Opportunities to use Australian sorghum and canola meal in feed rations

March 2026

Richard Simonaitis

CEO

Grains Australia

GRAINS AUSTRALIA

Grains Australia is an initiative of the

GRDC GRAINS RESEARCH & DEVELOPMENT CORPORATION

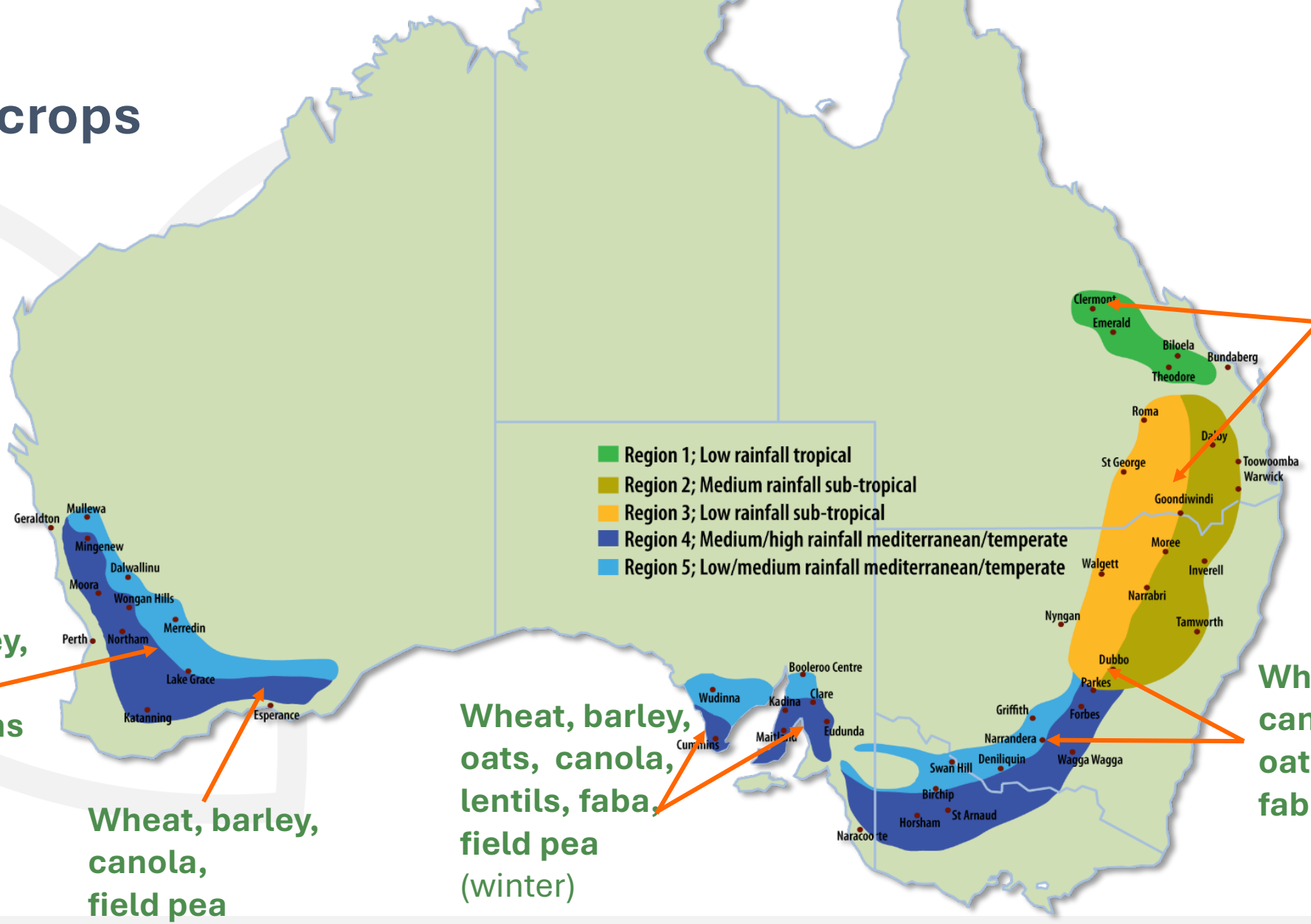
Overview of Australian feed grains

GRAINS AUSTRALIA

Grains Australia is an initiative of the

GRDC GRAINS RESEARCH & DEVELOPMENT CORPORATION

Major crops



Wheat, barley, oats, canola, lupins (winter)

Wheat, barley, canola, field pea (winter)

Wheat, barley, oats, canola, lentils, faba, field pea (winter)

Chickpeas, wheat, barley (winter)
Sorghum, mungbeans (summer)

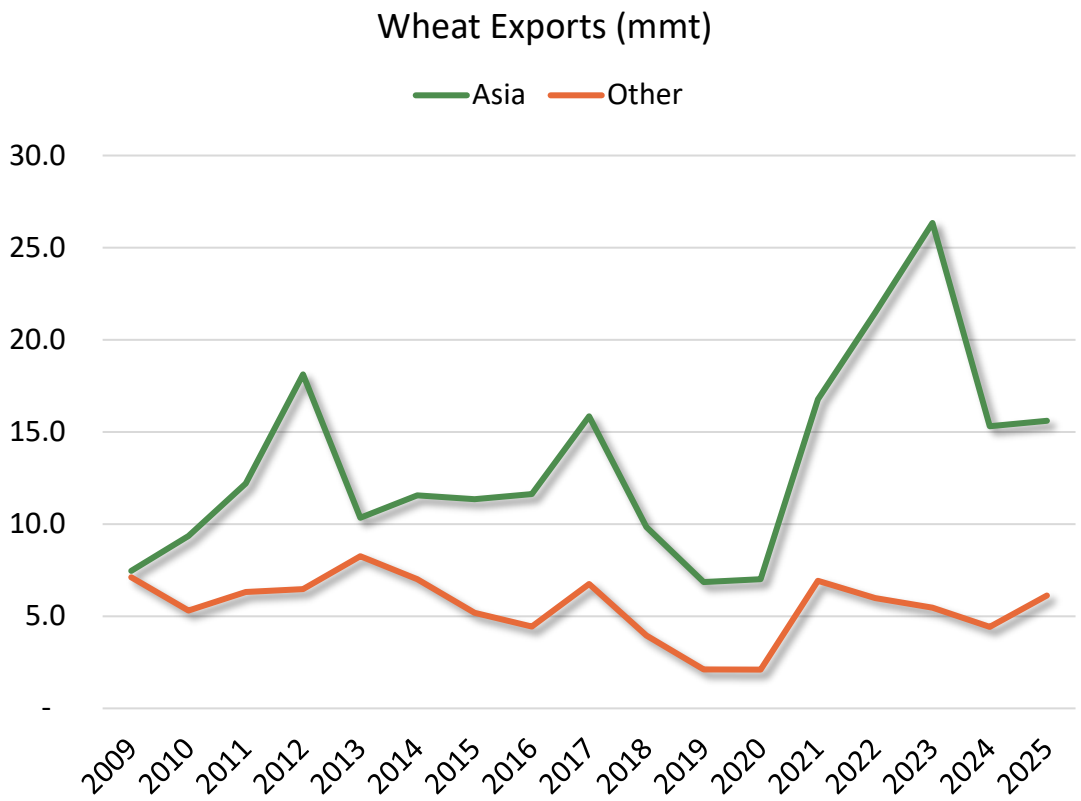
Wheat, barley, canola, oats, lupins, lentils, faba (winter)

GRAINS AUSTRALIA

Grains Australia is an initiative of the GRDC GRAINS RESEARCH & DEVELOPMENT CORPORATION

Wheat in Asia

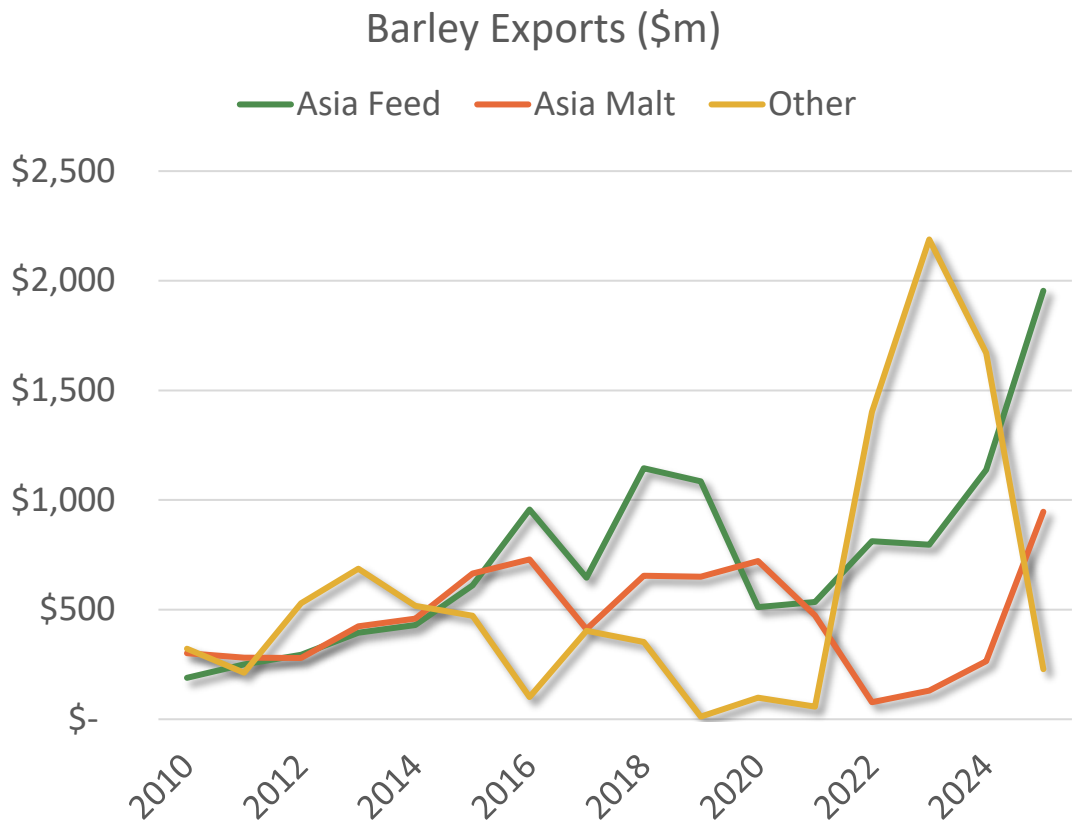
- 34.5 mmt of wheat produced per year.
- Servicing Asian markets.
- Food demand dominates, due to preferred colour characteristics.
- Feed demand growing in some markets where low protein wheat is suitable.



Source: ABARES 2026

Malt and feed barley in Asia

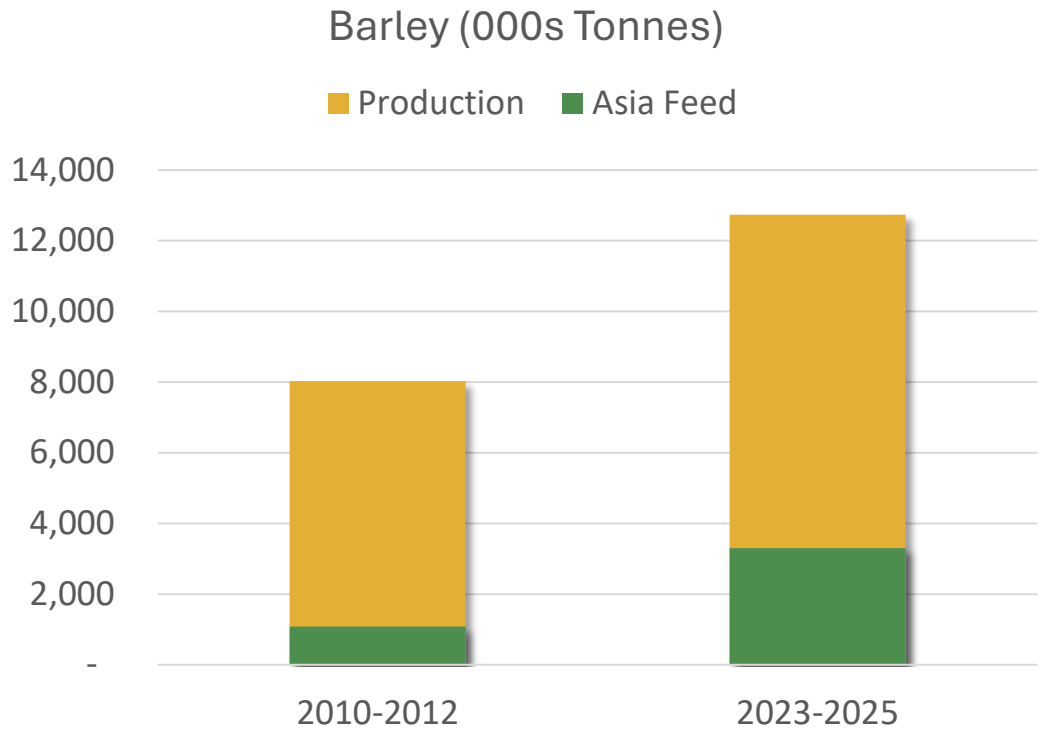
- 13.6 mmt of barley produced per year.
- ~65% / ~35% split between feed and malt quality
- Asia is the major destination of Australian feed and malting barley.
- China historically the largest market.
- Growth in feed barley exceeding growth in malting barley .



Source: ABARES 2026

Feed barley into Asia

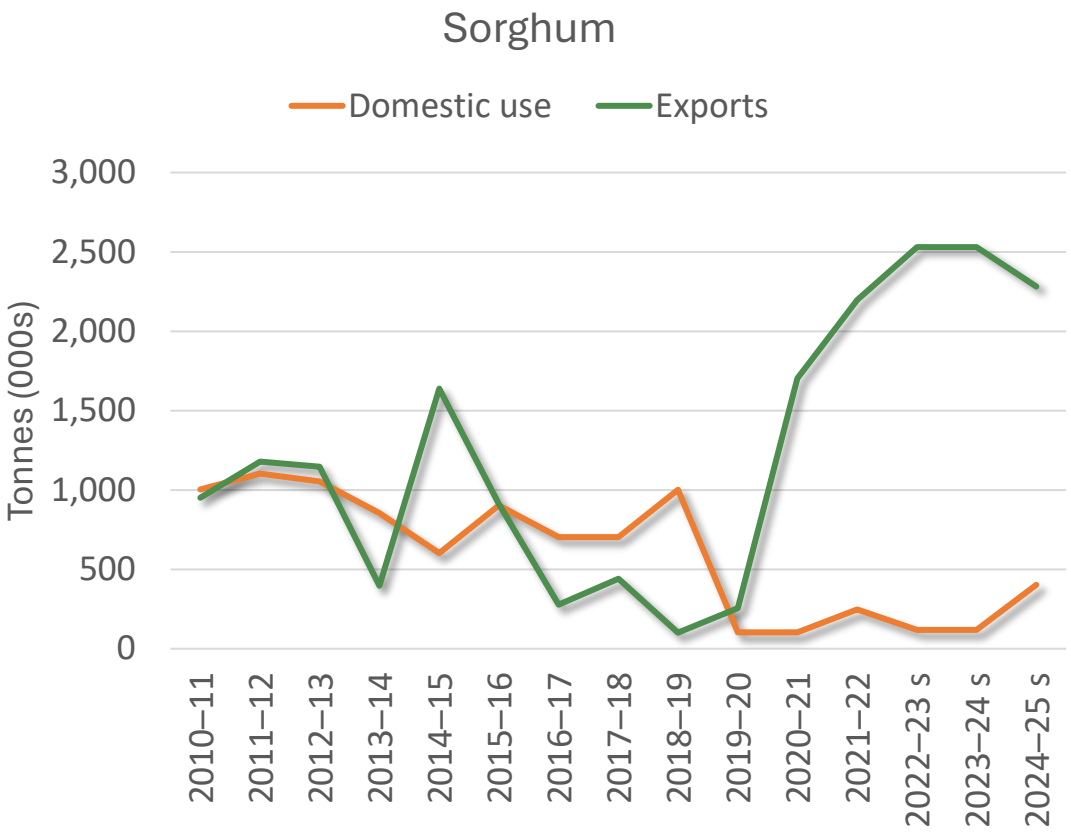
- Increasing importance as an export region.
- Increasing volumes of production meeting demand growth.
- Expectations of demand growth in animal production lead to mutually beneficial outcomes.



Source: ABARES 2026

Sorghum in Australia

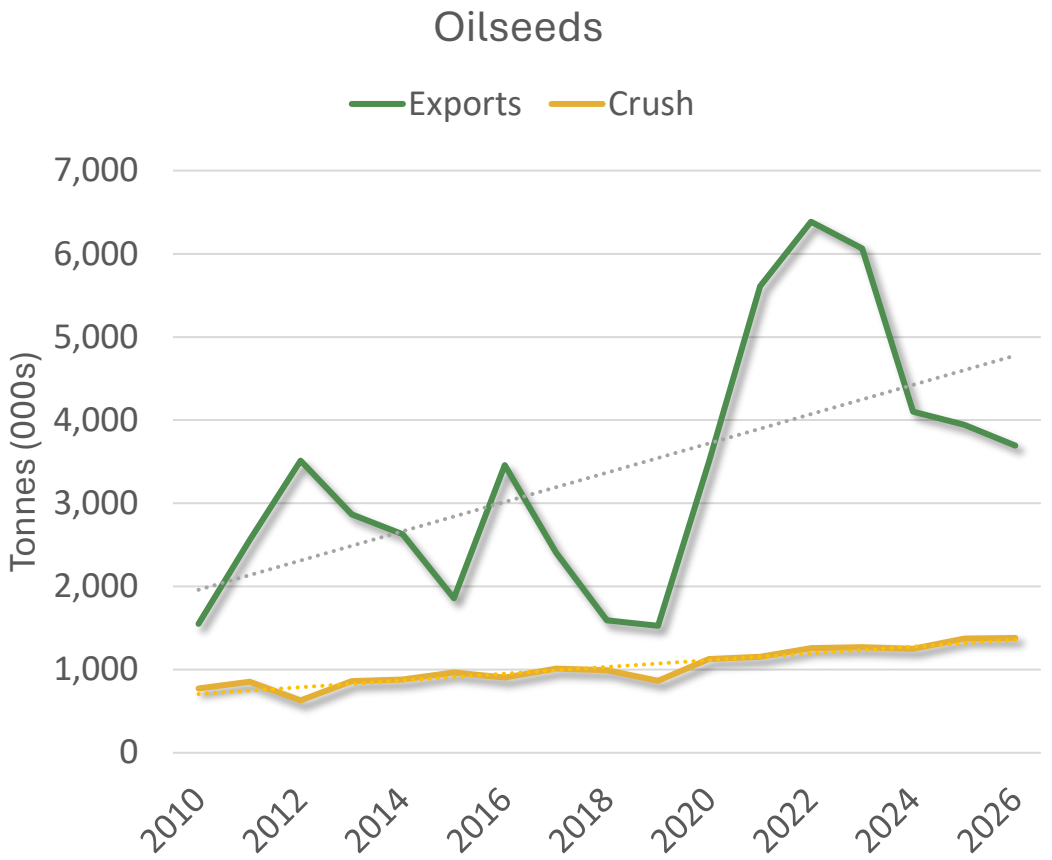
- Annual production of 2.5mmt (5yr average).
- Switch in markets from domestic to export focused.
- Increasing production volumes.
- Domestic feed industry competing with export sector.



Source: ABARES 2026

Oilseeds in Australia

- 6.9mmt of canola annual production, and growing.
- Average crush of 1.3mmt producing ~780k tonnes of meal.
- Increasing crush capacities and volumes.
- Meal component valuable addition to rations.



Source: ABARES 2026

Australian sorghum for feed

- **Superior quality and safety -** Australian sorghum has low toxin levels.
- **Reliable protein content:** Australian sorghum has a reliable level at 9–10% protein.
- **Strong interest:** Understand there is need for more technical data on Australian sorghum.

Australian canola meal for feed

- **Soybean meal replacement:** Available alternative to soybean meal that fits within rations for various species.
- **Long term supply:** Australian supply expanding as additional Canola crushing capacities are brought online. Potential for significant expansion with SAF.

Australian grain in feed rations

GRAINS AUSTRALIA

Grains Australia is an initiative of the

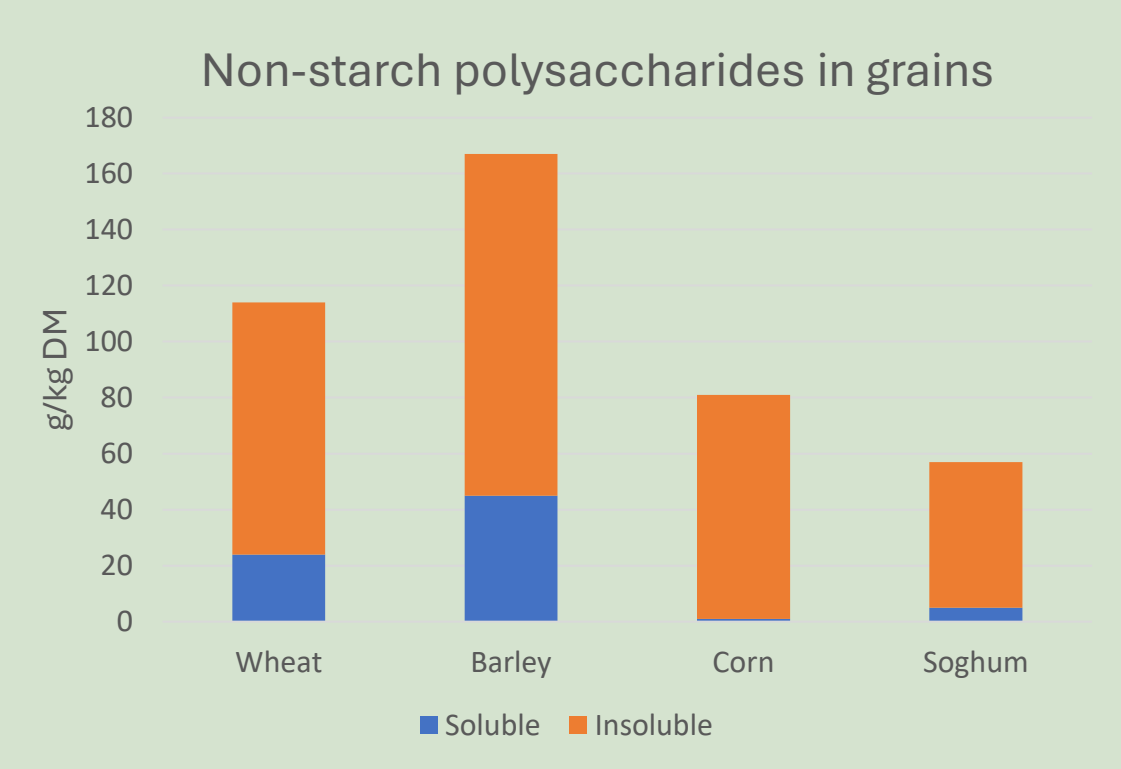
GRDC GRAINS RESEARCH & DEVELOPMENT CORPORATION

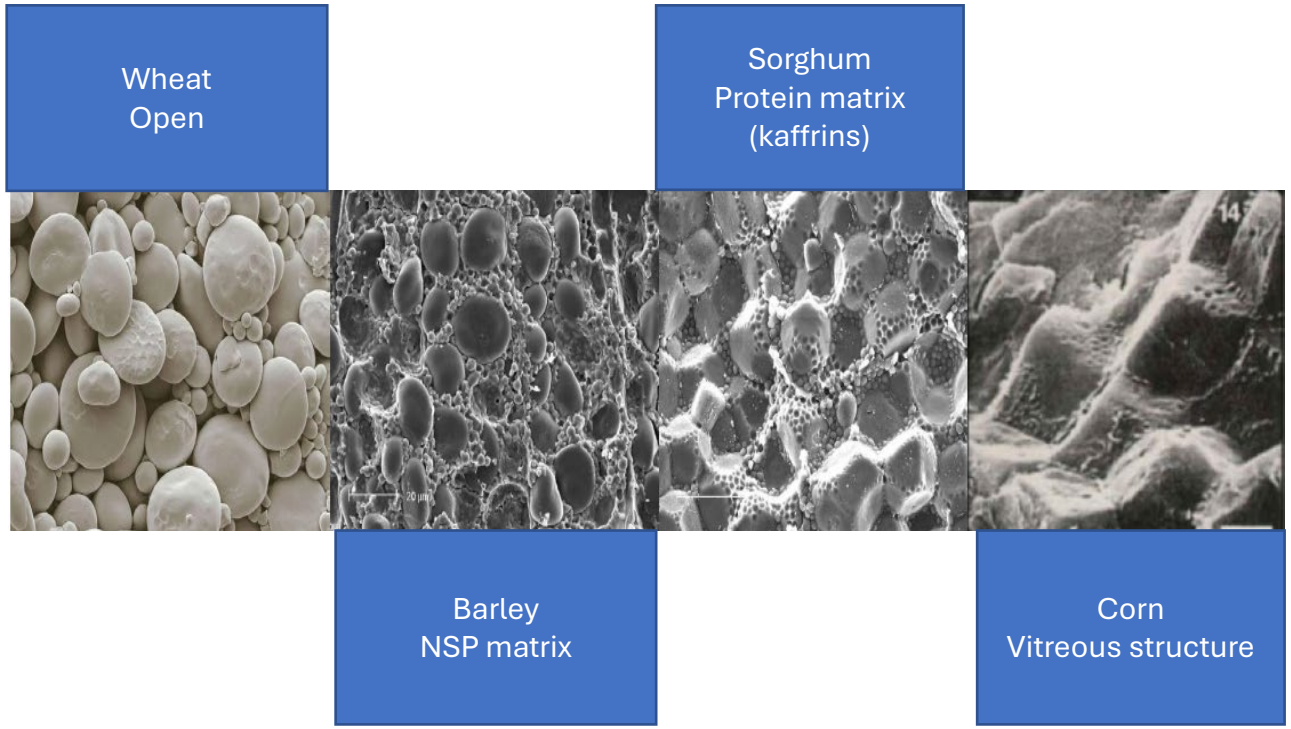
Starch sources available in Asian livestock diets

	Corn	Sorghum	Wheat	Barley	Cassava	Broken rice
Protein %	7.6	9.3	11.0	9.9	2.5	8.1
Starch %	63.8	64.4	60.0	52.3	71.9	75.4
Sugar %	1.7	1.1	2.6	2.2	2.4	0.4
Fat %	3.6	2.9	1.4	1.6	0.6	1.1
Ash %	1.2	1.9	1.5	2.2	2.7	0.8
Crude fibre %	2.3	2.4	2.4	4.7	3.0	0.6
Calcium %	0.04	0.03	0.06	0.07	0.13	0.04
Phosphorous %	0.25	0.30	0.31	0.34	0.09	0.21
Phytate Phos %	0.19	0.21	0.20	0.19	0.02	0.11
Available Phos %	0.06	0.09	0.11	0.15	0.07	0.10
Linoleic acid %	1.83	1.11	0.58	0.70	0.08	0.35
AMEn Cockerel, Kcal/kg	3160	3310	2980	2730	3220	3320
AMEn Broiler, Kcal/kg	3090	3250	2860	2600	3220	3260
ME Grower Pig, Kcal/kg	3290	3340	3190	2970	3220	3460
NE Sow, Kcal/kg	2710	2640	2520	2320	2620	2810
ME Ruminant, Kcal/kg	2880	2790	2720	2580	2560	2800
Xanthophylls, mg/kg	23					

Source: www.feedtables.com – values are as fed

Non-starch polysaccharides and starch structures in grains





*NSP content can be variable between varieties

Enzyme selection needs to consider type and level of NSP within the diet.

Using low tannin Australian sorghum in Asian diets for swine

	Maximum recommended inclusion in commercial diets %
Creep	0
Prestarter	5
Starter	7
Grower	15
Finisher	25
Gestating Sow	25
Lactating Sow	15

Piglets
Sensitive to taste and texture.
Gradual introduction.
Less tolerant of anti-nutritional factors.
Use appropriate enzymes (protease and NSPase + phytase).

Growing pigs
Step up program recommended.
Use appropriate enzymes (protease and NSPase + phytase).
Very high inclusions may result in adverse feeding behaviour.

Sows
Can replace up to 35% of corn/wheat in the diet.
Well tolerated when milled well and provided in balanced diets.

Other considerations
Australian sorghum generally has lower moisture and greater storage capacity, and lower risk of mycotoxins.
Improves carcass fat firmness due to high levels of SFA compared to corn.

GRAINS AUSTRALIA
Grains Australia is an initiative of the GRDC GRAINS RESEARCH & DEVELOPMENT CORPORATION

Using low tannin Australian sorghum in Asian diets for poultry

	Maximum recommended inclusion in commercial diets %
Chick/quail prestarter	5
Pullet Grower	10
Pullet Developer	15
Pre-Lay	25
Laying Hen/Duck	35
Broiler/duck/ quail Grower	30
Broiler/duck/quail Finisher	35

Meat birds

Replace 50% of corn in diet.
Maintain ADG, ADFI & FCR.
Maintain litter quality.
Reduced abdominal fat in carcass.

Layers

Replace 50% of corn in diet.
Maintain ADG, ADFI & FCR.
Improve egg size.
Maintained egg quality.

Other considerations

Sorghum can contain ergot (a fungus that produces toxic alkaloids) — consider a toxin binder effective against ergot.
Must ensure tannin levels are low <0.5.
Needs to be milled well.
Does not contain pigments for yolk/skin.

GRAINS AUSTRALIA
Grains Australia is an initiative of the GRDC GRAINS RESEARCH & DEVELOPMENT CORPORATION

Comparison of soy and canola protein meals for livestock diets

	SBM 46%	Full Fat Soya	Full Fat Canola seed	Solvent Canola	Cold Press Canola	Expeller Canola
DE MJ/kg	15	20	20.8	12.5	14	13.5
NE MJ/kg	8.85	14	16.23	7.5	9	8
CP %	46	38	21.53	37	35	30
Fat %	1.5	19	37.88	3.4	16	13
Fibre %	4.5	4	8.87	10.9	14	14
Total Lysine %	2.74	2.31	1.20	2.04	1.93	1.65
SID Lysine %	2.49	1.99	0.88	1.51	1.43	1.22
SID Methionine %	0.59	0.45	0.34	0.61	0.55	0.48
SID M+C %	1.18	0.92	0.69	1.27	1.12	0.97
SID Threonine %	1.58	1.22	0.67	1.14	1.09	0.94
SID Isoleucine %	1.84	1.43	0.63	1.09	1.03	0.89
SID Tryptophan %	0.54	0.42	0.21	0.35	0.33	0.29
SID Arginine %	3.09	2.51	1.06	1.81	1.72	1.5
SID Histidine %	1.05	0.86	0.45	0.78	0.74	0.64
SID Leucine %	3.06	2.42	1.14	1.96	1.86	1.59
SID Valine %	1.91	2.84	0.79	1.36	1.29	1.11
Omega6:Omega 3	7.4	7.2	2.0	2.0	2	2

Solvent and expeller canola meal most commonly exported.

Moderate density protein meal.

Good source of fibre & oil.

Favourable fatty acid profile (anti-inflammatory due to low omega 6 to omega 3 ratio).

Rich in sulphur amino acids.

Increasing availability and sustainably produced.

Using low glucosinolate Australian canola for swine

	Maximum recommended inclusion in commercial diets %
Creep	2
Prestarter	4
Starter	6
Grower	12
Finisher	15
Gestating Sow	8
Lactating Sow	6

Piglets
Sensitive to slightly bitter flavour .
Gradual introduction.
Less tolerant of anti-nutritional factors.
Use appropriate enzymes (protease and NSPase + phytase).

Growing pigs
High inclusion levels are well tolerated.
Use appropriate enzymes (protease and NSPase + phytase).

Sows
Sensitive to slightly bitter flavours (tannins and sinapines) so use modestly.

Other considerations
Has a dark colour so may influence the colour of finished feed.
Is a source of omega 3 fatty acid alpha-linolenic acid.
Does not influence the colour of offal – a common myth.

Using low glucosinolate Australian canola for poultry

	Maximum recommended inclusion in commercial diets %
Chick prestarter	2
Broiler/duck/quail Starter	4
Broiler/duck/quail Grower	8
Pullet grower	4
Pullet Developer	6
Pre-lay	8
Laying Hen/Duck	10

Glucosinolates

Poultry are less sensitive to glucosinolates and they do not really present an issue.

Taste

Poultry are sensitive to the bitter compounds in canola meal (tannins and sinapines) and for this reason we need to use modest amounts and gradually introduce canola. When fed at higher levels the feed intake is reduced, but the feed conversion remains unaffected.

Egg quality

When used at modest levels, there are no negative effects on egg size, shell quality, or taste.
Fish odour (from metabolism of sinapines) in eggs can be an issue in some brown egg layers if feed at high levels.
Improved omega 3 content in eggs.

Glucosinolates & maximum raw materials inclusion rates

	Dietary inclusion of canola %				
Glucosinolates in raw material µmol/g	**5**	**10**	**15**	**20**	**25**
5	**0.25**	**0.5**	**0.75**	**1**	**1.25**
10	**0.5**	**1**	**1.5**	**2**	**2.5**
15	**0.75**	**1.5**	**2.25**	**3**	**3.75**
20	**1**	**2**	**3**	**4**	**5**
30	**1.5**	**3**	**4.5**	**6**	**7.5**

NB: Australian canola meal contains <6 umol/gm

- Insist on the certificate of analysis.
- Act conservatively.
- Set maximum tolerance limits based on age/class of pig/bird.
  - e.g. 3 µmol/g for growing fish.
  - 2µmol/g for grower-finishers, poultry.
  - 1µmol/g for gestating sows and developing gilts.
  - 0.5µmol/g for weaners/ fingerlings.

Canola meal: An opportunity in aquaculture diets

	Maximum recommended inclusion in commercial diets %
Herbivorous fish	10
Omnivorous fish	7
Marine fish	3
Shrimp	3

Fastest growing animal protein sector, concentrated in Asia.

Can be used as a partial replacement for fishmeal or soy bean meal.

Proven to be successfully used in pangasius, tilapia and grass carp diets at high inclusion levels.

Milling used for aquaculture feed is highly compatible with canola meal for optimal nutrient utilisation.

Fish feed generally has a darker colour so the darker colour of canola meal is not a disadvantage.

Conclusions

- **Understanding potential raw materials is key to remaining competitive in the livestock industry.**
  - Know the nutrition value.
  - Understand the anti-nutritional factors.
  - Understanding the functional benefits.

- **Sorghum represents a competitive starch source for Asian livestock diets**
  - High starch content.
  - Moderate protein.
  - Moderate source of available phosphorous.

- **Canola meal represents a competitive protein source for livestock and aquaculture diets**
  - Moderate to high protein density.
  - Very good fatty acid profile for improve carcass quality and nutritional value of eggs, milk and meat.

Thanks

GRAINS AUSTRALIA

GRDC GRAINS RESEARCH & DEVELOPMENT CORPORATION

Grains Australia is an initiative of the Grains Research & Development Corporation