

Section 5

Barley Receival Standards

and

Classification Procedures

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5.1 Barley Classification Procedures

Check the Current Seasons Receival Standards Chart- Supplied by the Quality Services Department

The following classification procedure is to be used for the receival of all Malting Barley grades.

1. Ask the grower or carrier for the variety of Barley to fill in the weight ticket. The varieties that can be accepted into the Malting Barley Grades are listed below. If the variety presented is not listed as a malt variety it is a feed grade Barley.

MALTING BARLEY IS EXTREMELY SENSITIVE TO VARIETAL ADMIXTURES – ALTHOUGH THESE ARE ALL MALTING VARIETIES THEY CANNOT BE BINNED TOGETHER

MALT ONLY VARIETIES

VARIETY	CODE	VARIETY	CODE
Arapiles	ARAP	Schooner	SCHN
Dhow	DHOW	Sloop	SLOP
Franklin	FRAN	SloopVIC	SLOV
Gairdner	GAIR	SloopSA	SLOS
Grimmett	GRIM	Tallon	TALL
Lindwall	LIND		

The following varietal codes are to be used when receiving Feed Barley or Downgrading Malt to Feed

VARIETY	CODE	VARIETY	CODE	VARIETY	CODE
Arapiles	ARAP	Galleon	GALL	Schooner	SCHN
Barque	BARQ	Grimmett	GRIM	Six row	6ROW
Beecher/cape	BCHR	Keel	KEEL	Skiff	SKFF
Bussel	BUSS	Ketch	KTCH	Sloop	SLOP
Cantala	CANT	Lara	LARA	SloopSA	SLOS
Chebec	CHEB	Maltworthy	MWRT	SloopVIC	SLOV
Clipper	CLIP	Monarch	MONA	Stirling	STIR
Corvette	CORV	Mundah	MUDN	Tallon	TALL
Dampier	DAHP	Not named/other	NTBA	Tantangra	TANG
Dash	DASH	Noyep	NOYP	Triumph	TRMP
Forrest	FORR	O'connor	OCNR	Two row	2ROW
Franklin	FRAN	Parwan	PARW	Waranga	WARG
Fitzgerald	FITZ	Picola	PICO	Weeah	WEAH
Gairdner	GAIR	Prior & chevalier	PRIR	Wyalong	WYAL
Galaxy	GALA	Research	RESH	Yagan	YAGN

2. Sample the load presented for delivery according to the Receival Sampling procedure detailed in section 1 to produce a representative Grower Load Composite (GLC) sample. Ensure the sample is thoroughly mixed.
3. Fill the ½ litre measure using the Barley pouring device and determine the Test Weight of the sample using the ½ litre measure and balance method according to section 2.
4. From the GLC sample draw a subsample to be tested for moisture and protein content. Approximately an 800 gram sample is needed for a whole grain Infratec instrument. Test the samples using the instrument provided according to the operating instructions in section 2 and record the results. Ensure the machine is set to the correct calibration. Barley moisture is determined using the Infratec.

If the moisture content, measured by the whole grain Infratec is less than 13.5% the classification can continue.

If >13.5% on the infratec, Go to the Kett Moisture Meter and re-test. If the Kett gives a result $\leq 12.5\%$ the load can be accepted. Write both the Infratec and Kett Result on the sample. If the result exceeds 12.5% the load is to be declined.

5. Check the sample for any signs of objectionable contaminants subject to Nil tolerance.
6. Pour the $\frac{1}{2}$ litre sample into a tray. Inspect the sample for presence of field insects or dead grain insects.
7. The screening assessment is based on a two (2) screen assessment (2.2 mm gap screen + 2.5mm top screen). Pour the $\frac{1}{2}$ litre sample into the Agtator, and shake back and forth 40 times.
8. Place the grain remaining above the 2.5 mm screen into the $\frac{1}{2}$ litre measure. This is the % Retention (RT). Empty the $\frac{1}{2}$ litre measure on the scales.
9. Place the contents that passed through the 2.2 mm screen into the $\frac{1}{2}$ litre measure on the scales. This is the % Screenings below the 2.2 mm screen (SC).

Weed Seeds

1. When small foreign seeds are identified in any of the screenings the following steps can be used to separate small foreign seeds (ryegrass, canola, turnip) from chaff and small barley.
2. Inspect above and below the screens and the bottom tray for weed seeds. Record the weed seeds using the method described in section 5.
3. If necessary pass the sample through the mesh screen over a white tray for inspection. Slightly blowing on the fine screenings can help separate seeds from chaff. Some seeds may still need hand separating.
4. Inspect above and below the screens and the bottom tray for weed seeds. Record the weed seed types using the codes listed in 5., mandatory when the load is to be downgraded.
5. If it is suspected the foreign grains are greater than the level allowed, count the number of foreign grains (wheat, triticale, rye and oats) per $\frac{1}{2}$ litre sample.
6. To assist with the Foreign Grain assessment for the Feed Barley grades use the following method (ABB Grain Ltd approved).
 - Convert the Test Weight back to grams / $\frac{1}{2}$ litre.
 - Divide by 10 to calculate the sample size for assessment.
 - Count the foreign seeds (wheat, triticale, oats and rye)in the sample.
 - Multiply this number by 10 to give you a count per $\frac{1}{2}$ litre.
 - EXAMPLE:
Test Weight = 70 kg/hl , which is 350 grams/ $\frac{1}{2}$ litre
Sample Size for assessment = $350/10 = 35$ grams
Weigh out 35 grams. Count the number of foreign grains - say 25 for this example.
Multiple 25 by 10 = 250, to give you count per $\frac{1}{2}$
The F1 maximum number of foreign grains is 500.

Defective Grains

1. Place a “small teaspoon” of grain into the 100 corn tray from the GLC, (not from above the screen) and rock it back and forth until all slots are full. Remove any excess grains. Inspect the grain in the tray for Shot, Sprouted, Dark Tipped, Cladisporium Affected, Skinned, Split/Cleaved, Frosted grains, Dry Green, Sappy, Varietal Admixtures. Up to 2 minutes can be spent inspecting the tray and a “Maggi Lamp” should be used.
2. Do not fill the tray, wheat and small defective barley will fill the slots first.
3. If the sample contains a large amount of broken grains, a 20 gram sample must be taken from the bucket and the broken grains separated. These are weighed and multiplied by 5 to express this as a percentage. This is the % Broken or Cracked Grains.
4. If snails are suspected in the load, a $\frac{1}{2}$ litre sample is taken from the GLC and the snails counted.

Stones

- 1 If stones are suspected in the load, a 1 litre sample is taken from the GLC and the stones counted. Where a tolerance is set the stones are measured using a points scale and a stone gauge. The stone gauge has three different sized holes. Stones that will fit through the smallest hole will incur 1 point per stone, stones that fit through the medium sized hole but not the small hole will incur three points per stone, stones that fit through the large hole but not the medium sized hole will incur five points per stone and stones that will not fit through the large hole will result in the rejection of the load. There is a maximum length of stone as measured using the maximum slot length at the top of the gauge. All points incurred from the count of the stones in a litre sample will be added together and the total compared against the allowable limits.
- 2 At Manual Load Entry (MLE) sites record the results of the quality tests along with the provisional and bin grade in the quality section of the Receivals Weighnote according to the instructions in the Commodity Document Manual. Ensure that the quality test data entered is compatible with the classification, otherwise the weighnote will be held in error when it is entered at Head Office, delaying payment to the grower until the information is corrected.
- 3 At Operational Management System (OMS) sites enter the test results and the variety code onto the computer according to the instructions in the OMS User Guide.

A list of the acceptable pay and bin grades in order of rank can be derived by the computer. However it is important to remember that this is only an aid for the classifier and does not absolve the classifier from the responsibility of classifying the load.

All mandatory tests shall be included on the weighnote (grower receipt transaction), as indicated with “**” below. If a test results in the grain being received into a grade lower than its varietal potential (eg Schooner downgraded from SC1 to SC3 or F1, or Galleon downgraded from F1 to F2), that test code and result must be included on the weighnote. A sample must be kept at the sample laboratory for three months.

*refers to subsequent tests required by OMS on the weighnote (grower receipt transaction) dependent on variety.

TEST CODES

Test	CODE	Test	CODE
Commodity – barley	BA	Shot grain	SH
Variety	VR**	Small Foreign Seeds	SS
Moisture	MO**	Sprouted grain	SP
Protein	PR**	Varietal admixture	VA
Screenings (below 2.2 mm screen)	SC**	Weather staining	WS
Retention	RT**	Weed seed contaminants type 1	S1
Test weight	TW**	Weed seed contaminants type 2	S2
Stones	SE**	Weed seed contaminants type 3a	3A
Skinning*	SK	Weed seed contaminants type 3b	3B
Cracked/Broken grains	CK	Weed seed contaminants type 3c	3C
Dark tipping and cladisporium	DC	Weed seed contaminants type 4	S4
Foreign grain	FG	Weed seed contaminants type 5	S5
Frost affected grain	FR	Weed seed contaminants type 6	S6
Green barley	GB	Weed seed contaminants type 7	S7
Earth (pea size pieces)	EA	Weed seed contaminants type 8	S8
Sand (grains by count)	ES	Black/Wild Oats, Wild Radish	BW
Snails – Round	SNR	RVA units	RV
Snails – Conical	SNC	Foreign Material	TF

Weed Seed Types to be included where the load has been downgraded due to weed seeds.

Take the appropriate amount of sample from the GLC sample to add to the Cell Composite or Bin Grade Composite samples (see section 1) and collect any other samples requested by ABB Grain Ltd.

A Daily Running Bulk Sample is required for each barley grade. The sample is a representative of the loads of barley delivered which have been classified as a malting or feed grade. Use the "Daily Running Bulk Sample" bags for this requirement.

5.1 National Barley Receival Standards

The following standards apply to all barley receivals for clients wishing to receive to the National Barley standards for Malt and Feed grades.

5.1.1 Common Receival Criteria

1. Varietal Admixture

A Varietal Admixture is defined as the presence of any other variety of barley.

This can be identified by the overall shape, size and colour of the grain, length of hairs on the rachilla, the shape of the lemma base, the colour of the aleurone layer, and the kernel shape (twisted or straight). This is covered in greater detail later in section 5

Varietal admixture is the presence of disallowed varieties. While there is no limit for 2 row varieties in Feed Barley, there are limits for six row and blue aleurone varieties in F1.

2. Test Weight

Measurement of the density of Barley, measured in kilograms per hectolitre.

3. Moisture

The amount of water measured in a sample of Barley, representing a load of Barley tendered for delivery. Calculated as a % by weight and measured on the Wholegrain Analyser.

4. Protein

Protein content of Barley measured as a % by weight on an AS IS basis. Measured on the Wholegrain Analyser.

5. Retention

Material retained above the 2.5mm Screen.

6. Screenings

Material falling below the 2.2mm Screen into the catch pan.

7. Germinative Energy- Late deliveries

This test applies to late deliveries ONLY (after the 1st March). A representative sample is required to be collected and forwarded for testing.

Minimum %
ALL MALTING GRADES
95

8. Germinative Capacity- Late deliveries

This test applies to late deliveries ONLY (after the 1st March). A representative sample is required to be collected and forwarded for testing.

Minimum %
ALL MALTING GRADES
98

9. RVA (Rapid Visco Analyser)

The RVA is used for determination of weather damage in Barley. These units are distributed by the ABB Grain Ltd as required depending on the Harvest conditions.

10. Shot or Sprouted Barley

Barley grain exhibiting the following outward signs of having commenced germination is considered to be shot.

- General Swelling of the Grain.
- Bursting of the grain at the germ end.
- The germ has a pinprick hole at the germ end, easily identified with a hand lens.
- General discolouration of the grain.
- Barley with roots, rootlets or a chit beginning to emerge is considered sprouted.

If shot and sprouted grains are detected grain can be classified no greater than Feed No.1

Where an RVA test is available it will override a visual assessment.

11. Black Tip and Field Fungi

Refer to the Colour Dark Tipped and Cladisporium Charts in the Classification Office for the definition.

Dark Tipping is caused by a field fungus.

Cladisporium is caused by a mould that gives the grain the appearance of "black spotting".

12. Skinnings

Skinning is damage to the protective husk of the Barley grain.

Each grain exhibiting one of more of the following characteristics is counted as a skinned grain.

1. Side or Back Skinning - One third or more of the husk is missing from the side or the back of the grain.
2. Germ Exposed - The husk is removed from the germ end of the grain or the germ itself has been removed.
3. Chipped - Approximately one third of the grain has been removed at the awn end of the grain.
4. Pearled - The entire husk has been removed and the aleurone layer is exposed.
5. Split Skirt - The husk is split along the centre or side edges, on the back of the grain, at the germ end.
6. Split Backs - The husk is split along the length of the centre ridge of the back of the grain.
7. Awn Skinning - Greater than a third of the husk from the awn end towards the centre of the grain has been removed.

13. Bored Insect Damaged Grain

Barley grains from a GLC, which exhibit insect damage, can be received within tolerances set in Recieval Standards.

14. Split/Cleaved Barley

Grains that contain an internal split.

Hormone affected Barley grains are to be classified under the Split/Cleaved heading. The grains affected are very distorted I shape, twisted and lack a traditional Barley shape. A picture is included in the Grain Quality Ute guide (page 49).

Use the Code CB (split/cleaved Barley) for hormone affected grain assessment.

15. Cracked or Broken Barley

Cracked or Broken Barley is defined as grains with a quarter or more of the grain missing.

16. Frost Affected Barley

Frosted Grains appear pinched and sunken in, usually on the awn half of the grain. In severe cases the kernel under the husk will appear orange. This should not be confused with moisture stressed grains, which are usually shrunken along the full length of the grain.

17. Dry Green Or Sappy Barley Grains

Dry Green and Sappy Barley Grains are those that have been harvested at an immature stage of development.

18. Heat Damaged or Bin Burnt

Heat Damaged or Bin Burnt grains are those that have become discoloured because of the development of storage fungi due to high moisture conditions, a gradual increase in temperature during storage or an incorrect artificial drying technique. Grains appear light to dark brown and may emit an odour.

19. Grain Contaminants

Foreign Grain in barley applies to Wheat, Cultivated Oats, Rice, Triticale and Cereal Rye. Pulses and oilseeds are considered weed seeds.

20. Weed Seeds

Weed Seeds are counted from above and below the screen.

*For Types 1 and 3(d) maximum applies on an individual seed basis per half litre.

Tolerance (maximum individual seeds per half litre)
TYPE 1*
Colocynth, Field Poppy, Horned Poppy, Jute, Long Head Poppy, Mexican Poppy, New Zealand Spinach, SaffronThistle, Wild Poppy, Cut Leaf Mignonette pods

Tolerances apply to whole seeds or their equivalent in pieces and refer to the maximum total of all seeds named in each type per half litre.

Except Type 1 and 3(d).

TYPE 2
Castor Oil Plant, Coriander, Crow Garlic/Wild Garlic, Darling Pea, Opuim Poppy, Ragweed, Rattlepods, Starburr, St. John's Wort, Broomrape, Parthenium Weed
TYPE 3A
Bathhurst Burr, Bulls head/Caltrop/Cats head, Cape Tulip, Cottonseed, Dodder, Noogoora Burr, Thornapple, Bellvine
TYPE 3B
Vetch (Tare) Vetch (Commercial)
TYPE 3C
Heliotrope (Blue) Heliotrope (Common)
Type 3D*
Double Gees/Spiny Emex/Three Corner Jack, Broad Beans
TYPE 4
Darnel (Drake Seed), Field Bindweed, Hexham Scent/Meliot (King Island)*, Hoary Cress, Mintweed, Nightshades, Paddy Melon, Skeleton Weed, Variegated Thistle
Type 5
Knapweed (Creeping/Russian), Paterson's curse/Salvation Jane, Sesbania Pea
Type 6
Colombus Grass, Johnson Grass
Type 7
Chickpeas, Clover, Corn/Maize, Cowpea, Faba Beans, Field Peas, Lentils, Lupins, Medic Pods, Safflower, Soybean, Sunflower and any other large (pea sized) seeds or pods
Type 8
Bindweed (Australian & Black), Bedstraw, Bromegrass, Forage Sorghum, Muskweed, Onion Weed, Phalaris glumes, Poverty Weed, Ryegrass stalk, Sheep weed, Turnip weed and any other weeds not specified in types 1 - 7 or small foreign seeds.
Small Foreign seeds not specified in types 1 - 8 below the 2.2 mm Agtastor screen.

A list of weed seeds, their codes and number of seeds is below.

* = Unmillable Material: U = Unlimited; S = Small Foreign Seeds

All SS in total not to exceed % by weight listed.

Some limits vary between South Australia and Victoria/New South Wales.

Common name	Botanical name	TYPE	M1 M3	F1	F2
			SA VIC/NSW		
Amsinckia	<i>Amsinckia spp</i>	S	0.6%	1.2%	2.0%
Australian bindweed	<i>Convolvulus erubescens</i>	8	50	150	300
Australian carrot	<i>Daucus glochidiatus</i>	8	50	150	300
Australian phalaris	<i>Phalaris aquatica</i>	S	0.6%	1.2%	2.0%
Ball clover	<i>Trifolium glomeratum</i>	S	0.6%	1.2%	2.0%
Barley grass	<i>Hordeum leporinum</i>	8	50	150	300
Barnyard grass	<i>Echinochloa crus-galli</i>	8	50	150	300
Bathurst burr	<i>Xanthium spinosum</i>	3A	2	2	2
Beans (faba)	<i>Vicia faba</i>	7	1	10	20
Bedstraw (Threehorn)	<i>Galium tricornutum</i>	8	50	150	300
Bifora (monkey face or carrot weed)	<i>Bifora testiculata</i>	8	50	150	300
Billy buttons	<i>Calocephalus platyphalus</i>	8	50	150	300
Bindy-eye	<i>Calotis hispidula</i>	8	50	150	300
Bindweed (Australian)	<i>Convolvulus erubescens</i>	8	50	150	300
Bindweed (black)	<i>Polygonum convolvulus</i>	8	50	150	300
Bindweed (field)	<i>Convolvulus arvensis</i>	4	20	20	20
Black bindweed	<i>Polygonum convolvulus</i>	8	50	150	300
Black oats	<i>Avena fatua</i>	BW	25	50	100
Bladder soap wort	<i>Vaccaria hispanica</i>	S	0.6%	1.2%	2.0%
Brome (great)	<i>Bromus diandrus</i>	8	50	150	300
Brome (soft)	<i>Bromus mollis</i>	8	50	150	300
Brome (sterile)	<i>Bromus sterilis</i>	8	50	150	300
Buchan weed	<i>Hirschfeldia incana</i>	8	50	150	300
Bulls head	<i>Tribulus terrestris</i>	3A	2	2	2
Burr grass (spiny)	<i>Cenchrus tribuloides</i>	8	50	150	300
Burrweed (yellow)	<i>Amsinckia spp</i>	S	0.6%	1.2%	2.0%
Caltrop	<i>Tribulus terrestris</i>	3A	21	2	2
Canary grass (lesser)	<i>Phalaris minor</i>	S	0.6%	1.2%	2.0%
Canary grass (wild)	<i>Phalaris canariensis</i>	S	0.6%	1.2%	2.0%
Canola	<i>Brassica rapa</i>	S	0.6%	1.2%	2.0%
Cape tulip	<i>Homeria spp</i>	3A	2	2	2
Carrot (Australian)	<i>Daucus glochidiatus</i>	8	50	150	300
Castor oil plant	<i>Ricinus communis</i>	2	NIL	NIL	NIL
Cats head	<i>Tribulus terrestris</i>	3A	2	2	2

Common name	Botanical name	TYPE	M1 M3	F1	F2
			SA VIC/NSW		
Celery (slender)	<i>Apium leptophyllum</i>	S	0.6%	1.2%	2.0%
Cereal rye	<i>Secale cereale</i>	FG	85	500	1500
Charlock	<i>Sinapis arvensis</i>	S	0.6%	1.2%	2.0%
Chickpeas	<i>Cicer arietinum</i>	7	1	10	20
Clover (ball)	<i>Trifolium glomeratum</i>	S	0.6%	1.2%	2.0%
Clover (pods)	<i>Trifolium spp</i>	7	1	10	20
Cockspur (Maltese)	<i>Centaurea melitensis</i>	S	0.6%	1.2%	2.0%
Colocynth	<i>Citrullus colocynthis</i>	1	8	8	8
Colombus grass	<i>Sorghum almum</i>	6	NIL	40	40
Coriander	<i>Coriandrum sativum</i>	2	NIL	NIL	NIL
Corn	<i>Zea mays</i>	7	1	10	20
Corn gromwell	<i>Buglossoides arvensis</i>	8	50	150	300
Cottonseed	<i>Gossypium spp</i>	3A	2	2	2
Cowpea	<i>Vigna unguiculata</i>	7	1	10	20
Creeping knapweed	<i>Acroptilon repens</i>	5	40	40	40
Crow garlic	<i>Allium vineale</i>	2	NIL	NIL	NIL
Cutleaf mignonette (seeds)	<i>Reseda lutea</i>	S	0.6%	1.2%	2.0%
Cutleaf mignonette (pods)	<i>Reseda lutea</i>	7	1	10	20
Darling pea	<i>Swainsona spp</i>	2	NIL	NIL	NIL
Darnel	<i>Lolium temulentum</i>	4	20	20	20
Dock	<i>Rumex spp</i>	S	0.6%	1.2%	2.0%
Dodder	<i>Cuscuta spp</i>	3A	2	2	2
Double gees	<i>Emex australis</i>	3D	1	1	1
Drake	<i>Lolium temulentum</i>	4	20	20	20
Durum	<i>Triticum durum</i>	FG	85	500	1500
Faba beans	<i>Vicia faba</i>	7	1	10	20
Fat hen	<i>Chenopodium album</i>	S	0.6%	1.2%	2.0%
Fescue	<i>Festuca spp</i>	S	0.6%	1.2%	2.0%
Field peas	<i>Pisum sativum</i>	7	1	10	20
Galvanised burr	<i>Sclerolaena birchii</i>	8	50	150	300
Garlic (crow) garlic (wild)	<i>Allium vineale</i>	2	NIL	NIL	NIL
Grain sorghum	<i>Sorghum bicolor</i>	8	50	150	300
Great Brome	<i>Bromus diandrus</i>	8	50	150	300
Gromwell (corn)	<i>Bugglosoides arvensis</i>	8	50	150	300
Hares ear	<i>Conringia orientalis</i>	S	0.6%	1.2%	2.0%
Hedge mustard	<i>Sisymbrium officinale</i>	S	0.6%	1.2%	2.0%
Heliotrope (blue)	<i>Heliotropium amplexicaule</i>	3C	1 POD/ 4 SEEDS		
Heliotrope (common)	<i>Heliotropium europaeum</i>	3C	1 POD/ 4 SEEDS		
Hexham scent (Melilotus)	<i>Melilotus indicus</i>	4	20	20	20
Hoary cress	<i>Cardaria draba</i>	4	20	20	20

Common name	Botanical name	TYPE	M1 M3	F1	F2
			SA VIC/NSW		
Horehound	<i>Marrubium vulgare</i>	S	0.6%	1.2%	2.0%
Horned poppy	<i>Glaucium flavum</i>	1	8	8	8
Indian weed	<i>Sigesbeckia orientalis</i>	8	50	150	300
Johnson grass	<i>Sorghum halepense</i>	6	NIL	40	40
Jute	<i>Corchorus olitorius</i>	1	8	8	8
Khaki weed	<i>Alternanthera pungens</i>	8	50	150	300
Knapweed (creeping)	<i>Acroptilon repens</i>	5	40	40	40
Knapweed (Russian)	<i>Acroptilon repens</i>	5	40	40	40
Knotweed	<i>Polygonum aviculare</i>	S	0.6%	1.2%	2.0%
Lentils	<i>Lens culinaris</i>	7	1	10	20
Lesser canary grass	<i>Phalaris minor</i>	S	0.6%	1.2%	2.0%
Lettuce	<i>Lactuca spp</i>	S	0.6%	1.2%	2.0%
Linseed	<i>Linum usitatissimum</i>	8	50	150	300
Long headed poppy	<i>Papaver dubium</i>	1	8	8	8
Lucerne (pods)	<i>Medicago sativa</i>	*	*	*	*
Lucerne (seed)	<i>Medicago sativa</i>	S	0.6%	1.2%	2.0%
Lupin	<i>Lupinus spp</i>	7	1	10	20
Maize	<i>Zea mays</i>	7	1	10	20
Mallow	<i>Malva spp</i>	8	50	150	300
Maltese cockspur	<i>Centaurea melitensis</i>	S	0.6%	1.2%	2.0%
Medics (pods)	<i>Medicago spp</i>	7	1	10	20
Medics (seeds)	<i>Medicago sp</i>	S	0.6%	1.2%	2.0%
Melilot (king island)	<i>Melilotus indicus</i>	4	20	20	20
Mexican poppy	<i>Argemone mexicana</i>	1	8	8	8
Mignonette (Cutleaf)	<i>Reseda lutea</i>	S	0.6%	1.2%	2.0%
Milk thistle (pods)	<i>Sonchus oleraceus</i>	7	1	10	20
Milk thistle (seeds)	<i>Sonchus oleraceus</i>	S	0.6%	1.2%	2.0%
Millet (Japanese)	<i>Echinochloa utilis</i>	8	50	150	300
Mintweed	<i>Salvia reflexa</i>	4	20	20	20
Muskweed	<i>Myagrum perfoliatum</i>	8	50	150	300
Mustard	<i>Sisymbrium spp</i>	S	0.6%	1.2%	2.0%
Mustard (Indian hedge)	<i>Sisymbrium orientale</i>	S	0.6%	1.2%	2.0%
New Zealand spinach	<i>Tetragonia tetragonoides</i>	1	8	8	8
Nightshades	<i>Solanum spp</i>	4	20	20	20
Noogoora burr	<i>Xanthium pungens</i>	3A	2	2	2
Oats (black)	<i>Avena fatua</i>	BW	25	50	100
Oats (common)	<i>Avena sativa</i>	FG	85	500	1500
Oats (sand)	<i>Avena strigosa</i>	BW	25	50	100
Oats (wild)	<i>Avena fatua</i>	BW	25	50	100
Onion weed	<i>Asphodelus fistulosis</i>	8	50	150	300

Common name	Botanical name	TYPE	M1 M3	F1	F2
			SA VIC/NSW		
Opium poppy	<i>Papaver somniferum</i>	2	NIL	NIL	NIL
Paddy melon	<i>Cucumis myocarpus</i>	4	20	20	20
Paradoxa grass (glumed)	<i>Phalaris paradoxa</i>	8	50	150	300
Paradoxa grass (seed)	<i>Phalaris paradoxa</i>	S	0.6%	1.2%	2.0%
Parthenium weed	<i>Parthenium hysterophorus</i>	2	NIL	NIL	NIL
Paterson's curse	<i>Echium plantagineum</i>	5	40	40	40
Peas (field)	<i>Pisum sativum</i>	7	1	10	20
Peppercress	<i>Lepidium spp</i>	S	0.6%	1.2%	2.0%
Phalaris (Australian)	<i>Phalaris aquatica</i>	S	0.6%	1.2%	2.0%
Poached egg daisy	<i>Calocephalus platycephalus</i>	8	50	150	300
Poppy (field)	<i>Papaver rhoeas</i>	1	8	8	8
Poppy (horned)	<i>Glaucium flavum</i>	1	8	8	8
Poppy (Mexican)	<i>Argemone mexicana</i>	1	8	8	8
Poverty weed (yellow)	<i>Calocephalus sonderi</i>	8	50	150	300
Radish (wild) seed	<i>Raphanus raphanistrum</i>	S	0.6%	1.2%	2.0%
Radish (wild) pod	<i>Raphanus raphanistrum</i>	BW	25	50	100
Ragweed	<i>Ambrosia spp</i>	2	NIL	NIL	NIL
Rapeseed	<i>Brassica rapa</i>	S	0.6%	1.2%	2.0%
Rattlepods	<i>Crotalaria spp</i>	2	NIL	NIL	NIL
Rice	<i>Oryza sativa</i>	FG	85	500	1500
Russian knapweed	<i>Acroptilon repens</i>	5	40	40	40
Rye (cereal)	<i>Secale cereale</i>	FG	85	500	1500
Ryegrass	<i>Lolium spp</i>	S	0.6%	1.2%	2.0%
Ryegrass on stalk	<i>Lolium spp.</i>	8	50	150	300
Safflower	<i>Carthamus tinctorius</i>	7	1	10	20
Saffron thistle	<i>Carthamus lanatus</i>	1	8	8	8
Sage (wild)	<i>Salvia verbenaca</i>	S	0.6%	1.2%	2.0%
Saltbush	<i>Atriplex spp</i>	S	0.6%	1.2%	2.0%
Salvation Jane	<i>Echium plantagineum</i>	5	40	40	40
Sand oats	<i>Avena strigosa</i>	8	50	150	300
Sesbania pea	<i>Sesbania cannabina</i>	5	40	40	40
Sheepweed	<i>Buglossoides arvensis</i>	8	50	150	300
Skeleton weed	<i>Chondrilla juncea</i>	4	20	20	20
Slender celery	<i>Apium leptophyllum</i>	S	0.6%	1.2%	2.0%
Small burrgrass	<i>Tragus australianus</i>	8	50	150	300
Sorghum (grain)	<i>Sorghum bicolor</i>	8	50	150	300
Sorrel	<i>Rumex acetosella</i>	S	0.6%	1.2%	2.0%
Sowthistle	<i>Sonchus spp</i>	S	0.6%	1.2%	2.0%
Soybean	<i>Glycine max</i>	7	1	10	20
Spear grass	<i>Bromus diandrus</i>	8	50	150	300

Common name	Botanical name	TYPE	M1 M3	F1	F2
			SA VIC/NSW		
Spear thistle	<i>Cirsium vulgare</i>	8	50	150	300
Spiny burr grass	<i>Cenchrus tribuloides</i>	8	50	150	300
Spiny emex	<i>Emex australis</i>	3D	1	1	1
Starburr	<i>Acanthospermum hispidum</i>	2	NIL	NIL	NIL
St. Johns wort	<i>Hypericum perforatum</i>	2	NIL	NIL	NIL
Sunflower	<i>Helianthus annuus</i>	7	1	10	20
Thistle milk (pods)	<i>Sonchus oleraceus</i>	1	8	8	8
Thistle milk (seeds)	<i>Sonchus oleraceus</i>	S	0.6%	1.2%	2.0%
Thistle (saffron)	<i>Carthamus lanatus</i>	1	8	8	8
Thistle (spear)	<i>Cirsium vulgare</i>	8	50	150	300
Thistle (variegated)	<i>Silybum marianum</i>	4	20	20	20
Tick grass	<i>Tragus australianus</i>	8	50	150	300
Thornapple	<i>Datura spp</i>	3A	2	2	2
Three cornered jack	<i>Emex australis</i>	3D	1	1	1
Threehorn bedstraw	<i>Galium tricornutum</i>	8	50	150	300
Triticale	<i>Triticosecale spp</i>	FG	85	500	1500
Turnip (Mediterranean)	<i>Brassica tournefortii</i>	S	0.6%	1.2%	2.0%
Turnip (wild)	<i>Brassica rapa</i>	S	0.6%	1.2%	2.0%
Turnip weed (ball)	<i>Rapistrum rugosum</i>	8	50	150	300
Urochloa grass	<i>Urochloa panicoides</i>	S	0.6%	1.2%	2.0%
Variegated thistle	<i>Silybum marianum</i>	4	20	20	20
Verbena	<i>Verbena spp</i>	S	0.6%	1.2%	2.0%
Vetch (commercial)	<i>Vicia spp</i>	3B	4	4	10
Vetch (wild tare)	<i>Vicia sativa</i>	3B	4	4	10
Wards weed	<i>Carrichtera annua</i>	8	75	150	300
Wheat	<i>Triticum aestivum</i>	FG	85	500	1500
Wheatgrass	<i>Agropyron spp</i>	8	50	150	300
Wild canary grass	<i>Phalaris canariensis</i>	S	0.6%	1.2%	2.0%
Wild garlic	<i>Allium vineale</i>	2	NIL	NIL	NIL
Wild oats	<i>Avena fatua</i>	BW	25	50	100
Wild poppy	<i>Papaver hybridum</i>	1	8	8	8
Wild radish (seed)	<i>Raphanus raphanistrum</i>	S	0.6%	1.2%	2.0%
Wild radish (pod)	<i>Raphanus raphanistrum</i>	BW	25	50	100
Wild sage	<i>Salvia verbenace</i>	S	0.6%	1.2%	2.0%
Wild turnip	<i>Brassica rapa</i>	S	0.6%	1.2%	2.0%
Wireweed	<i>Polygonum aviculare</i>	S	0.6%	1.2%	2.0%
Yellow burrweed	<i>Amsinckia spp</i>	S	0.6%	1.2%	2.0%
Yellow poverty weed	<i>Calocephalus sonderi</i>	8	50	150	300

21. Cereal Smut

There is a **NIL** tolerance for cereal smuts. This includes all types of Smut – ball, covered and loose.

Grains infected with Ball Smut (commonly known as Stinking Smut or Bunt) are those which have become invaded by spores of the fungus, *Tilletia caries*. They have the appearance of pale, plump, slightly oversized grains. These grains are easily crushed between the fingers and contain a mass of black powder (spores) with a distinctive rotten egg smell.

Loose Smut is the result of the fungus *Ustilago tritici* developing in heads during the growing phase.

22. Ergot

Ergots are purplish black fungal bodies that contaminate cereal and ryegrass kernels when they are infected by the fungus *Claviceps purpurea*

Ryegrass Ergot: The tolerance applies to the maximum length (in centimetres) that the pieces are not to exceed when aligned end on end.

Cereal Ergot: The tolerance refers to the maximum number of pieces per ½ litre.

23. Earth and Sand

Category of grain contaminant referring to admixture by any soil type, with the tolerance being for grains of sand or pea size pieces of earth.

24. Stones

Stones are counted from a 1 litre sample and put through the stone gauge to determine the number of units.

25. Field Insects

Field Insects include Grasshoppers, Woodbugs, Ladybirds, Sitona Weevils and any other field insects that are not damaging to stored grain. Tolerances are for dead or live insects and refer to whole bodies or body portions for all field insects except Grasshoppers. For Grasshoppers, 6 legs, 3 body parts or 2 wings, constitute 1 insect. The tolerance is for dead or alive Grasshoppers and refers to whole bodies.

26. Pea Weevil

When peas are detected in a load after sampling, it will be necessary to confirm that they are free of live pea weevil and/or larvae; this means that the peas will need to be broken open. If peas are not found in the probed sample but are obvious on the surface of the load, several peas are to be collected at random in a safe manner and checked for infestation.

This is to be carried out using the "pea crusher" supplied. Up to 10 peas are placed into the cylinder and the piston rammed home to break open the peas. The peas are then inspected for pea weevil infestation. As pea weevil will most likely be in the larval stage, care should be exercised when breaking open the peas as the grub can easily be lost in the debris. If no live pea weevil and/or larvae are found, the load can be classified.

27. Grain Insects

THERE IS A NIL LIMIT FOR ALL LIVE GRAIN INSECTS IN ALL GRADES.

Grain insects are those, which attack or inhabit stored grain. A listing of the common grain insect species is given below.

For a guide to Insect identification consult the “Insects of Stored Grain” pocket book or wall chart available in all sampling offices. If you are unsure of the identification of any insect detected in the sample then the load should be declined until it can be identified. Contact your Area or Head Office for assistance.

Maximum Dead Grain Insects Per ½ Litre
All barley grades
10

Common name	Scientific name
Angoumois grain moth	<i>Sitotroga cerealella</i>
Confused flour beetle	<i>Tribolium confusum</i>
Flat grain beetle	<i>Cryptolestes spp</i>
Fungus beetle	<i>Corticaria punctulata</i>
Granary weevil	<i>Sitophilus granarius</i>
Hairy fungus beetle	<i>Typhaea stercorea</i>
Indian meal moth	<i>Plodia interpunctella</i>
Lesser grain borer	<i>Rhyzopertha dominica</i>
Maize weevil	<i>Sitophilus zeamais</i>
Mites	<i>Acarina</i>
Psocids/book lice	<i>Psocoptera</i>
Rice weevil	<i>Sitophilus oryzae</i>
Rust-red flour beetle	<i>Tribolium castaneum</i>
Saw toothed grain beetle	<i>Oryzaephilus surinamensis</i>
Tropical warehouse moth	<i>Ephestia cautella</i>

28. Snails

Snails refer to whole bodies or substantially whole (more than half) Snail shells irrespective of size of the White Snail (*Cernvella virgata*), White Italian Snail (*Theba pisana*), Pointed Snail (*Cochlicella acuta*), Small Pointed Snail (*Cochlicella barara*) and Cernuella neglecta.

29. Odours, Tainting Agents, Sour and Musty or Mouldy grains

There is a **NIL** tolerance for any contaminant which imparts an objectionable taint or smell to the load such as, but not limited to, eucalyptus, Wild Garlic, Coriander or animal faeces. Tainting agents also refer to objectionable odour as a result of insect infestation or rotting snail, bird or rodent bodies.

Includes odour due to improper storage causing mould.

30. Foreign material

There is a maximum % by weight of foreign material not already specified in the standards per ½ litre for all barley grades.

31. Objectionable Matter

There is a **NIL** tolerance for any objectionable matter including any sticks, glass, concrete or any other commercially unacceptable contaminant, smell or taste

32. Mouldy and Sweated grains

There is a **NIL** tolerance for any grain visibly affected by post – harvest mould. It can not be received.

33. Chemical Residues

There is a **NIL** tolerance for chemicals not approved for stored grain include all chemicals which are not registered for use on stored Barley in this State, or chemicals registered for use on stored Barley but which have been applied at a rate in excess of the legal rate specified on the label by the manufacturer. Grain treated with, or contaminated with Bioresmethrin, Carbaryl, Organochlorine compounds, or Dryacide will not be accepted.

If a Grower indicates that the load has been treated with a chemical either shortly before harvesting or prior to delivery, the classifier should contact the Quality Services Department to determine whether the chemical and the treatment rate are acceptable for receipt at your site.

34. Pickling Compounds and Red Dyed Grains

There is a **NIL** tolerance for Pickling compounds and red dyed grains. Including Fenaminosulf, triadimenol, carboxin, flutriafol, bitertanol and any other fungicide added to the grain as a seed treatment. Also included are any marker dyes commonly used during crop spraying operations, which have stained the grain.

35. Barley not of the current season

To be accepted into malting classification loads of approved malting varieties must be of the current season.

Loads of Barley containing any contaminants which have a **NIL** tolerance are unacceptable and require an Official sample to be collected regardless of variety (sample not required for moisture and live grain insects). These loads are identified as a NAGAD Specimen (Not Acceptable, Grower Advised Declined). Separate the **NIL** tolerance contaminants in the sample. One specimen is attached in a NAGAD SPECIMEN packet to the Official sample and forwarded to the ABB Grain Ltd Laboratory and the other specimen attached to your duplicate sample which is retained on site. If only one specimen of the contaminant is found in the sample, this is forwarded with the Official sample to the ABB Grain Ltd laboratory. These loads must also be issued with an AusBulk Notice of Decline.

5.2 Barley Varietal Identification

In malting barley, the mixture of varieties is undesirable, unless varieties have similar malting performance.

During the malting process the grain is germinated. Each variety has a different rate of germination. Compatible varieties such as Clipper and Schooner take up water and germinate at a similar rate to produce an even malt. With incompatible varieties, the rate of water uptake is different resulting in uneven malt. Some grain may be over malted or some grain may be under malted. The malting process cannot be stopped for some of the mixture while the rest catches up.

It is necessary that classifiers are able to identify barley varieties. In South Australia, identification is mainly based on four characteristics.

Morphological Features

1. Kernel Shape (Twisted Grain)

This is a feature readily visible to the unaided eye.

Six Row barley has three rows on each side of the central stem called the rachis. The central row can grow without problem, but the other two have to twist to fit in the cramped space. Therefore, on average, two-thirds of the grain will be twisted.

In the case of Two Row barley, the outer two rows on each side do not grow and only the even inner rows on each side develop, giving a sample with no twisted grains.

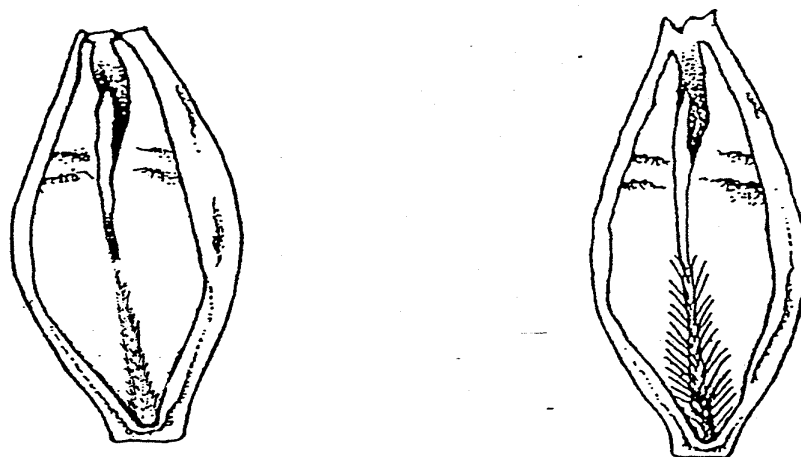
2. Aleurone Layer Colour

The aleurone layer is under the husk of the grain and is easily seen on skinned grains or when the husk is peeled off. Until the release of Corvette, all two-row varieties in Australia had a white aleurone layer. Some varieties overseas have a purple or black aleurone layer.

3. Rachilla Hair Length (Long V Short (Fuzzy))

This feature generally needs the aid of 5x or 10x magnification for recognition.

The rachilla is part of the barley flower, which remains on the grain. It does not seem to serve any purpose. It lies along the crease or hollow in the front of the grain, attached to the base or germ end and extending about one-third to one-half the grain length. It is generally thin and covered by one of two types of hair. Either it is densely coated with short fuzzy hairs or it has long glistening silky hairs. While the fuzzy haired type is always lushly covered, the longhaired type can either be well covered or else have only a few hairs on it with the almost smooth rachilla easily seen.



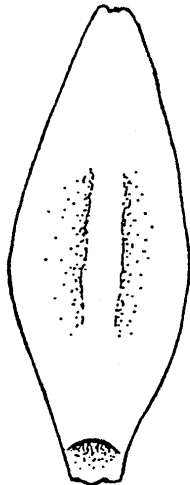
As an aid to examining the rachilla hair type, it is useful to lift the rachilla out of the hollow in the grain. This can be done by tilting back the base of the grain with the thumbnail. The rachilla can then be

observed against the light or against a coloured surface when the hairs are more easily seen. If the hairs are visible to the naked eye they are almost certainly of the long type.

4. Lemma Base Shape (Creased V Not Creased)

This feature is most easily seen with some magnification.

The lemma is the skin on the back of the grain, which continues up, into the awn. This is the opposite to the side of the grain, which is hollow running along its length and the rachilla. At the base of the lemma, the grain of some varieties will have a crease or furrow running across it, whilst other varieties will not have a crease.



Specific Variety Characteristics

In examining all barley features it is worth looking at more than one grain. Often the rachilla can be knocked out during the harvesting and sometimes the base of the lemma is broken off as well.

These features enable the varieties grown in South Australia to be separated into a number of groups. Further separation into separate varieties can be more difficult and is usually not necessary at the silo.

1. Short Hair Rachilla and Depressed or Smooth Lemma Base

1.1 Schooner

Medium to average size. Mellow colour tending to grey underneath. Wrinkles evident mostly on top.

1.2 Sloop

Slightly plumper than Schooner, off white to yellow in colour and more angular than Schooner. More like Chebec.

1.3 Chebec

Similar to Schooner but an all round whiter colour. Ribs running down centre of back and edges more pronounced than Schooner. Smaller percentage of wrinkles evident.

1.4 Forrest

Generally larger in size than Schooner. Easily distinguished by brown stripes prominent on ribs down the centre back and edges (however not all grains exhibit this effect).

1.5 Barque

Similar to Galleon but slightly plumper and brighter

1.6 Galleon

Usually longer and thinner than Schooner or Chebec and has a brighter white colour. Tends to retain more awn especially if reaped in cooler conditions. When viewed side on, some grains display a slight downwards hook to the germ end.

1.7 Gairdner

Long large grain with the rachilla almost half the length of the grain.

2. Short Rachilla Hair and Creased Lemma Base

2.1 Weeah

Distinct crease evident at the lemma base. Medium to large grain.

3. Long Rachilla Hair and Depressed or Smooth Lemma Base

3.1 Clipper

Small to medium size. Mainly white in colour. Long silky hair on rachilla.

3.2 Franklin

Predominantly small in size. Off white to yellow colour. Almost half length of grain heavily wrinkled both top and bottom. Rachilla lies close in crease. Poor grain size.

3.3 Skiff

Small to medium size grain and under normal conditions is quite plump. Caramel like colour and generally shows considerable husk and backbone in load. Bushy rachilla in a good year very wrinkled.

3.4 Tallon

Similar in most respects to Franklin. Especially the wrinkles, but generally lighter in colour.

3.5 Arapiles

Medium size white grain. Bushy rachilla hair.

3.6 Yagan

Long angular grains, white to yellow in colour. Rachilla hair long and bushy.

4. Six Row Varieties

4.1 Beecher

Long thin grain, white colour with long rachilla hair. Approximately two thirds of the grains are twisted.

4.2 Cape

Grain exhibits a blue coloured aleurone, short haired rachilla and again two thirds of the grains are twisted.

5. Summary Of Major Grain Characteristics

Variety	Rachilla hair		Lemma base	
	Long	Short	Depressed	Creased
Arapiles	*		*	
Barque		*	*	
Chebec		*	*	
Clipper	*		*	
Forrest		*	*	
Franklin	*		*	
Galleon		*	*	
Gairdner		*	*	
Schooner		*	*	
Skiff	*		*	
Sloop		*	*	
Tallon	*		*	
Weeah		*		*
Yagan	*		*	

5.3 2003/2004 Barley Recieval Chart

Ensure that the current Barley Recival Charts are added to this section.

5.3.1 AusBulk Ltd.

Barley Receival Standards SA Vn 011346

Barley Receival Standards VIC Vn 022067

Barley Receival Standards SA F3, F4, F5 Vn 012259

5.3.2 ABA Ltd.

ABA Barley Receival Standards NSW Vn 011349

ABA Barley Receival Standards VIC Vn 01134