



INDUSTRY DISCUSSION PAPER ON DEVELOPMENT AND IMPLEMENTATION OF A PULSE CLASSIFICATION SYSTEM

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A. Purpose of this Discussion Paper

This Discussion Paper has been developed with the aim of garnering broad pulse industry support for the concept of a pulse classification system as well seeking feedback on a framework to support the operations of a pulse classification system.

For the purpose of this document, the term 'pulse industry' refers to the value chain including breeders, seed commercialisation partners, growers, bulk handlers, traders, brokers, processors and other end users.

This Discussion Paper has been initiated by Pulse Australia for the purpose of developing an agreed Pulse Classification framework. The implementation and ongoing maintenance of a Pulse Classification system, based on the agreed framework, will become the remit of the Classification function within Grains Australia.

B. Background

The Australian grain value chain is very familiar with the concept of grain classification, with formal and globally recognised systems applying to Australian wheat and barley, to more basic systems of classification for canola (regular/high oleic); oats (feed/milling); sunflower (bird/poly/mono) and soybeans (milling/culinary).

The Australian pulse industry has operated with an informal classification system for a number of years, typically utilising names of past successful varieties as a generic term for a class of pulse closely resembling the successful (often, parent) variety. Examples include '**Jimbour type**' for a group of desi chickpea varieties; '**Nipper type**' and '**Nugget type**' for groups of lentil varieties; '**Kaspa type**' for dun field peas and '**Fiesta type**' for faba beans. The so-called 'classes' are used to group varieties with similar end-user/market characteristics with such varieties invariably being the progeny of the former successful



varieties- retaining the key end-user attributes, but with improved genetics for, for example, agronomic aspects.

Pulse Australia annually publishes the [Pulse Variety Guide](#), detailing the varieties available in that year. This publication goes some way to classifying pulses, providing details of physical characteristics relevant for the market (size, shape, colour). In 2021, this guide listed 13 varieties of kabuli chickpea, 18 varieties of desi chickpea, 20 varieties of field pea, 21 varieties of lentils, 17 varieties of faba/broad beans, 19 varieties of lupins and 9 varieties of mung beans.

The common aspect of all existing Australian grain classification systems, formal and less formal, is that the systems are anchored in the end use/application of the grain. This becomes a fundamental principle in formalising a pulse classification system.

Classification of vetch, pigeon pea and adzuki beans is beyond the scope of this work, due to their relative sizes and clear market uses.

C. Issues to be addressed

A number of issues are supporting the need for a more formal pulse classification system.

The growing range of pulse varieties combined with the emergence of new market segments in Australia, notably the plant protein and fractionation end-uses, are just two of the drivers that has spurred industry interest in a better, more formally defined pulse classification system.

However there are number of practical issues related to pulse varieties which a formal pulse classification system will assist in addressing.

I. Market confusion through use of old/obsolete variety names

The use of heritage variety names as a generic term for a class of similar varieties (such as 'Jimbour style' for desi chickpeas) creates market confusion through the value chain from grower onwards. These terms have been promulgated by Australian traders wishing to preserve the market attributes of the heritage variety by re-assuring buyers in foreign markets that a new variety is of a 'style' (or 'class') equivalent to/same as the heritage variety. Thus the generic term permeates the value chain as the message flows back to farm level that 'XYZ style' is market preference, albeit available in new variety 'ABC'.

The use of these terms not only creates confusion but dilutes the impact and branding of new varieties coming onto the market as they become less likely to be known by their name, but rather classed by a heritage name.

II. Loss of EPR collection through misdeclaration

The issue identified in I. above also leads to misdeclaration at receival sites, as growers can (and do) reference their delivery by the generic heritage variety name, rather than the specific variety name.

This prevents the deduction of the appropriate EPR from the new variety, and either mis-attributes the EPR to the heritage variety (where an EPR applies, such as 'Nipper' lentil); or



collects no EPR when the heritage variety has no EPR applied (such as 'Nugget' and 'Jimbour').

III. Disconnect between breeder and end user

There is currently no formal feedback mechanism between breeders and end users/traders.

Historically, breeders engaged with end users in-market to ascertain preferred end-market characteristics. This has underpinned the successful chickpea breeding program where the functional characteristics of the Indian market have been optimised by the breeder.

In addition, Australian traders/brokers/exporters had a semi-formal engagement with breeders through Pulse Australia at the 'Australian Grains Industry Conference' (AGIC) where new intended varieties were showcased to the trade for feedback. This engagement and feedback process ended in 2016.

Market feedback to breeders tends now to be anecdotal in nature and through more informal channels, such as comments at field days, etc.

IV. Imprecise market signals to growers

The absence of a clear classification system has led to imprecise and misleading market signals to growers, where a new variety is planted in the expectation that it will meet a certain market need and price point. Once harvested, the grain may be deemed by the market as not meeting the intended market need, and the grower could either be rewarded or penalised in price, depending on the ultimate market segment the grain best suits.

The 2019 situation with 'PBA Hallmark XT' is a case in point where this new variety was introduced and classed as a '*medium red lentil variety*', and on harvest (following a season of sub-optimal conditions) the grain in some regions exhibited some characteristics consistent with 'Nugget style' (medium red, lens shaped) (as expected) but other characteristics consistent with 'Nipper style' (small red, flatter style). Although the season conditions were a contributing factor for the varying interpretation of the class/type for 'PBA Hallmark XT' style, it was recognised that a more formal classification process pre-release of the variety may well have overcome the issues faced by growers and traders.

D. Considerations

A number of considerations need to be taken into account in the development of a classification system for pulses. While some of these considerations are shared with other commodities (such as the need for segregation), a number are unique to the pulse sector.

I. Subjective nature of assessment

A key consideration that is largely unique to the pulse sector is the subjective nature of many of the characteristics that will be used in a classification process. While many grain commodities can be assessed objectively on end-user relevant metrics such as protein levels, dough strength, fatty acid profile, wort viscosity and other quantitative factors, the degree to which many pulses meet market needs is on qualitative factors such as shape, appearance, splitting and dehulling ability and taste. For example, it was the degree to which the shape (more flat or more 'oval/football-like shape' of the afore mentioned PBA Hallmark XT variety which was one of the more confounding aspects of that variety (in 2019).

Objective factors such as grain size and weight are also taken into account for pulses, and depending on the market use, protein level is also important (for fractionation), however for the majority of markets for many pulses, the subjective quality parameters are important classification criteria.

An effective pulse classification system will need to incorporate appropriate and agreed methods for assessing the subjective factors.

II. Large number of commodities

There are a relatively large number pulse commodities (six) that could be subject to classification, within which there are a number of sub-groups. Each sub-group addresses specific market segments, while within each subgroup, some specific varieties are better tailored to specific market needs within a segment (Table 1). For example, very large kabuli chickpeas are best suited for canning; while medium sized kabuli chickpeas are more suited for subcontinent markets for use in food dishes (curries, etc); Smaller kabulis may be used for flour milling.

Commodity	Sub-Group
Chickpeas	Desi Kabuli
Lentils	Green Red
Faba beans	Faba Beans Broad Beans
Field Peas	Dun (rounded and dimpled) White Blue
Lupins	Sweet Albus
Mung Beans	Green Black

Table 1 Commodities and sub-groups

The benefit of the sub-grouping is that that end-market uses are relatively discreet which should assist in developing and applying a classification system.

As a classification system will be pulse specific, and while the broad framework will be common across all pulses, the fact that each commodity will require differing classification criteria will dictate that the task to develop a classification system will need to be staged.

The following recommended order of priority for developing and implementing a classification system is based on market need and the degree to which a quasi-classification system already exists (Table 2):

Priority	Commodity	Rationale
1	Lentils	End market uses more nuanced (whole, flour, split) Avoid future Hallmark type issues
2	Field Peas	Emerging opportunities in the plant protein sector Existing market access for China Existing market access for India (limited by quota) End market uses more nuanced (whole/split/milling/confectionary/feed)
3	Faba Beans	Emerging opportunities in the plant protein sector Main market end-uses well understood and needs met



4	Chickpeas	Main market end-uses well understood and needs met, despite being nuanced (whole, flour, split)
5	Lupins	Main market end-uses well understood and needs met
6	Mungbeans	Main market end-uses well understood and needs met

Table 2 Classification Development Priorities

III Segregations

As with existing Australian grain classification systems, the grower and bulk handling systems are required to assess the degree to which any additional segregations are value-adding to the supply chain. If the market is unable to demonstrate the market value-adding that a classification can deliver, it will be more difficult to justify a segregation.

Fortunately, a number of factors work in the favour of supporting a pulse classification system through the supply chain:

- a. The existing pulse growers and handling systems already cope with segregations by broad variety types. This is particularly so for lentils, (small 'Nipper type' and medium 'Nugget type') but also for chickpeas (desi and kabuli) and beans (faba and broad) in southern states.
- b. Much of the movement of pulses has not been through the bulk handling system, but rather as discreet loads to container packing terminals, making segregation implicit. However, the more recent container shipping disruptions have encouraged more bulk handling of pulses for bulk export, which may be a continuing trend for some time.

Nevertheless, any formalisation of a pulse classification system, together with the fragmentation of end use market needs will necessitate a value proposition to be established for each new segregation.

IV Geographical Classification

The ubiquitous nature of wheat production in Australia has led to wheat classification being developed on a regional basis.

Consideration needs to be given as to whether this is required for pulses. Pulse production tends to be more geographically concentrated, however this is a tendency rather than a rule, with faba beans, for example, grown from Darling Downs to South Australia and in WA, albeit concentrated in southern NSW, Vic and SA. Similarly, desi chickpeas tend to be concentrated in Central Queensland, Darling Downs and northern NSW- but are also grown in southern regions from time to time.

Advice from relevant breeders will be required to ascertain the degree to which geographic dispersion/environmental variables impact the end-user functional characteristic of each pulse type/variety.

V. Market Segments

Allied to the issue of segregation is that of diverse and growing end-market uses, and thus the need for additional classifications. The emerging plant protein fractionation market could well develop into one with a need for a specific class, albeit one with an objective measure such as protein levels or amino acid profile; Similarly, substitution markets (such milling faba beans in India to supplement more expensive chana flour), could drive the need for an additional faba bean segregation.



Any pulse classification system will need to be designed with flexibility to enable adaptation to emerging market needs.

E. Key Principle

The Pulse Classification System will be founded on the fundamental market-driven principle of varieties in a class being **'fit for purpose'** and in doing so, providing confidence to the market that pulse varieties in a given class will all provide equivalence in terms of functional performance.

The classification of varieties into well defined, market-driven classes also provides signals to growers of the differing commercial values that a buyer will place on each variety while also defining the market-driven quality targets for breeders.

The establishment of a Pulse Classification System works to better connect the value chain, particularly breeders and growers, with the end markets.

Classification versus Trading Standards

In establishing a Pulse Classification System, it is important to distinguish between Trading Standards and Classifications.

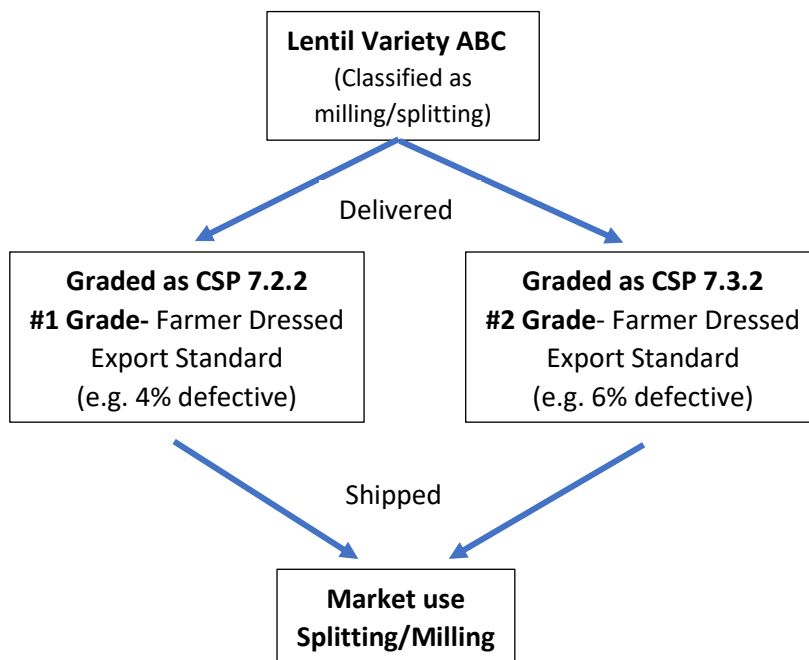
Trading Standards provide a common set of criteria relating to grain quality by establishing the industry accepted minimum requirements that a buyer and seller can agree on.

By contrast, Variety Classification is the categorisation of grain varieties into a class or type of grain according to its end-use functional properties.

In relation to pulses, there are 52 Trading standards across the 6 main commodities (13- Faba/Broad Beans; 11- Chickpeas; 12- Lentils; 8- Lupins; 8- Field Peas) which are essentially providing standards to determine the *grade* of the pulse in question based on the base quality standards (moisture, defects, foreign material, etc).

While some grading criteria are relevant for end user functionality (such as moisture, defects (for some markets)), it is the Variety Classification that will subsequently determine the appropriate market segment for a variety. Standards determine the grade; Classification determines the use.

Any one variety may meet more than one standard, but may retain the classification, as depicted in Figure 1.





F. Process Framework.

The following section outlines a broad framework for development and implementation of the Pulse Classification System.

As flagged in the introduction to this Discussion Paper, the intent is that Grains Australia, through its Classification function, will establish and operationalise the Pulse Classification System.

As with all grain classification, Pulse Classification requires an in-depth understanding of all the functional needs of all the market options and how these relate to the physical properties of the pulse. The Classification system provides a critical link between the market and the breeder, with involvement of parties in between.

Consequently, a Pulse Classification system requires involvement of the following parties:

- Breeders
- Seed commercialisation parties
- End user expert(s) with knowledge of market use, including technical processing requirements where relevant
- Grain handlers/transporters (both bulk and container)
- Trader/exporter

It is recommended that pulse-specific **Classification Panels** be formed drawing from the above list, firstly, identify the relevant end-market classification characteristics, and to subsequently assign existing pulse varieties to relevant classes. This would ultimately require 6 panels to be established—one for each major pulse commodity.

As the Pulse Classification System will be retrospective, a large body of work will be required to classify existing pulses.

Fortunately, there is significant experience within the industry, particularly within breeders and traders/exporters, to be able to capably describe the existing and preferred markets and market uses for each pulse. Drawing on this bank of knowledge and expertise will enable the development of classification definitions, and the assigning of existing varieties to specific classifications.

In addition to classifying existing pulses, a process will need to be developed for breeders to engage with the respective pulse panel for classification of impending new varieties. Expert advice will be required to determine the extent (in terms of time and geography) to which impending varieties will need to be trialled on farm(s) before sufficient information will be available to enable the panel to make an informed view.

It is expected that breeders and traders will have ongoing engagement in the development of new varieties, as is the case now, facilitated through events such as State pulse group meetings, field days, pulse and broader grain conferences. However, this informal engagement and feedback mechanism will not be prescribed in the classification process.

Grains Australia will be tasked with developing the **'rules'** associated with Pulse Classification, modelled broadly on the Wheat Classification Guidelines. This will include details of the overall classification process; role and responsibilities of the panel(s); the classification criteria (per pulse type); the specific classes (per pulse type); the analytical methods to be used (where relevant);



classification zones (if/where relevant); and process for dispute management, and any fees (if applicable) for the classification process.

G. Summary

This paper is intended to initiate a conversation amongst the pulse industry in relation to the development of a formal pulse classification system.

A number of **issues** were detailed for which a well-designed classification system will be aimed at addressing. This includes overcoming market confusion existing now by the use of 'heritage' variety names to describe a 'class'; improving EPR collection through more accurate variety declaration; better connecting the value chain, particularly breeders with end-users; and providing clear and unambiguous variety signals to growers.

In the development of a Pulse Classification System, a number of **considerations** need to be taken into account, including the largely subjective nature of market needs; the large number of pulse commodities and sub-groups involved. Lentils have been proposed as the priority commodity to commence the Pulse Classification work. It was noted that any additional segregations anticipated as a result of Pulse Classification System will need to be commercially justified on the basis of the value created from the classification. The need for geographic classifications, as used for wheat, will need to be assessed based on breeder input, the developing market segments dictate that a Pulse Classification System will require flexibility to adapt.

The **key principle** of Classification being market/end-use driven was reiterated, while awareness is needed throughout the industry on the differences between Pulse Standards and Pulse Classification.

Finally, a strawman framework was proposed, with Grains Australia providing leadership, governance and ongoing ownership of the Pulse Classification System, the process facilitated through pulse-specific Pulse Classification Panels.

H. Next Steps

This discussion paper has been circulated widely to the Australian Pulse Industry for review.

Written feedback is sought on the items raised in the paper, with a specific focus on the following aspects:

- The need for and value from the establishment of Pulse Classification System;
- The issues such a system might create and address;
- Considerations that should be taken into account is assessing the development of a Pulse Classification System;
- The operational framework.

Feedback should be directed to Nick Goddard, Pulse Australia nick@pulseaus.com.au by **Friday 8th July**

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