

Harvest Sampling of Crops

The objective of sampling is to obtain a sample of a size suitable for tests in which the same constituents are present as in the seed lot and in the same proportions.

The quantity of seed tested is minute when compared with the size of the grain line with which it is intended to represent. No matter how accurately the laboratory testing is done, the results can only show the quality of the sample submitted for analysis. Consequently, every effort must be made to ensure that the samples collected at harvest, or from the silo, accurately represent the composition of the seed lot in question.

The purpose of sampling at harvest time is to establish that the initial quality of grain is fit for the intended market. For quality determinations, representative samples are needed. Collection methods can influence results, but sample size can be very small.

Growers should be able to demonstrate a formal procedure to collect representative samples from incoming loads of grain. A minimum sample size of 5 kilograms per grain line is recommended. However, the sample selection should be random and unbiased to ensure a representative sample is collected. (14)

For grain to be stored on farm it is recommended that harvest samples be collected as the grain transfers from the truck or trailer into the auger, therefore the sample frequency will be dependent on the size of the load.

Samples should be kept in a clean container that can be sealed preventing the sample being contaminated or tampered with in any way. This should be clearly identified as to its contents and stored in a safe, vermin and weatherproof area. (15)

Samples shall be kept for a minimum of three months after the final delivery of the line of grain. (16)

14.	A formal procedure to collect representative samples from incoming loads of grain is followed.	M
15.	Samples stored on farm are clearly identified, sealed to prevent tampering, and are stored in a safe, vermin and weatherproof area.	M
16.	Samples are kept for a minimum of three months after final delivery of the line of grain.	M

Grain Drying

The moisture content of grain or seed at harvest can severely affect the storage life and/or condition of the stored product. The higher the moisture levels at harvest, the more important and critical grain drying becomes. Not only will high moisture content lead to potential quality downgrades but this can also attract and encourage storage pests to infest the grain or seed.

If drying is deemed necessary, or the normal practice, all attempts must be made to ensure that the integrity and quality of the grain is maintained at all times. (17)

If the drying process requires that grain be physically shifted from one silo or bin to another or from property to another, then a record of these movements must be kept so as to avoid potential contamination errors from occurring. (18)

Samples shall be collected after the grain-drying process is carried out. Most processors require post-drying samples as a contractual obligation. (19)

For further information on Grain Drying refer to "The Drying and Storage of Grain and Herbage Seeds"

17.	Grain drying process is carried out ensuring that the crop integrity and quality of the grain is maintained at all times.	M
18.	Any grain movements during drying process are recorded. <ul style="list-style-type: none"> • Silo Content Records 	C
19.	Samples are collected after drying process.	M

On Farm Grain Storage

Most growers, particularly in the South Island, store some or all of their harvested crops on farm either in silos or other storage facilities. The length of time grain is stored on farms can range from a few days to many months. Therefore, in order for confidence in the traceability of grain from the paddock to the time that the grain leaves the property it is crucial that every silo or storage facility is identified in a clear and unambiguous way.

It is required that all silo and/or storage facilities be clearly identified by unique individual numbers physically written on or attached to the door. (20)

Facilities used for the holding of grain, whether short or long term, must be weatherproof and in sound condition so as to minimise the potential for vermin damage. (21)

The contents of each silo or storage facility must be recorded and this includes grain insecticide applications. (22)

The information recorded on silo contents should include:

- Silo Number
- Date
- Crop type
- Paddock
- Estimated tonnage in and out
- Moisture
- Insecticide applied and rate

This information should be kept in a safe but handy place for quick reference when required.

Regular checks should be made on the condition of grain or seed while in long-term storage. (23)

Any use of rodenticides, on or around storage or harvest facilities must be recorded (24)

It is recommended that grain aeration be used for long-term storage. For further recommendations on storage of grain on farms refer to the relevant sections of the Post Harvest Grain Management poster and to "The Drying and Storage of Grain and Herbage Seeds"

20.	Facilities are clearly and uniquely identified.	C
21.	Storage facilities used for the holding of grain are and in sound condition and remain weatherproof.	M
22.	The contents of all silos or other storage facilities are recorded and include grain insecticide applications. <ul style="list-style-type: none"> • Estimated Silo content records • Grain Insecticide records 	C
23.	Regular checks are made on the grain to ensure vermin and pest free and in sound condition.	M
24.	Any use of rodenticides are recorded. <ul style="list-style-type: none"> • Rodenticides and bait station records 	M

Transportation of Grain

Transport equipment has the potential to cause cross contamination issues following carriage of ruminant proteins, fertiliser, soil etc. Previous loads in trucks/trailers should be thoroughly cleaned out prior to loading. (25)

Ensure all transport equipment meets HALAL requirements. (26)

Use of delivery notes is recommended for all consignments leaving the farm. Delivery notes should include details: (27)

- Crop type
- Date
- Destination
- Weight
- Haulage contractor
- Silo number

25.	Trucks, trailers and augers are clear and free of contamination from previous loads.	M
26.	<p>All trucks and trailer used to transport grain meets HALAL requirements, ensuring the product does not contain.</p> <ul style="list-style-type: none"> • Residues and/or additives of any animal origin • Alcohol and other harmful beverages • Ingredients from poisonous materials 	
27.	Delivery note used.	R

Records

Following is a summary of the records that are required to be kept to adhere to the conditions of the scheme. Members are not required to keep these records individually and may choose to combine any records as best suits their recording system.

Some example records are included in Appendix 1.

RECORD	REF.	CAT.	REFERENCE MATERIAL
Farm map	1.	C	
Sowing records	3.	C	
Fertiliser application records	5.	C	Code of Practice for Fertiliser Use
Chemical application records	8.	R	Code of Practice for the Management of Agrichemical
Halal Requirements	12.	C	Animal Products Notice: General Export Requirements for Halal Animal Materials and Halal Animal Products. Part 5: Halal Processing
Pre harvest storage Insecticide records	14.	C	Post Harvest Grain Management Poster & "The Drying and Storage of Grain and Herbage Seeds"
Silo content records	18. 22.	C	
Grain insecticide records	22.	C	
Delivery Notes	26.	R	

Glossary

A **Line** of grain referred to in the Grower Manual is a parcel of grain of the same cultivar, of uniform specifications that is marketed by an organisation.

Appendix 1: Example Records

The object of the grower audit is to obtain or sight evidence and evaluate it objectively to determine the extent to which certain criteria are fulfilled. This would therefore involve sighting records kept by the grower to verify all crop related activities from purchase to selling. The second part of the audit would be to observe or outline methods and procedures when handling or storing grain.

The exact format and methods employed by growers when keeping crop records is entirely dependent on each grower's individual preference. This will be considered and evaluated by the auditor on a case-by-case basis with each grower.

The following are examples of paddock and silo records that could be sighted at an audit to verify actions taken:

Paddock Record

(Incorporating sowing, fertiliser, chemical & grain insecticide records)

Paddock A 9.6 Ha

Consort – local feed contract

2/05/02	80kg/ha Consort Wheat-Gaucho treated (1G ref 200123556) 150kg/ha DAP	27
28/08/02	15g/ha Glean 300ml/ha Cougar 20ml/ha Karate	
5/10/02	1.5l/ha Cycocel 250ml/ha Opus	
23/10/02	2.5l/ha MCPA (some fumitory) 100ml/ha Topic 500ml/ha Fortune	
25/10/02	200kg/ha Urea	92
4/11/02	400ml/ha Allegro	
11/11/02	200kg/ha Urea	92
2/12/02	250ml/ha Opus 250ml/ha Amistar	
18/12/02	250ml/ha Opus 250ml/ha Amistar	211kg N
13/02/03	3l/ha Roundup	
20/02/03	Harvest 91 tonne to silo J1, 14.8% moisture, 20 degrees no Actellic	

Silo Content Records

(Incorporating silo content, pre harvest insecticide and grain insecticide records)

Alternative 1.

Using a notebook page for each silo, record all activities.

Silo Record J1

<i>15/01/03</i>	<i>Cleaned silo, sound mjb Sprayed Actellic liquid</i>
<i>20/02/03</i>	<i>91 tonne Consort Wheat ex paddock A 14.8% moisture, 20 degrees (no Actellic) -sample sent & kept ref con 1</i>
<i>31/03/03</i>	<i>91 tonne transferred to D1 Dryer</i>

Silo Record D1

<i>15/01/03</i>	<i>Cleaned silo, greased unloader Sprayed Actellic liquid</i>
<i>20/01/03</i>	<i>10 tonne Nui Ryegrass ex paddock L 14% moisture</i>
<i>25/01/03</i>	<i>10 tonne Nui delivered to Seed Cleaner 12%</i>
<i>26/01/03</i>	<i>Cleaned silo</i>
<i>31/03/03</i>	<i>91 tonne Consort exJ1 (paddock A) 14.8% to dry (no Actellic)</i>
<i>14/04/03</i>	<i>Delivered to mill, 3 units</i>

Alternative 2.

Using a spreadsheet (Accounts Book) list all activities in each silo.

	<i>J1 (V bottom)</i>	<i>D1 (dryer)</i>
<i>15/01/03</i>	<i>Cleaned all silos, sprayed Atellic liquid, mjb</i>	
<i>20/01/03</i>		<i>10 t Nui ex pdk L 14%</i>
<i>25/01/03</i>		<i>deliver to Seed cleaner - 12% 1 unit</i>
<i>26/01/03</i>		<i>Cleaned – Bal 0</i>
<i>20/02/02</i>	<i>91 t Consort ex pdk A -14.8%, 20 deg (no Atellic)</i>	
<i>31/03/03</i>	<i>transfer to D1 cleaned Balance 0</i>	<i>91 t Consort ex D1 (pdk A) (no Atellic)</i>
<i>14/04/03</i>		<i>delivered to mill -3 units Cleaned - Bal</i>

Appendix 2: Audit Checklist

	Criteria	Category	Y	N	Comments	Agreed Action
1.	A system is in place, where grain can be reliably traced back to the paddock where grown. <ul style="list-style-type: none"> • Farm map 	C				
2.	Seed sown can be identified and verified by bag label or by purchase invoice/receipt.	C				
3.	Record of all sowings is retained which includes fertiliser and chemicals used. <ul style="list-style-type: none"> • Sowing Record 	C				
4.	Growers sowing "farm-saved" seed can verify seed origin and history.	C				
5.	A system for recording all fertiliser and nutrient applications is in place. <ul style="list-style-type: none"> • Fertiliser Application Record 	C				
6.	Purchase or contractor invoices retained for inspection at audit.	R				
7.	Growers hold current GROWSAFE® certification or	R				

	<p>equivalent/supervision by certified person:</p> <ul style="list-style-type: none"> • Sight and record current GROWSAFE® Introductory or Applied Certificate • Sight and record current GROWSAFE® Registered Chemical Applicators Certificate 					
8.	<p>Chemical Application diary or record is maintained. Minimum information recorded should include:</p> <ul style="list-style-type: none"> • Paddock • Crop type • Date Applied • Chemical Product Applied • Application • Water Rate (R) • Application Method <p>Name of Applicator</p>	C				
9.	Purchase or contractor invoices retained for inspection at audit.	C				
10.	Agrichemicals are kept in designated store and clearly identified.	M				
11.	Storage facilities and harvesting equipment	C				

	cleaned and fit for purpose before season start.				
12.	Regular calibration of moisture meters.	R			
13.	All pre-harvest insecticide treatments on silos or storage facilities are recorded. <ul style="list-style-type: none"> Pre-harvest storage insecticide records 	C			
14.	A formal procedure to collect representative samples from incoming loads of grain is followed.	M			
15.	Samples stored on farm are clearly identified, sealed to prevent tampering and are stored in a safe, vermin free and weatherproof area.	M			
16.	Samples are kept for a minimum of three months after final delivery of the line of grain.	M			
17.	Grain drying process is carried out ensuring that the crop integrity and quality of the grain is maintained at all times.	M			
18.	Any grain movements during drying process are recorded. <ul style="list-style-type: none"> Silo Content Record 	C			
19.	Samples are collected after drying process.	M			

20.	Facilities are clearly and uniquely identified.	C				
21.	Storage facilities used for the holding of grain are in sound condition and remain weatherproof.	M				
22.	The contents of all silos or other storage facilities are recorded and include grain insecticide applications. <ul style="list-style-type: none"> • Silo content records • Grain insecticide records 	C				
23.	Regular checks are made on the grain to ensure vermin and pest free, in sound condition.	M				
24.	Trucks, trailers and augers are clear and free of contamination from previous loads.	M				
25.	Delivery note used.	R				

Agreed date for completion of corrective actions:

Signature Assessor:

Signature Grower:

Appendix 3: Supplier Declaration



QAGRAINZ SUPPLIER DECLARATION

To the best of my knowledge the Wheat delivered complies with the following to meet Halal (Lawful) Food conditions:

It does not contain:

- Residues and/or additives of animal origin.
- Alcohol and other harmful beverages.
- Ingredients from any poisonous materials.

GROWER'S NAME: _____

GROWER'S SIGNATURE: _____

DATE: DD/MM/20YY _____

BACKGROUND

Halal certified food producers require confirmation from suppliers that the products they use are halal compliant / produced using methods and products sanctioned by Islamic law. Within Islamic law there are clear rules around residues and/or additives of animal origin, alcohol and other harmful beverages and ingredients form poisonous materials, all are considered haram.

DEFINITIONS

Halal (*Arabic*) translates as 'permissible' and describes any act or object that is sanctioned by Islamic law, as defined in the Koran.

Haram (*Arabic*) translates as 'forbidden' and describes any act or object that is prohibited by Islamic law, as defined in the Koran.

Further Information

For further information on organisations referred to in the Grower Manual, please contact the relevant body below:

Code of Practice for Fertiliser Use

Fertresearch
PO Box 9577
Newmarket
Auckland
Tel 09 415 1357
Fax 09 415 1359
Email fmra@xtra.co.nz

Code of Practice for the Management of Agrichemical (Growsafe®)

The Secretary
The New Zealand Agrichemical Education Trust
PO Box 10232
Wellington
Tel 04 472 9997
Fax 04 472 9997
Web www.growsafe.co.nz

Post Harvest Grain Management Poster and “The Drying and Storage of Grain and Herbage Seeds” – Edited by Murray Hill

Both available from:

Foundation for Arable Research
PO Box 80
Lincoln