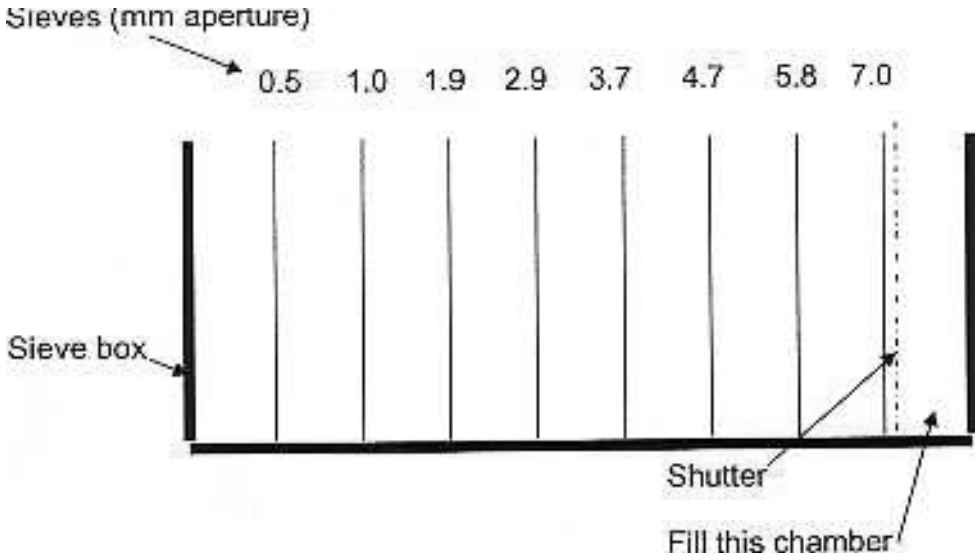
While all designs of sieve boxes are acceptable to the Fertiliser Quality Council, the following design of sieve box is preferred so that consistency is facilitated.

- Inner Dimensions 155mm x 60mm x 25mm
- Volume of each chamber 232cc
- Sieve Sizes (mm, actual aperture) 0.5, 1.0, 1.9, 2.9, 3.7, 4.7, 5.8, 7.0.

Use of the Sieve Box

1. Make sure all sieve chambers are empty.

2. With the coarsest (7mm) screen to the right, place the shutter against the 7mm screen as shown, then fill the right hand column, tapping the box gently to settle the fertiliser. Screed off the surplus fertiliser, then withdraw the shutter.



3. Put the top on the sieve box, then turn the box so the filled chamber is uppermost, and shake the sieve box gently for about 10 seconds.

4. Turn the sieve box upright again and gently tap it so the levels in each column are level.

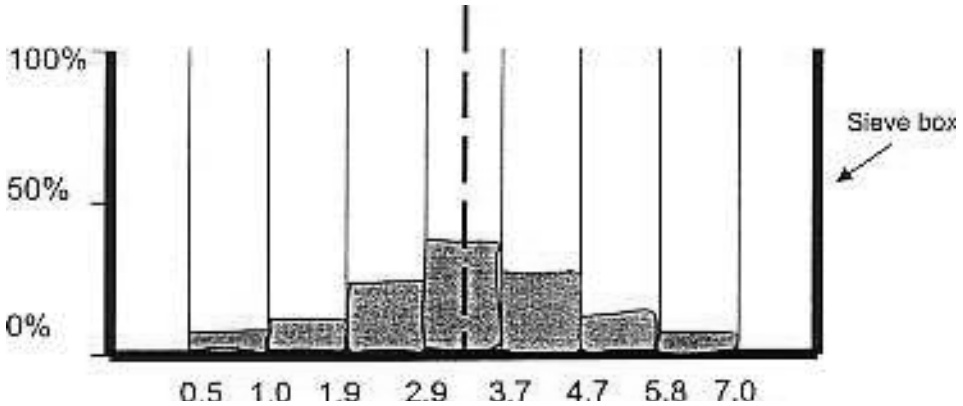
5. Read off the % level in each column.

6. Estimate the SGN and UI values using the notes below.

Estimating SGN and UI

Estimating SGN

Estimating SGN from amounts retained in the sieve box.



The diagram shows the amounts retain in each chamber after sieving. To estimate SGN the shaded area to the left of the imaginary dotted line must equal the shaded area to the right. In this case the line has been drawn so that these areas are equal, and the line meets the bottom scale at about 3.3. The SGN = 3.3 or 330

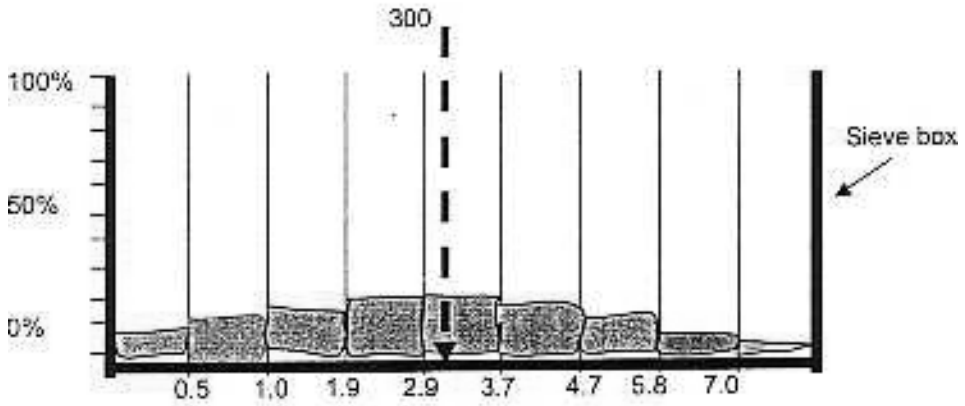
Estimating UI

It is more difficult to estimate UI as accurately as SGN. The more chambers that have some material retained in them the lower the UI value will be. If for example, all the material is retained in only two chambers then the UI will be high – probably about 55 or 60. In the above example the UI is 18. There are some rough guides that can be used to help estimate UI. These include:

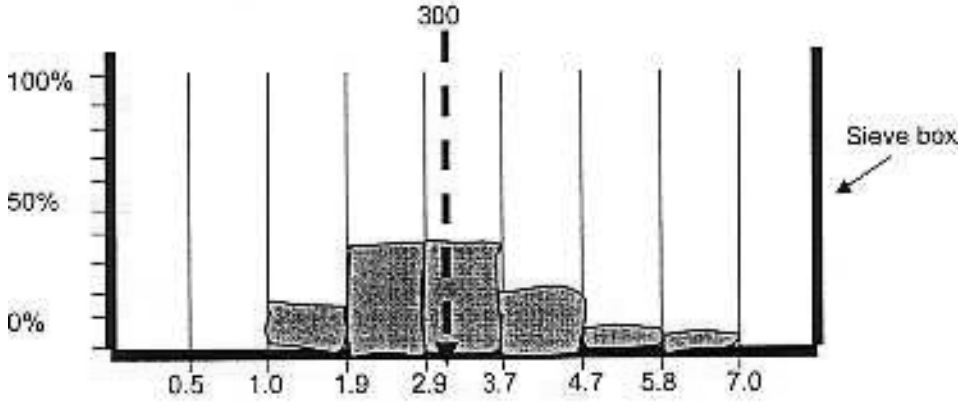
- If each chamber has more than 5% then the UI will be less than 20
- If any two adjacent chambers in the sieve box add to more than 70% then the UI will be greater than 30
- If any two chambers add to more than 80% then the UI will be more than 50.

The figures below show three samples with the same SGN but different UI.

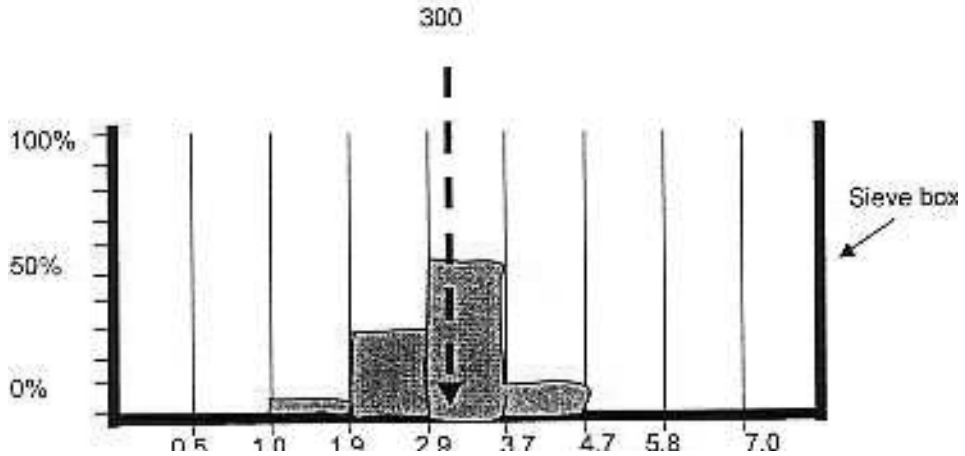
Sample A SGN = 300, UI = 11



Sample B SGN = 300, UI = 38



Sample C SGN = 300, UI 56



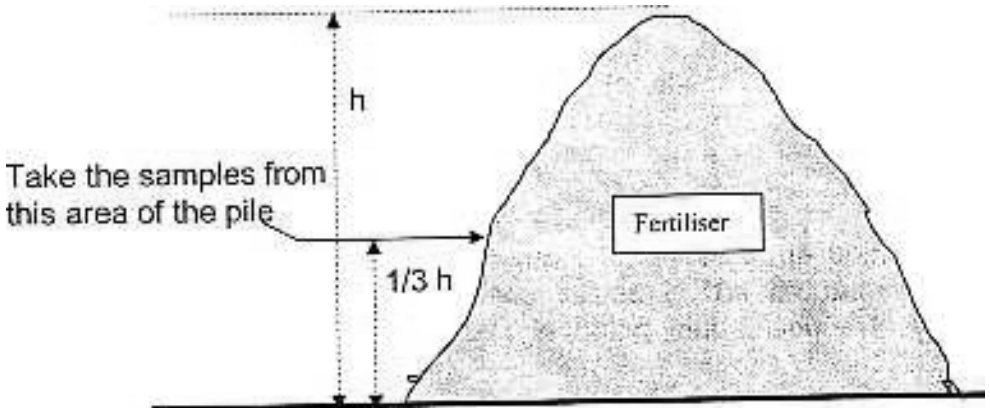
Sampling

Obtaining a representative sample of fertiliser is important when information on SGN and UI is being obtained. When fertiliser is tipped into a pile all the large particles tend to fall to the outside edge and bottom of the heap. A sample taken from that area would not be typical in terms of particle size or size range.

The best sampling method is to use a sampling spear. As this is pushed into the heap of fertiliser it collects and retains a sample of fertiliser that will more closely represent the whole heap. A sampling spear that retains a sample that is less than or equal to the volume required to fill the sieve box chamber should be used. If it is less than the sieve box chamber volume then repeated samples are taken until the sieve box chamber is full.

In all cases the sample should not be taken from the lower part of the pile of fertiliser – at least 1 metre from the bottom of the pile is a good guide.

- The best sampling procedure is to use the sampling spear and repeat the sample/sieve procedure three times. Drive the spear in horizontally.
- The next best option is to take one sample with the spear then use the sieve box.
- If a spear is not available, samples should be taken about one third up from the bottom of the pile as shown in the figure below. Dig into the pile a little to avoid taking material from the outside of the heap. Fill the sieve box chamber with several small handfuls. Do not use a shovel to take the sample then tip from the shovel onto the sieve box as this will give a biased sample because the large particles will flow into the box first.



Use of SGN and UI values for even spreading

NZ fertiliser products have a range of 95 – 475 for SGN values and 5 – 68 for UI values so there is a wide variation. Some simple guidelines are given here to help make use of SGN and UI data. In the past SGN and UI data have not routinely been obtained for NZ fertiliser products, so it is important to refine these guidelines for NZ conditions and equipment.

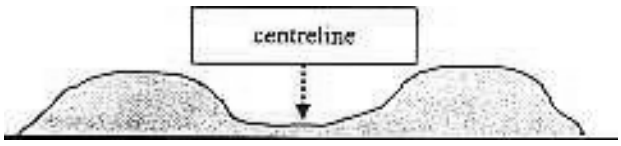
Each spreader driver should sample and sieve box test the actual products used during Spreadmark Certification. The measurement of the particle size of the product and the spreading results from the distribution test will form a series of benchmarks of spreader performance. (The SGN and UI of the product will be given on the Spreadmark Certificate).

The three main guidelines are:

- If the SGN is lower than 150 and the UI less than 20 it will be more difficult to get an accurate distribution (Fine product).
- If the SGN is between 250 and 350 and the UI between 20 and 60 then even spreading can be achieved provided the spreader is set correctly. (Medium product).
- Where the SGN is 350+ and the UI is 50+ even spreading becomes more difficult and there is an increased risk of crop damage. (Coarse product).

These are guidelines only. The three categories given here could be seen as fine, medium and coarse in terms of SGN. Some generalisations are possible.

- Higher SGN values suggest wider swath widths are possible.
- High UI values, i.e., more uniform particle sizes (for any SGN) tend to give a “hollow” transverse spread pattern.



- Fine material can be spread evenly but it depends on the machine and the weather.
- Coarse material can also be spread evenly but it depends on machine design.
- An even spread with material classed as medium should be possible with an spreader.

Use of SGN and UI values for blending fertilisers.

NZ fertiliser products have a wide range of physical properties and these properties affect the ease with which they can be blended and the degree to which they tend to segregate.

All spreading companies spread blends of fertiliser and some prepare their own blends. The information below is intended to indicate the degree to which blending is likely to be effective.

The compatibility of blend constituents depends on both SGN and UI. The available data suggests the following guidelines:

Difference between SGN or UI values	**Compatibility for blending**
Less than 10	Good compatibility
11 – 20	Moderate compatibility – some segregation likely
Greater than 20	Incompatible

Spreadmark internal audit checklist

Purpose

The purpose of this checklist is to guide the company internal auditor to ensure that the Spreadmark Quality System continues to operate effectively.

Note that the Code References are to the Spreadmark System Standard for Groundspread Companies.

Checklist

Code Ref	Question	Complied with?
1.2	Is the person with overall responsibility for quality assurance still the person shown in the Quality Manual?	
1.3 &2.1	Are we still keeping proper records or orders and deliveries?	
2.2	Is the method that we use to communicate customer orders to drivers still appropriate?	
2.3	Are reconciliations between orders and deliveries still able to be made?	
3.1	Is our environmental care policy still current?	
3.1	Are we still taking care to ensure that fertilisers are not being spread or blown into waterways?	
3.1	Are our loads still covered when on public roads?	
3.1	Is spreader washdown still being done under controlled conditions?	
4.1	Are enough of our spreaders still certified?	
4.3	Are our spreaders still operating within the bout width limits defined by their Spreadmark test certificates?	
4.8	Are we still keeping records of spreader checks and calibrations?	
4.10	Are our certified spreaders still identified as such?	
5.1 &5.3	Are our spreader operators still competent?	
5.2	Do enough of our spreader operators still hold a current Spreadmark training certificate?	
6.1 &6.2	Is the written guideline material provided for the drivers still up-to-date?	

Signed …….. **Date** ……..