

**Essentially derived varieties and
the *Plant Breeder's Rights Act 1994* (Cth)**

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National Library of Australia Cataloguing-in-Publication entry:

Author: Hamish MacDonald and Brad Sherman

Title: Essentially derived varieties and the Plant Breeder's Rights Act 1994 (Cth) / Hamish MacDonald and Brad Sherman

Edition: 1st edition

ISBN 978-0-6456873-1-6

Subjects:

Plant breeder's rights – Australia

Intellectual property – Australia

Public administration – Australia

Publisher: Black Jettie, Labrador, Queensland

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Executive Summary

The rights granted to PBR owners in Australia were extended in 1994 to encompass varieties that are ‘essentially derived’ from an initial PBR protected variety (these were later expanded to also include non-PBR protected varieties). The new essentially derived variety (EDV) concept was motivated by a concern that advances in biotechnology, combined with the breeder’s exemption, were undermining the lead time that initial breeders enjoyed over subsequent breeders, and facilitating unfair free riding on the effort of the initial breeder.¹ To qualify as an EDV, applicants must show that the second variety:

- is predominantly derived from the first plant variety;
- retains the essential characteristics that result from the genotype or combination of genotypes of that other variety; and
- does not exhibit any important (as distinct from cosmetic) features that differentiate it from the first variety.²

In recent years concerns have been raised in Australia, in other countries, and at the international level about the effectiveness of existing EDV schemes. One key concern is that essential derivation provisions are weighted in favour of subsequent breeders, who may not be captured by essential derivation laws due to the limited scope of these laws. That is, there are concerns that even though the breeder of the subsequent variety has made use of the initial PBR protected variety, the owner of the rights in the initial variety will lose out completely. This is a particular issue in Australia, where under current law a single important difference will be enough to bring a variety outside the scope of essential derivation. There are also concerns (which go beyond EDV) that technological changes which have sped up breeding have unfairly shifted the balance between the initial breeder and subsequent breeders too much in favour of the latter.

There are two primary pathways for reform of the law of essential derivation in Australia. The first option is to reform essential derivation provisions to align more closely with the UPOV Convention, and particularly with the proposed Explanatory Notes on Essential Derivation (which are currently being deliberated within UPOV which would replace the previous 2017 Explanatory Notes). The second option is to retain the current Australian approach with modifications. A third option, to retain the current Australian approach without changes, was rejected based on stakeholder feedback.

Adopt UPOV’s proposed Explanatory Notes on EDVs

To implement the proposed Explanatory Notes in Australia, multiple changes would have to be made to Australian law. The most distinctive feature of current Australian law is the requirement in section 4(c) that an essentially derived variety “does not exhibit any important (as distinct from cosmetic) features that differentiate it from the first variety.”³ This requirement is not reconcilable with changes in the proposed Explanatory Notes which are designed to broaden the concept of essential derivation beyond capturing only cosmetic breeding.

¹ John Harvey, ‘The UPOV Convention – The Scope of Protection and its General Provisions’, Seminar on the Nature of and Rationale for the Protection of Plant Varieties under the UPOV Convention (19 September 1990) 45 <https://www.upov.int/edocs/pubdocs/en/upov_pub_697.pdf>.

² Section 4, *Plant Breeders Rights Act 1994* (Commonwealth).

³ Section 4(c), *Plant Breeders Rights Act 1994*.

Specifically, the proposed Explanatory Notes introduce a greater focus on the use of genetic testing to determine essential derivation; the stipulation that mono-parental breeding methods will intrinsically give rise to essential derivation; and the provision that a variety may have multiple changes to essential characteristics but still be an essentially derived variety.⁴

The main advantages of adopting these Explanatory Notes would be to ensure that Australia's approach is aligned with the rest of the world, and to better reward the contributions of initial breeders. The main disadvantage of adopting the proposed Explanatory Notes is that it would replace the relatively clear Australian approach to determining essential derivation with a more complex, ambiguous, and indeterminate legal regime.

Retain the current Australian approach with modifications

One of the recurring problems with plant breeder's rights is a lack of awareness and understanding about the scope and nature of the law. This is evident in relation to essential derivation. There are many reasons for this. One key reason for this is that the statutory language is not as clear as it might have been. The paucity of decisions construing the language of the Act and a lack of clarity about IP Australia's approach to EDVs means that there is little to no judicial guidance about the meaning of the law and how it is construed by IP Australia. Given that IP Australia functions as a decision-making body in relation to EDVs, it is crucial that they make their interpretation of EDV law publicly available.

⁴ *Explanatory Notes on Essentially Derived Varieties under the 1991 Act of the UPOV Convention* (3 September 2021) <https://www.upov.int/edocs/mdocs/upov/en/wg_edv_4/upov_exn_edv_3_draft_2.pdf>.

List of Recommendations

Adopt the proposed UPOV Explanatory Notes:

1. Continue the current Australian approach to assessing essential derivation, particularly through the retention of section 4(c).
2. Do not mandate genetic testing for determining essential derivation.
3. Do not stipulate that all varieties developed through mono-parental breeding techniques are inherently essentially derived varieties.
4. Do not state that a subsequent variety may have multiple differences in essential characteristics and still constitute an essentially derived variety.
5. Continue to monitor instances of unfair free-riding, and the agreement of genetic thresholds for plant groupings, with the possibility of adopting the proposed Explanatory Notes if technology erodes the advantage of initial breeders and if consensus on genetic thresholds is reached.

Retain the current Australian approach with modifications:

6. Retain section 4(a) in its current form to maintain alignment with the text of the UPOV Convention.
7. Provide a definition for the words ‘predominantly derived’.
8. Provide a definition for the words ‘retains the essential characteristics’.
9. Consider combining sections 4(b) and 4(c) into a single section. In the alternative, publish informational materials specifying how these relate to one another.
10. Clarify whether section 19 could be used to facilitate commercialisation of an essentially derived variety in cases where the initial breeder is blocking commercialisation or imposing unreasonable terms.
11. Consider the feasibility of requiring PBR applicants to specify essential characteristics at the time of grant if uncertainty about essential characteristics persist.
12. Provide greater transparency around how essential derivation is assessed in Australia. This could be achieved by providing informational resources such as explanatory guidelines for essential derivation.
13. Expand IP Australia’s *Manual of Practice and Procedure* for plant breeder’s rights to include essential derivation.
14. Make all decisions (past and future) in relation to essential derivation publicly available. Encourage stakeholders to undertake education training and awareness on essential derivation.

1. Introduction

When the concept of essential derivation was introduced in the 1991 revision of the UPOV Convention,⁵ it was in response to concerns not only of piracy through cosmetic breeding, but also that with the onset of affordable genetic manipulation, “the timescale for producing a new variety may be quite short.”⁶ It was argued that genetic engineering facilitated the rapid introduction of minor adjustments, since “a new variety may contain all the major components, for example yield and quality of the original variety, but confer a useful additional factor such as improved disease resistance.”⁷ The concern was that this would enable a breeder’s work to be appropriated without remuneration or recognition. Essential derivation is defined in Article 14(5) of the UPOV Convention:

- (5) [*Essentially derived and certain other varieties*]
- (a) The provisions of paragraphs (1) to (4) shall also apply in relation to
 - (i) varieties which are essentially derived from the protected variety, where the protected variety is not itself an essentially derived variety,
 - (ii) varieties which are not clearly distinguishable in accordance with Article 7 from the protected variety and
 - (iii) varieties whose production requires the repeated use of the protected variety.
 - (b) For the purposes of subparagraph (a)(i), a variety shall be deemed to be essentially derived from another variety (“the initial variety”) when
 - (i) it is predominantly derived from the initial variety, or from a variety that is itself predominantly derived from the initial variety, while retaining the expression of the essential characteristics that result from the genotype or combination of genotypes of the initial variety,
 - (ii) it is clearly distinguishable from the initial variety and
 - (iii) except for the differences which result from the act of derivation, it conforms to the initial variety in the expression of the essential characteristics that result from the genotype or combination of genotypes of the initial variety.
 - (c) Essentially derived varieties may be obtained for example by the selection of a natural or induced mutant, or of a somaclonal variant, the selection of a variant individual from plants of the initial variety, backcrossing, or transformation by genetic engineering.

When plant breeder’s rights were first introduced in Australia in 1987, the rights given to the owner of plant breeder’s rights were limited to the protected variety. Over time the rights were extended to include harvested materials and products derived from harvested materials. While these changes improved the protection offered to breeders, a problem remained. Because the rights were limited to the protected variety, any change made to the PBR protected variety resulting in a new variety would take the subsequent breeder outside the scope of the owner’s rights. This narrow scope of protection, and the increasing speed of breeding brought about by technological innovations, led to concerns about ‘copycat’ or ‘cosmetic’ breeding - the development of varieties with trivial differences to circumvent plant breeder’s rights. There were also concerns that significant breeding use of an existing variety without compensation would be unfair, even if non-trivial modifications were made.

⁵ John S. C. Smith, ‘The Future of Essentially Derived Variety (EDV) Status: Predominantly More Explanations or Essential Change’ (2021) 11(1261) *Agronomy* 1, 1-2.

⁶ John Harvey, ‘The UPOV Convention - The Scope of Protection and its General Provisions’, Seminar on the Nature of and Rationale for the Protection of Plant Varieties under the UPOV Convention, 19 September 1990, 45 <https://www.upov.int/edocs/pubdocs/en/upov_pub_697.pdf>.

⁷ *Ibid.*

To deal with problems of this nature, the concept of essential derivation was introduced in the 1991 revision of the UPOV Convention.⁸ This was in response to concerns not only of piracy through cosmetic breeding, but also that with the onset of affordable genetic manipulation, “the timescale for producing a new variety may be quite short.”⁹ It was argued that genetic engineering facilitated the rapid introduction of minor adjustments, since “a new variety may contain all the major components, for example yield and quality of the original variety, but confer a useful additional factor such as improved disease resistance.”¹⁰ The concern was that this would enable a breeder’s work to be appropriated without remuneration or recognition.

Achieving compliance with the 1991 UPOV Convention was a key driver behind the introduction of the Plant Breeder’s Rights Act 1994, which includes essential derivation provisions. The policy objective of Australia’s implementation of essential derivation is to reduce the incentive for free riding on the efforts of original breeders, without limiting the scope for follow-on innovation.¹¹

Section 12 of 1994 Plant Breeders Rights Act provides that if PBR is granted in a plant variety (the initial variety) and a declaration is made that another plant variety is essentially derived from the initial variety, the right granted in the initial variety extends, with effect from the date of declaration, to that other plant variety. The requirements that must be satisfied for a variety to be declared an essentially derived variety are set out in section 4. This provides that a variety is an essentially derived variety of another plant variety if the (subsequent) variety:

- (a) is predominantly derived from the first plant variety; and
- (b) retains the essential characteristics that result from the genotype or combination of genotypes of that other variety; and
- (c) does not exhibit any important (as distinct from cosmetic) features that differentiate it from the first variety.¹²

When the law was first changed to recognise rights in essentially derived varieties, the rights only applied where the subsequent variety was PBR protected. However, the law was changed in 2019 to provide that an initial PBR owner can control the use of an essentially derived variety whether or not it is protected by PBR.¹³ A variety can only be an initial variety for the purpose of essential derivation if that initial variety is not itself essentially derived from another PBR-protected variety.¹⁴

One of the notable features of Australia law is that decisions about essential derivation are decided by IP Australia rather than by the courts. Specifically, the decision is made by the Registrar of Plant Breeders Rights at IP Australia. The process for deciding whether a subsequent variety is an essentially derived variety is triggered when an ‘eligible person’ (either the PBR grantee or exclusive licensee) makes an ‘application for declaration of essential

⁸ John S. C. Smith, ‘The Future of Essentially Derived Variety (EDV) Status: Predominantly More Explanations or Essential Change’ (2021) 11(1261) *Agronomy* 1, 1-2.

⁹ John Harvey, ‘The UPOV Convention - The Scope of Protection and its General Provisions’ Seminar on the Nature of and Rationale for the Protection of Plant Varieties under the UPOV Convention, 19 September 1990, 45 <https://www.upov.int/edocs/pubdocs/en/upov_pub_697.pdf>.

¹⁰ *Ibid.*

¹¹ See Productivity Commission Inquiry into Australia’s IP Arrangements, Final Report, 20 December 2016, page 418.

¹² Section 4, *Plant Breeders Rights Act 1994*.

¹³ *Intellectual Property Laws Amendment (Productivity Commission Response Part 1 and Other Measures) Act 2018* (Cth), ss 31, 2.

¹⁴ Section 40(1A)(c), *Plant Breeders Rights Act 1994*.

derivation' to IP Australia using the appropriate form.¹⁵ It is important to note that different processes apply depending on whether PBR has been applied for or granted in the second variety.

1.1 Where PBR has been granted in the second variety

The rules dealing with situations where PBR has been granted in the second variety are set out in sections 40 and 41 of the *Plant Breeders Rights Act 1994*. These require the applicant ('eligible person') to provide such information on the initial and subsequent varieties to establish a *prima facie* case of essential derivation.¹⁶ The information currently requested by IP Australia includes the PBR certification and application numbers, the botanical and variety names of the initial variety, and whether the initial variety itself has been declared to be an essentially derived variety.

Applicants are also required provide information that establishes a *prima facie* case that the second variety is an essentially derived variety of the initial variety. Specifically, applicants are required to provide enough information to make a *prima facie* case that the second variety:

- is predominantly derived from the first plant variety;
- retains the essential characteristics that result from the genotype or combination of genotypes of that other variety; and
- does not exhibit any important (as distinct from cosmetic) features that differentiate it from the first variety.¹⁷

If the Registrar is satisfied that an applicant has established a *prima facie* case that the second variety is an essentially derived variety of the initial variety, they must notify the applicant and the grantee of PBR in the second variety. The Registrar must also notify the grantee of PBR in the second variety that unless the grantee establishes within 30 days after being so notified or such longer period as the Registrar allows that the second variety is not an essentially derived variety of the initial variety, the Registrar will, at the end of that period, declare the second variety to be an essentially derived variety.

On the basis of information supplied by the applicant and the grantee of PBR in the second variety, the Registrar may decide that a test growing or further test growing is required to determine whether the *prima facie* case has been rebutted.¹⁸ The costs associated with the test growing must be paid by the person who, without the test growing, failed to rebut the *prima facie* case of essential derivation, whether or not the test growing led to rebuttal of that case¹⁹.

If, after considering the information presented by the grantee of PBR in the second variety, any information obtained from a test growing, and any other relevant information obtained by the Registrar, the Registrar will then make a decision about whether the second variety is an essentially derived variety.²⁰

¹⁵ For background see Explanatory Memorandum, *Intellectual Property Laws Amendment (Productivity Commission Response Part 1 and Other Measures) Bill 2018*, [32]-[36].

¹⁶ Section 40(5), *Plant Breeders Rights Act 1994*.

¹⁷ Section 4, *Plant Breeders Rights Act 1994*.

¹⁸ Section 41(1A), *Plant Breeders Rights Act 1994*.

¹⁹ Section 4(4), *Plant Breeders Rights Act 1994*.

²⁰ Section 40(10), *Plant Breeders Rights Act 1994*.

1.2 Where PBR application has been accepted but not yet granted in the second variety

Special rules apply where an application for PBR has been accepted but not finally determined in a second variety. In this situation, an eligible person is able to make an objection under section 35 of the 1994 Act to the granting of PBR in the second variety.²¹ If PBR is granted in the second variety, the PBR owner or exclusive licensee is able to apply under section 40(1A) for a declaration that the second variety is essentially derived from the initial variety.

1.3 Where PBR has not been applied for in the second variety

Where PBR has been not been applied for, or granted, in the second variety,²² the applicant (PBR owner or exclusive licensee) is required to provide information about the initial variety (PBR certification and application numbers, and the botanical and variety names).²³

The applicant is also required to provide the botanical and variety names of the second variety, and any information that enables the Registrar to notify anyone the applicant reasonably believes to be the breeder of the second variety about the application. Where the identity of the breeder of the subsequent variety is not known, the applicant needs to convince the Registrar that they have undertaken ‘reasonable steps’ to identify the breeder of the second variety.

The applicant is required to prove on the *balance of probabilities* that the second variety is:

- essentially derived from the initial variety,
- a registrable plant variety within the meaning of section 43.

In addition, the initial variety must not itself be declared to be essentially derived from another plant variety.

As soon as practicable after an application is made, the Registrar must publish a notification of the application in the *Plant Varieties Journal* about the applicant and the application.

Before making a decision about whether a PBR protected plant variety is essentially derived from another plant variety, the Registrar must give ‘interested persons’ an opportunity to be heard about the application. An ‘interested person’ is anyone the applicant reasonably believes to be the breeder of the second variety or any other person who claims to have an interest in the second variety.

Where the Registrar has notified an interested person about the application, the hearing period is 2 months after either the day the application was notified or when the application was published in the *Plant Varieties Journal* (whichever is the latest date). Where there are no interested persons, the hearing period is 2 months after the day notification of the application was published in the *Plant Varieties Journal*. No hearing fees are charged.²⁴

When deciding whether a variety is an essentially derived variety, the Registrar may seek further correspondence from either party, order a test growing, or consider any other relevant

²¹ Section 40(2)(a) and (b), *Plant Breeders Rights Act 1994*.

²² Section 41F(1), *Plant Breeders Rights Act 1994*.

²³ Explanatory Memorandum, *Intellectual Property Laws Amendment (Productivity Commission Response Part 1 and Other Measures) Bill 2018*, [47]-[54].

²⁴ See Explanatory Memorandum, *Intellectual Property Laws Amendment (Productivity Commission Response Part 1 and Other Measures) Bill 2018*, [62].

information. The applicant must pay all costs associated with the test growing under section 41E, as they stand to benefit if the variety is declared to be essentially derived.²⁵

If the Registrar is satisfied on the balance of probabilities that the second variety essentially derived from the initial variety; is a registrable plant variety; and that the initial variety is not itself declared to be essentially derived from another plant variety, they will make a declaration that the variety is an essentially derived variety.

Once a variety is declared to be essentially derived from an initial variety, ‘the right granted in the initial variety extends [...] to that other plant variety’.²⁶ Where this occurs the essentially derived variety will be covered by two sets of plant breeder’s rights. This is because the second breeder’s PBR is not revoked by a declaration of essential derivation. Commercial use of the essentially derived variety will then require authorisation from both owners.

²⁵ Explanatory Memorandum, *Intellectual Property Laws Amendment (Productivity Commission Response Part 1 and Other Measures) Bill 2018*, [75].

²⁶ Section 12, *Plant Breeders Rights Act 1994*.

2. Review of Prior Literature

This section begins with an overview academic literature on the concept of essential derivation, before surveying the treatment of essential derivation in international case law.

2.1 Academic Literature

Academic analyses of the concept of essential derivation tends to highlight its complexity and indeterminacy.

Sven J. R. Bostyn concludes that “no adequate interpretation of the complex EDV concept has been found”. He argues that the scope of essential derivation should be expanded for the sake of fairness, and suggests a ‘reward model’ where payment of a user fee is required whenever most of the essential characteristics of an initial variety are retained.²⁷ Elsewhere, he notes the lack of clarity in the UPOV Convention, argues that the purpose of the EDV concept is not solely to prevent plagiarism, and states that “the current practice whereby complex and often not very clear technical and quantitative analyses and predictability coefficients are calculated does not in effect provide sufficient legal certainty to both users and courts.”²⁸

Jay Sanderson highlights limitations of using quantitative methods to assess essential derivation. These include that “nature and range of genetic thresholds may vary according to a number of factors including the particular plant species and the research method used”; that “absolute measures of genetic similarity are not scientifically feasible” due to the sampling methodology used in molecular marker assays; and that breeders “may use marker-assisted breeding to evade a declaration of essential derivation”.²⁹

John Stephen C. Smith summarises that “the concept of essential derivation will remain a valid and increasingly useful approach”, provided that a number of conditions are met. These include that “metric thresholds have a high degree of consensus on a crop specific basis”, that “the definition of ‘essential’ is at least agreed on a crop specific basis”, that “attempts are not made to evade essential derivation through use of ‘reverse breeding’”, and that “demonstration of predominant derivation causes the reversal of burden of proof to be upon the developer of the putative EDV who is best placed to provide pertinent evidential responses”.³⁰

Edgar Krieger, Ellen De Keyser and Jan De Riek consider that “a too narrow interpretation of the EDV Concept, as currently applied by the Australian Government, deprives breeders of initial variety from effective protection and an additional income”, and that the Australian approach currently “fails to meet the aim of the EDV Concept as implemented in the UPOV 1991 Act” due to its narrow scope.³¹

Mark Janis and Stephen Smith find that the concept of essential derivation has “proven disappointing”, criticising the technological and legalistic complexity of the ‘conformity’

²⁷ Sven J. R. Bostyn, ‘Towards a Fair Scope of Protection for Plant Breeders’ Rights in an Era of New Breeding Techniques: Proposals for a Modernization of the Essentially Derived Variety Concept’ (2021) 11(8) *Agronomy (Basel)* 1511.

²⁸ Sven JR Bostyn, ‘Plant Variety Rights Protection and Essentially Derived Varieties: A Fresh Proposal to Untie the Gordian Knot’ (2020) 69(8) *GRUR International* 785.

²⁹ Jay Sanderson, ‘Essential Derivation, Law and the Limits of Science’ (2006) 24(1) *Law in Context* 34.

³⁰ John Stephen C. Smith, ‘The Future of Essentially Derived Variety (EDV) Status: Predominantly More Explanations or Essential Change’ (2021) 11(6) *Agronomy (Basel)* 1261.

³¹ Edgar Krieger, Ellen De Keyser and Jan De Riek, ‘Do New Breeding Techniques in Ornamentals and Fruits Lead to Essentially Derived Varieties?’ (2019) 10 *Frontiers in Plant Science* 1612.

criterion and the attempt to blend fundamentally incompatible phenotypic and genotypic systems of assessment.³²

2.2 International Case Law

In countries other than Australia, essential derivation is litigated privately by plant breeders in civil courts. A limited number of essential derivation decisions have been heard by courts, in countries including the Netherlands, Israel, Germany, Spain, and Italy.

In the 2008 case of *Van Zanten Plants B.V. vs. Hofland B.V.*, the District Court of the Hague considered whether the freesia variety ‘Mercurius’ was essential derived from the variety ‘Ricastor’.³³ The applicants submitted as evidence a comparative genetic study, conducted by Naktuinbouw using AFLP technology, found 100% genetic similarity between the varieties using a Jaccard similarity index. The defendant did not provide genetic evidence, or an explanation for the high degree of genetic similarity. As a result, the Court in this case made a finding of essential derivation primarily based on evidence of genetic conformity.

The subsequent year, the District Court of Tel-Aviv-Jaffa considered essential derivation of *Gypsophila* varieties in *Danziger “Dan” Flower Farm vs. Hananya Azolay and Astée Flowers B.V.*³⁴ The applicant submitted as evidence two genetic analyses showing very high degrees of genetic similarity between the varieties. The Court considered this genetic evidence to be sufficient to reverse the burden of proof in accordance with Israeli legislation. The Court further determined that once the burden of proof was reversed (through evidence of genetic conformity), only phenotypic characteristics could be used to rebut essential derivation. The defendant did not produce sufficient evidence to rebut essential derivation, so the variety was found to be an EDV.

Another case concerning the same *Gypsophila* varieties, *Danziger “Dan” Flower Farm vs. Astée Flowers B.V.*, was heard in the Appeal Court of the Hague in 2009.³⁵ The parties agreed that the subsequent variety was created through polyploidisation using colchicine. The applicant submitted two DNA studies carried out by Keygene and based on the AFLP technique showing a genetic similarity of 0.944 and 0.937 respectively, using Jaccard indexes. The respondent submitted a genetic report based on the same technique and carried out by IdQ, with a Jaccard similarity index of 0.87. The respondent argued that a priori the AFLP technology was not an appropriate test method to establish genetic similarity between the varieties because with this technique relevant differences may remain undetected due to the character of the markers. This dispute is instructive – it is very possible for both parties to produce genetic assessments in support of their claims, there may not be a sound method for deciding between conflicting genetic test results in every case.

The Court in this case considered that the elements of essential derivation could be assessed sequentially: first looking at whether the varieties were distinct, then at whether there was predominant derivation (assessed through genetic conformity), and finally at whether the

³² Mark D Janis and Stephen Smith, ‘Technological Change and the Design of Plant Variety Protection Regimes’ (2007) 82(3) *Chicago-Kent Law Review* 1557.

³³ *Van Zanten Plants B.V. vs. Hofland B.V.* (310918/KG ZA 08-594), District Court of the Hague, August 6, 2008 (interim injunction proceedings).

³⁴ *Danziger “Dan” Flower Farm vs. Hananya Azolay and Astée Flowers B.V.* (001228/03), District Court of Tel-Aviv-Jaffa, March 5, 2009.

³⁵ *Danziger “Dan” Flower Farm vs. Astée Flowers B.V.* (105.003.932/01), Appeal Court of the Hague, December 29, 2009.

derived variety was sufficiently similar to the original variety phenotypically, such that they only differ in one or a few of their essential characteristics (those characteristics which determine the value of the variety). The Court found that there was no essential derivation, due to there being 17 morphological differences between the varieties, as determined during the grant of plant breeder's rights. It therefore reached a different conclusion to the Israeli judgement on the essential derivation status of the same varieties.

In 2010, the Court of First Instance of Mannheim, Germany, examined the essential derivation status of a wheat variety in *Probstdoder Saatzucht GmbH & Co. KG v Pflanzzucht Oberlimpurg*.³⁶ The court noted that references to differences in DUS test descriptions between the initial and subsequent variety could not be considered, as the initial variety had 5 different DUS test descriptions with internal differences that sometimes surpassed the differences claimed between the initial and derived variety. The court appointed an expert to carry out a genetic analysis using SSR markers, which showed a genetic similarity of 99%. On this basis the court ruled the variety to be essentially derived. This was appealed on the basis of phenotypic differences between the varieties, and on the basis that the genetic testing methodology was unreliable. However, the appeal was never heard, as the parties reached a settlement.

The 2015 Italian case *Almo s.p.a. v Sardo Piemontese Sementi Soc. Coop. Società Agricola* concerned a rice variety which differed from the initial variety in “the characteristic of supplementary resistance to imidazolinone herbicides”, and in a number of other morphological characteristics.³⁷ The Court in this case considered that predominant derivation (Article 13(6)(a)) was clearly present, as “the initial variety has been used for breeding the subsequent derived variety”. The case turned on whether the variety conformed to the initial variety in essential characteristics (Article 13(6)(c)). To assist with this determination, the Court appointed a technical expert to ascertain the essential characteristics of a rice variety and to make a recommendation on whether the variety was essentially derived. This case is the only case which attempted to comprehensively enumerate the essential characteristics to be compared.

The technical expert concluded that the variety was not essentially derived, as the characteristics shared by the varieties were not unique to the initial variety or were too environmentally dependent to be considered essential. The Court disagreed, determining that the existence of characteristics in other varieties was irrelevant from a legal perspective. The Court ruled that the subsequent variety was essentially derived, due to a combination of genetic and morphological similarities: “The genetic material of the GLADIO parent is more prevalent than that of the other parent (see Dr Piffanelli's report: DNA tests show that, out of the 25 genetic markers, 21 are inherited from GLADIO and just 4 from the other parent), SIRIO CL is highly likely to be the result of a backcrossing with GLADIO (see the above-cited report) and, above all, SIRIO reproduces the four genotype characteristics of GLADIO (grain type; duration of the vegetative cycle; productive capacity; quality of the rice obtained, or yield after industrial processing) which it did not inherit from the other parent CLEARFIELD.” These four characteristics are those which were held to be the essential characteristics of rice, minus those which were considered to be too environmentally dependant (and herbicide resistance,

³⁶ *Probstdoder Saatzucht GmbH & Co. KG v Pflanzzucht Oberlimpurg* (7 0 442t04), Court of First Instance of Mannheim, Civil Chamber (10 December 2010).

³⁷ *Almo s.p.a. v Sardo Piemontese Sementi Soc. Coop. Società Agricola* 3519/2015, Turin Trial Court (14 May 2015).

which was added to the subsequent variety). The precise degree to which genetic testing and phenotypic assessment contributed to the finding was not elaborated.

In the 2016 Spanish case *Syngenta Crop Protection AG v Ekologic Seeds DA & Top Seeds Iberica SL*, which concerned tomato varieties, the court considered genetic assessments showing 91.5% genetic similarity (without elaborating on the source of this assessment).³⁸ The court held that “there is no recognised threshold in respect of tomatoes that makes it possible to determine the existence of an essential derivation” and noted that other tomato varieties shared similarly high degrees of genetic similarity. The court then considered phenotypic differences between the varieties. The court stated in passing that essential characteristics may include things not examined in DUS testing (such as taste of a fruit). Ultimately the court noted numerous phenotypic differences, including some which were held to be important for the marketing of the produce, and it found no essential derivation.

Taken as a whole, existing case law illustrates the lack of clarity around essential derivation, and the strong possibility of arbitrary or inconsistent judgements. Judgements differ in their conceptualisation of essential characteristics, their genotypic and phenotypic assessment techniques, and the degree of similarity required by varieties. Particular areas of unresolved uncertainty include the selection of a reliable genetic testing methodology, the arbitration between conflicting genetic tests, and the relative significance of phenotypic and genetic evidence in determining essential derivation.

³⁸ *Syngenta Crop Protection AG v Ekologic Seeds DA & Top Seeds Iberica SL* 157/2016, Provincial Court of Grenada, Spain (30 June 2016).

3. Options for Reform

We consider that there are two primary pathways for reform of the law of essential derivation in Australia. The first option is to reform essential derivation provisions to align more closely with the UPOV Convention, and particularly with the proposed explanatory notes on essential derivation. The second option is to retain the current Australian approach, with some modifications. We consider each separately.

3.1 Option 1: Adopt the proposed UPOV Explanatory Notes

Australia's approach to essential derivation is different to that of many other countries. One inconsistency is in terms of how conformity between the initial and derived varieties is assessed. Under the UPOV Convention, essential derivation requires that "except for the differences which result from the act of derivation, [the derived variety] conforms to the initial variety in the expression of the essential characteristics that result from the genotype or combination of genotypes of the initial variety".³⁹ In Australia, essential derivation primarily requires that the derived variety "does not exhibit any important (as distinct from cosmetic) features that differentiate it from that other variety".⁴⁰

UPOV's proposed Explanatory Notes on Essentially Derived Varieties suggest a number of significant modifications to existing Explanatory Notes. To implement the Explanatory Notes in Australia, multiple changes would have to be made to Australian law. Of these, four stand out.

In order to implement the proposed Explanatory Notes on Essentially Derived Varieties into Australian law, it would be necessary to remove the "important" difference criterion. This would broaden Australia's system of essential derivation and bring it into closer alignment with that of the UPOV Convention.

A second proposed change is to ground the essential derivation concept more explicitly on a foundation of genetic analysis, specifically on the quantification of genetic difference via techniques such as molecular markers and genome sequencing.

A third proposed change is the suggestion that breeding methods which involve derivation from a single parent variety would automatically give rise to essential derivation. The proposed Explanatory Notes state that "Varieties with a single parent ("mono-parental" varieties) resulting, for example, from mutations, genetic modification or genome editing are *per se* predominantly derived from their initial variety". Similarly, "in the case of mono-parental varieties, all differences necessarily result from one or more act(s) of derivation, meaning that all differences are excluded from consideration of the [essential derivation] status". These statements effectively mean that any mono-parental derivation from a PBR variety will lead to essential derivation, regardless of the number or substance of these changes. In contrast, the 2017 Explanatory Notes provide examples of breeding methods which may give rise to essential derivation but also specify that these "may not necessarily result in an essentially derived variety". The objective of these proposed explanatory notes is to broaden the scope of essential derivation.

The fourth significant change is the suggestion that "differences in essential characteristics" will not necessarily prevent a variety from being essentially derived, if those differences result

³⁹ UPOV Convention, Article 14(5)(iii).

⁴⁰ Section 4(c), 1994 Plant Breeders Rights Act.

“from the act(s) of derivation”. This could theoretically encompass any quantum of difference (or even many differences), depending on how “act(s) of derivation” is defined.

We look at each of these possible reforms in turn.

3.1.1 Remove the stipulation in section 4(c) that essentially derived varieties must not ‘exhibit any important (as distinct from cosmetic) features’

Section 4(c) of the Plant Breeder’s Rights Act is not compatible with the proposed UPOV Explanatory Notes on Essentially Derived Varieties. Accordingly, one of the key changes that would occur if Australia was to adopt the proposed Explanatory Notes would be the removal of section 4(c). This incompatibility arises because one of the changes proposed by UPOV’s proposed Explanatory Notes on Essentially Derived Varieties is that “differences in essential characteristics” will not necessarily prevent a variety from being essentially derived if those differences result “from the act(s) of derivation”.

Given the key role that this criterion plays in Australian EDV, this would constitute a major change of approach to Australian law.

One of the concerns with the use of ‘important features’ as a criteria to determine whether a variety is an essentially derived variety is that there may be situations where the subsequent variety is clearly derived from the initial variety, but because the subsequent variety exhibits an important difference it will not be essentially derived. The concern in these circumstances is that even though the breeder of the subsequent variety has made use of the initial PBR protected variety, the owner of the rights in the initial variety loses out completely. To remedy this problem, it has been suggested that the test for EDV should be modified to simultaneously recognise the rights in the initial variety and the rights in subsequent variety, even when it has an important difference or multiple important differences.

In effect, what is being argued is that PBR law should recognise the rights of the PBR owner whenever a variety is predominantly derived from and retains the essential characteristics of an initial variety, even though the subsequent variety exhibits important differences. These proposals suggest that the role of essential derivation is not merely to discourage cosmetic breeding, but to encourage benefit sharing between initial and derived varieties more broadly.

Removing section 4(c) would leave criteria 4(a) (predominant derivation) and 4(b) (retention of essential characteristics) to determine essential derivation. This would bring Australia’s law into closer alignment with the wording of the UPOV Convention, which includes criteria of predominant derivation and retention/conformity with essential characteristics but does not include anything like section 4(c).

Benefits:

Removing section 4(c) would:

- expand the scope of essentially derivation, leading to more situations where benefit sharing occurs and preventing breeders from making a change to appropriate a protected variety.
- prevent subsequent breeders from introducing a single important change and then claiming the full benefit of a high-performing variety without paying royalties, potentially eroding the initial breeder’s investment.
- bring Australian law into closer alignment with the wording of the UPOV Convention.

Costs:

- One of the arguments made against removing section 4(c) is that the resulting system would be difficult to implement in practice.⁴¹ One of the advantages of the current law is that ‘important’ is a comparatively clear and easy requirement to apply. If section 4(c) was removed, essential derivation would turn on section 4(a) and (b), which would give rise to the problems that are discussed below.
- If section 4(a) and (b) were the only criteria for a variety to be considered an EDV, a wide and cascading range of derived varieties would potentially be considered EDVs. This could discourage investment in plant breeding using PBR-protected varieties (and possibly plant breeding more generally), potentially slowing cumulative innovation in new plant varieties.
- Expanding the scope of essential derivation by removing section 4(c) would undermine the objectives of the breeder’s exemption, making high-performing breeding material more difficult to work with.
- Removing section 4(c) could make the scope of protection provided by PBR out of proportion with the level of innovation achieved.⁴²

Our Recommendation

While section 4(c) represents a departure from the wording of the UPOV Convention, it presents significant advantages in the clarity and administrability of the law. Without agreed genetic thresholds or workable legal tests to determine essential derivation, removing section 4(c) is likely to introduce further legal uncertainty about essential derivation, and risks slowing cumulative varietal innovation. It is also worth noting that perceived instances of unfair free-riding appear to be exceedingly uncommon in Australia.

One change that could improve the clarity of the law would be to replace the words “important (as distinct from cosmetic) features” with a more informative phrase. For example, the subsection could be replaced with: “(c) it does not exhibit any commercially significant features that differentiate it from that other variety”. This would clarify what examiners are looking for while also removing the word “cosmetic”, which can be confusing when cosmetic characteristics are also important or economically valuable (as in the case of ornamentals).

Noting that advancements in breeding technology have the potential to exacerbate unfair free-riding by decreasing the time needed to create new varieties, we recommend that IP Australia continues to monitor this issue. For the time being, section 4(c) presents a clear and workable criterion for determining essential derivation that should be retained.

3.1.2 Prioritise or mandate genetic testing to decide essential derivation

Within UPOV and some member countries, there has been a general movement towards the assessment of essential derivation through genetic testing. UPOV’s proposed Explanatory Notes are also pushing in this direction. Proposals tend to focus on the quantification of predominant derivation (or conformity) and retention of essential characteristics through

⁴¹ Australian Government Advisory Council on Intellectual Property, ‘A review of enforcement of Plant Breeder’s Rights, Final Report’ (2010) 69
<https://www.ipaustralia.gov.au/sites/default/files/acip_final_report_review_of_enforcement_of_pbr_archived.pdf>.

⁴² Australian Government Advisory Council on Intellectual Property, ‘A review of enforcement of Plant Breeder’s Rights, Final Report’ (2010) 69
<https://www.ipaustralia.gov.au/sites/default/files/acip_final_report_review_of_enforcement_of_pbr_archived.pdf>.

standardised molecular marker assays.⁴³ Similar proposals are also being made in Australia in relation to the way section 4(a) and (b) are determined.

Similarity and difference can be assessed using measures of genetic relatedness, which include biochemical, cytological, and molecular markers. Molecular markers systems include restriction fragment length polymorphisms (RFLPs), random amplified polymorphic DNAs (PARs), sequence characterised amplified regions (SCARs), and amplified fragment length polymorphisms (AFLPs), among others.⁴⁴ The most widely used and promising molecular marker systems for plant variety characterisation are Simple Sequence Repeats (SSR) and single nucleotide polymorphisms (SNP).⁴⁵

The development of rapid and cost-efficient whole-genome sequencing is likely to allow the comparison of the entire genomes of plant varieties to assess whether a plant is predominantly derived from and retains essential characteristics of the initial variety. A statistical model can then be used to compare the two genomes, and to quantify the difference between them.

One question that arises is whether genetic testing could be used to assess section 4(c) by testing for the presence or absence of important changes. However, as “important” is contrasted with “cosmetic” it appears to turn on an assessment of commercial value, which may not correlate with genetic difference. The use of genetic tests for section 4(c) therefore does not seem viable, except where molecular markers are reliably linked to specific characteristics, as recommended by UPOV.⁴⁶

The question of the role and place of genetic testing to assess essential derivation in Australia is closely tied to section 4(c).

If section 4(c) is retained: The existence of section 4(c) generally means that questions about predominant derivation and retention of essential characteristics will not be determinative of whether a variety is essentially derived: this will instead turn on whether the variety exhibits important differences in comparison to the initial variety under section 4(c). As a result, mandating or preferencing genetic testing for section 4(a) and (b) would probably not have much of an impact on the outcomes of decisions. It may, however, have an impact on parties thinking of applying for an EDV declaration. The reason for this is that because the application form requires applicants to make a case (either prima facie or on the balance of probabilities) that they have satisfied all three requirements of section 4, the cost of mandatory genetic testing may deter potential applicants, especially smaller breeders.

If section 4(c) is removed: If subsection 4(c) was removed, the situation changes. In this case, a shift to genetic testing to determine predominant derivation in section 4(a) and the retention of essential characteristics in section 4(b) may have more of an impact in Australia.⁴⁷

⁴³ Seyed Hossein Jamali, James Cockram and Lee T Hickey, ‘Is Plant Variety Registration Keeping Pace with Speed Breeding Techniques?’ (2020) 216(8) *Euphytica*.

⁴⁴ Charles Lawson, ‘Plant Breeder’s Rights and Essentially Derived Varieties: Still Searching for Workable Solutions’ (2014) 36(8) *European intellectual property review* 499.

⁴⁵ Xiong Yuan et al, ‘Effective Identification of Varieties by Nucleotide Polymorphisms and Its Application for Essentially Derived Variety Identification in Rice’ (2022) 23(1) *BMC Bioinformatics* 30.

⁴⁶ *Guidance on the Use of Biochemical and Molecular Markers in the Examination of Distinctness, Uniformity and Stability (DUS)* (25 October 2020) <https://www.upov.int/edocs/tgpdocs/en/tgp_15.pdf>.

⁴⁷ Subsection 4(b) of the *Plant Breeders Rights Act* could potentially also be tested genotypically, although the word “characteristic” implies a phenotypic assessment.

Benefits:

- Genetic forms of assessment are less influenced by the plant's environment, making them useful for consistently identifying plants for the purposes of determining predominant derivation and the retention of essential characteristics.
- They can discriminate more finely than phenotypic assessments, allowing intellectual property rights over more specific varieties to be granted.
- Genetic assessments can be more easily standardised and automated than morphological assessments, which can reduce the degree of subjective human judgement involved in each assessment.⁴⁸
- Genetic testing can provide a greater degree of certainty for breeders: if a crop falls above the set genetic conformity threshold, it is an essentially derived variety, and breeders with access to the necessary resources can test this in advance.
- Selection for phenotypic distinctiveness can undermine selection for optimum yield: as Yang et al put it, "as genetic gain in yield increases over time, it is inevitable that DUS trait combinatorial space gets more limited".⁴⁹ Genetic assessments could therefore be a better indicator of a variety's agronomic value.
- Morphological characteristics are not available at all growth stages, which can make phenotypic assessment more difficult.
- The protection of hybrid varieties by trade secrets on parent varieties can prevent phenotypic comparison of the variety with its parental lines, necessitating the use of genetic data in determination of EDV status.⁵⁰

Costs:

- Breeders without access to the technology and expertise required to perform genetic testing will be at a distinct disadvantage, being unable to analyse their own plants with the technology that will be used to determine whether intellectual property rights exist.
- Genetic testing can encourage different forms of cosmetic breeding, where breeders aim to create just enough genetic variation to circumvent intellectual property rights while maintaining the valuable characteristics of the original variety.
- Genetic techniques vary in their operation and interpretation and produce different measures of genetic relatedness. In many areas genetic assessment remains contested and indeterminate. Accordingly, using genetic tests to determine predominant derivation and the retention of essential characteristics requires agreement on and standardisation of the genetic testing procedures, statistical methodologies, and thresholds of difference which should be applied. This consensus has not yet been reached for most plant groupings.⁵¹

⁴⁸ Chin Jian Yang et al, 'Overcoming Barriers to the Registration of New Plant Varieties under the DUS System' (2021) 4(1) *Communications Biology* 302.

⁴⁹ Ibid.

⁵⁰ Yves Rousselle et al, 'Study on Essential Derivation in Maize: III. Selection and Evaluation of a Panel of Single Nucleotide Polymorphism Loci for Use in European and North American Germplasm' (2015) 55(3) *Crop science* 1170.

⁵¹ Robert Mano, 'White Paper on Essentially Derived Varieties' (20 Feb 2019), 3 citing Comments to the Explanatory Notes on Essentially Derived Varieties under the 1991 Act of the UPOV Convention – CIOPORA (2016); https://www.UPOV.int/edocs/mdocs/UPOV/en/caj_73/caj_73_comments_ciopora.pdf. Jay Sanderson, 'Essential derivation, law and the limits of science' (2006) 24(1) *Law in Context*, 34- 53.

- Without consensus on a complete genetic testing methodology for a plant grouping, disputes are extremely difficult to resolve in a non-arbitrary way, as illustrated by existing case law in countries which have adopted genetic testing in EDV disputes.
- Statistical measures of genetic relatedness, such as the Jaccard index, are correlated with, but are not direct measures of, actual similarity.⁵² These tests generally rely on sampling strategies, and thus are not absolute measures of genetic relatedness.⁵³ The development of rapid and cost-efficient whole-genome sequencing is likely to allow the comparison of the entire genomes of plant varieties to assess whether a plant is predominantly derived from and retains essential characteristics of the initial variety. Nonetheless, a statistical model must be used to compare the two genomes, and to quantify the difference between them. This entails the use of statistical models to weight differences between the genomes, and the design of these models can significantly influence the results obtained. As a result, many of the difficulties inherent with assessment with molecular markers remain for whole-genome sequencing (and for methodologies comparing very large numbers of SNPs).

Our Recommendation

In the absence of widely agreed genetic thresholds and testing methodologies for most plant groupings, the use of genetic testing as the only way to adjudicate essential derivation is likely to result in uncertainty. The disadvantages this change could impose upon smaller and less technologically sophisticated breeders is also a matter of concern.

At this stage we recommend that the law remain the same and that genetic testing *not* be made mandatory. We also recommend that IP Australia continue to monitor the development of genetic thresholds for determining essential derivation, with a view towards reassessing their adoption at a later point in time.

3.1.3 Make all mono-parental varieties inherently essentially derived varieties

Under UPOV’s proposed Explanatory notes, breeding methods which involve derivation from a single parent variety will inherently give rise to essential derivation. The revised Explanatory Notes state that “Varieties with a single parent (“mono-parental” varieties) resulting, for example, from mutations, genetic modification or genome editing are per se predominantly derived from their initial variety”.⁵⁴ Similarly, “in the case of mono-parental varieties, all differences necessarily result from one or more act(s) of derivation, meaning that all differences are excluded from consideration of the [essential derivation] status”.⁵⁵ These statements effectively mean that any mono-parental derivation from a PBR variety will automatically lead to essential derivation, regardless of the number or significance of the changes. In contrast, the 2017 Explanatory Notes provide examples of breeding methods which may give rise to essential derivation but also specify that these “may not necessarily result in an essentially derived variety”⁵⁶. This would clearly increase the scope of essential derivation, and thus of the plant breeder’s right. It would also reduce the ability of breeders to make use of protected varieties without prior approval.

Benefits:

⁵² Lawson (n 45).

⁵³ Jay Sanderson, ‘Essential derivation: law and the limits of science’, (2006) 24(1) *Law in Context* 34- 53.

⁵⁴ *Explanatory Notes on Essentially Derived Varieties under the 1991 Act of the UPOV Convention* (n 4).

⁵⁵ *Ibid.*

⁵⁶ *Ibid.*

- Making all mono-parental varieties inherently essentially derived would substantially broaden essential derivation, alleviating concerns (such as those raised during IP Australia’s consultation process) that essential derivation is too minimal and that it does not sufficiently reward initial breeders.
- Most mono-parental varieties retain almost the entirety of the initial variety’s genome, with one or few important changes. Making these varieties intrinsically EDVs means that benefits will be shared with the breeder of the initial varieties, who arguably created most of the variety’s value.
- This would provide a clear and unambiguous test for essential derivation in cases where a variety has conclusively been created through mono-parental breeding.

Costs:

- Making all mono-parental varieties inherently essentially derived could deter the use of new breeding technologies on high-performing PBR varieties, slowing the overall rate of varietal improvement.
- This change would mean that mono-parental breeding would only be possible with the prior approval of the PBR owner. This would entail the greater involvement of lawyers in the breeding process, and a reduction in the freedom to improve upon existing varieties.
- Other forms of work-around may be encouraged by this change, such as following mono-parental derivation with unnecessary crossing and selection for the sole purpose of avoiding claims of essential derivation.
- Expanding the scope of essential derivation gives more control to the owners of existing commercial varieties. Providing an intellectual property advantage to multi-parental varieties benefits larger organizations, who are more likely to have established genetic material and the resources needed to develop costly long-term crossbreeding programs.
- This change would significantly undermine the breeder’s exemption in the case of mono-parental varieties.

Our Recommendation

We recommend that the Act be clarified to make it clear that mono-parental varieties are intrinsically ‘predominantly derived’ for the purposes of section 4(a). However, as we are recommending the retention of 4(c), a mono-parental variety will not be an EDV unless it ‘does not exhibit any important (as distinct from cosmetic) features that differentiate it from that other variety’.

3.1.4 Allow multiple differences in essential characteristics for EDVs

Another change in UPOV’s proposed Explanatory Notes on Essentially Derived Varieties is the suggestion that a declaration that “differences in essential characteristics” will not necessarily prevent a variety from being essentially derived if those differences result “from the act(s) of derivation”. This could theoretically encompass any difference (or even many differences), depending on how “act(s) of derivation” is defined. As a result, this change is likely to operate to substantially increase the scope of essential derivation.

Implementing this change would require the removal or replacement of section 4(c), which provides that a single change in an important characteristic is sufficient to make a variety non-EDV.

Benefits:

- Increase the scope of essential derivation, preventing second breeders from using an existing variety without profit sharing after changing a single essential characteristic.

Costs:

- Removes the relative clarity of the current test by examining whether there is a single different important feature.
- Would require a system for determining essential derivation without relying on a single or even multiple differences in essential characteristics (possibly genetic testing).
- Undermines the breeder's exemption by significantly increasing the scope of essential derivation.
- Concerns were raised during IP Australia's consultation that this change could 'stifle development', particularly within the ornamental horticultural industry.

Our Recommendation

We do not recommend adopting this change. Without agreed genetic thresholds or alternative legal tests for determining essential derivation, this change would introduce significant legal uncertainty, by expanding the scope of essential derivation indeterminately. This could potentially deter investment in breeding.

3.2 Option 2: Retain the current Australian approach with no modifications

There is widespread agreement among stakeholders that maintaining the current Australian law without any changes is not a viable option. We agree that there are many ways in which the current law could be modified to ensure that it better meets its goals and objectives.

3.3 Option 3: Retain the current Australian approach with modifications

A third option for reform is to retain a modified version of the current Australian approach. In this section, we discuss some of the possible changes that could be made to improve the law as it currently stands.

3.3.1 Remove the requirement that the variety be predominantly derived

Some stakeholders suggested that the word 'predominantly' makes the meaning of section 4(a) unclear. Section 4(a) provides that for a variety to be an essentially derived variety of another plant variety it must be 'predominantly derived from the first plant variety'. As with many of the provisions in the Plant Breeders Rights Act, there is no judicial guidance about the scope and meaning of section 4(a).

One of the functions of the requirement that an EDV be 'predominantly derived' is that it prevents independently bred varieties from being caught by essential derivation provisions (i.e. the uncommon situation where a third party independently developed a highly similar variety). It also ensures that the relationship between the initial variety and the derived variety are close enough to warrant recognising the interests of the owner of the initial variety rights in the subsequent derived variety.

There are several different ways that a decision could be made about whether a variety is 'predominantly derived' under section 4(a). One option is to compare the phenotype of the two varieties. Here, similarity of phenotype is assumed to indicate derivation. Another option is to use genetic descriptions to compare the genotype of the two varieties. In this situation, genetic similarity (however that is judged) is taken to indicate derivation. Another option is to examine the breeding history of the subsequent variety to trace its origins.

Australian law is silent about what the test should be. All three modes of determining whether a variety is predominantly derived have been used by IP Australia in deciding whether a variety is an essentially derived variety.⁵⁷

One of the criticisms that has been made of the way IP Australia decides whether a variety is predominantly derived is that it is not ‘sufficiently rigorous.’⁵⁸ This is a difficult claim to evaluate, as the 3 cases of essential derivation that IP Australia has had to date have not required rigorous examination of predominant derivation. In essence this is criticism of the use of phenotypic criteria and breeding history to decide whether a variety is predominantly derived. In line with this it has also been suggested that genetic descriptions of relatedness, possibly based on molecular markers, would be a more appropriate method of quantifying the extent to which the derived variety was predominantly derived from the original variety. We discuss the advantages and disadvantages of this suggestion below.

The fact that the variety must be *predominantly* derived suggests that the test is a quantitative one. One thing that is unclear is working out when the threshold is met. This is a problem whatever test is used to determine whether a variety is predominantly derived. For example, where the varieties are judged phenotypically in terms of their features and characteristics, the question arises: does predominately mean that most, all, or a majority of the features? Similar problems arise if genetic criteria or breeding history is used, unless predominant derivation is interpreted to require only that the subsequent variety was in fact derived from the initial one.

One way to avoid some of the uncertainty surrounding the operation of section 4(a) is to remove the requirement that the variety be *predominantly* derived. The revised section 4 would provide that a variety is an essentially derived variety of another plant variety if:

(a) it is ~~predominantly~~ derived from the first plant variety

Benefits:

- This could improve the clarity of the Act, by removing any kind of assessment of similarity between the varieties from this subsection. The degree of similarity required for essential derivation is dealt with by other subsections.
- This section would operate to ensure that an EDV is actually derived from another variety, and not just a product of convergent breeding.

Costs:

- This could increase the scope of EDV, which might negatively impact on investment in breeding
- This would move the wording of the provision further away from the language of the UPOV Convention (which uses “predominantly derived” in its text).

Our Recommendation

We recommend that the Act retain section 4(a) in its current form to maintain alignment with the text of the UPOV Convention.

⁵⁷ Interview with IP Australia (11/08/2022).

⁵⁸ Australian Government Advisory Council on Intellectual Property, ‘A review of enforcement of Plant Breeder’s Rights, Final Report’ (2010) 67

<https://www.ipaustralia.gov.au/sites/default/files/acip_final_report_review_of_enforcement_of_pbr_archived.pdf>.

3.3.2 Define “predominantly derived”

The clarity of section 4(a) could alternatively be increased by retaining the requirement of “predominantly derived” but providing an explicit definition to make its operation clear. As sections 4(b) and 4(c) provide criteria for how similar the initial and derived varieties must be for essential derivation to exist, the simplest and clearest definition would be to specify that “predominantly derived” means “factually derived from” and does not entail an additional test of similarity between the varieties.

Benefits:

- This would improve the clarity of essential derivation provisions by making it clear what is required for a finding of predominant derivation.

Costs:

- Providing a definition could limit the flexibility of the phrase ‘predominantly derived’.

Our Recommendations

We recommend that a definition of ‘predominantly derived’ be provided either in the Act and/or in IP Australian PBR Guidelines. This should clarify that different techniques (genotypic, phenotypic and breeding history) can be used to show derivation, and should possibly give guidance about their use. In addition, it should stipulate that varieties developed through mono-parental breeding methods are intrinsically ‘predominantly derived’ (noting that due to section 4(a), predominantly derived varieties may not be EDVs).

3.3.3 Clarify the meaning of the phrase “retains the essential characteristics”

Another source of confusion for stakeholders is section 4(b), which specifies that for a variety to be declared an essentially derived variety of another plant variety is that it must retain the ‘essential characteristics’ that result from the genotype or combination of genotypes of that other variety.

There are two main ways to determine whether a variety retains the essential characteristics of the initial variety. One option is to compare the phenotype of the two varieties. Here, similarity of phenotype is assumed to indicate derivation. Another option is to use genetic tests to compare the genotype of the two varieties. In this situation, genetic similarity (however that is judged) is taken to indicate derivation. At present both tests could potentially be used to decide whether section 4(b) has been satisfied. In recent years, it has been argued that genetic descriptions should be used to determine whether a variety retains essential characteristics. This is discussed below.

‘Essential characteristics’ are defined to mean ‘heritable traits that are determined by the expression of one or more genes, or other heritable determinants, that contribute to the principal features, performance or value of the variety.’⁵⁹ As a result, essential characteristics are taken to mean heritable phenotypic traits or the physical and functional characteristics of the variety. Given the language of the Act, it seems that all of the essential characteristics must be present in the subsequent variety for it to be declared essentially derived.

While the definition of ‘essential characteristics’ in the Act provides some clarity about its scope and meaning, there are still a number of issues that are unclear. Of critical importance is working out exactly what the essential characteristics of a variety are, who makes this

⁵⁹ Section 3, *Plant Breeders Rights Act 1994*.

determination, and on what basis. These are important questions that have the potential to shape the way essential derivation is decided.

There is also some uncertainty about what is meant by a trait contributing to the *principal* features, performance, or value of the variety: what does ‘principal’ add? Does principal only apply to features but also to performance and value? Presumably ‘performance’ includes agronomic and potentially also economic or commercial factors. While it seems clear that ‘value’ is judged through a commercial lens,⁶⁰ it is unclear whether it would also apply to non-commercial benefits that are of value.

It has been suggested that ‘essential’ characteristics could relate to UPOV’s ‘asterisked characteristics’; those characteristics which are designated as ‘important for the international harmonisation of variety descriptions’ and which, in general, ‘should always be examined for DUS and included in the variety description.’⁶¹ Another possibility is that ‘essential’ characteristics relate to UPOV’s grouping characteristics (used for selecting comparator varieties). However, a connection between these UPOV characteristics and “essential characteristics” seem unlikely, as the definition of “essential” refers to “principal features, performance or value”, while grouping and asterisked characteristics are selected by their environmental independence and usefulness in international harmonisation respectively,⁶² without consideration of features, performance, or value.

International case law underscores the technical and definitional challenges of assessing essential derivation through essential characteristics. Courts have varied significantly in their reliance on genetic testing, morphological assessments, and breeding histories when making determinations on essential derivation,⁶³ sometimes reaching different conclusions despite almost identical facts.⁶⁴ These cases have consistently involved contrasting genetic results, or contestation of the validity of genetic tests presented by the opposing side.⁶⁵ It is worth noting that these cases rely on the national laws of their respective countries and are not necessarily directly comparable to Australian legal criteria.

⁶⁰ IP Australia: “These features differ depending on the specific plant and its commercial context. For example, another colour can differ substantially in wheat varieties but provide no known commercial advantage. However, colour differences in flowers, such as the Calla Lily, have huge commercial implications”.

⁶¹ ‘General Introduction to the Examination of Distinctness, Uniformity and Stability and the Development of Harmonized Descriptions of New Varieties of Plants’ (2002)

<https://www.upov.int/export/sites/upov/publications/en/tg_rom/pdf/tg_1_3.pdf>.

⁶² Development of Test Guidelines. https://www.upov.int/edocs/tgpdocs/en/tgp_7.pdf

⁶³ *Almo s.p.a. v Sardo Piemontese Sementi Soc. Coop. Società Agricola* 3519/2015, Turin Trial Court (14 May 2015), *Astée Flowers B.V. v Danziger “Dan” Flower Farm* (2005) 198763, Court of The Hague (13 July 2005), *Danziger “Dan” Flower Farm v Astée Flowers B.V.* (2009) 105.003.932/01, Court of Appeal, The Hague (29 December 2009), *Danzinger Flower Farm v Hanania Azulai and Astee Flowers B.V.* (2009) 1228/03, District Court, Tel-Aviv-Jaffa, *Probstdoder Saatzucht GmbH & Co. KG v Pflanzzucht Oberlimpurg* (7 0 442t04), Court of First Instance of Mannheim, Civil Chamber (10 December 2010).

⁶⁴ Compare *Danziger “Dan” Flower Farm v Astée Flowers B.V.* (2009), Court of Appeal, The Hague (29 December 2009) with *Danzinger Flower Farm v Hanania Azulai and Astee Flowers B.V.* (2009) 1228/03, District Court, Tel-Aviv-Jaffa.

⁶⁵ *Danziger “Dan” Flower Farm v Astée Flowers B.V.* (2009), Court of Appeal, The Hague (29 December 2009), *Danzinger Flower Farm v Hanania Azulai and Astee Flowers B.V.* (2009) 1228/03, District Court, Tel-Aviv-Jaffa, *Probstdoder Saatzucht GmbH & Co. KG v Pflanzzucht Oberlimpurg* (7 0 442t04), Court of First Instance of Mannheim, Civil Chamber (10 December 2010).

The meaning of the phrase “retains the essential characteristics” could be clarified. This could include stating clearly whether it is *all* of the essential characteristics which must be retained (so that a single change in an essential characteristic would place the varieties outside the ambit of essential derivation). The relationship between “essential characteristics” and “important features” (from section 4(c)) could also be further clarified.

Benefits:

- Clarifying the meaning of the phrase “retains the essential characteristics” would make the operation of 4(b) clearer and more transparent.

Costs:

- Specifying an exact meaning for section 4(b) could reduce its flexibility, limiting the ability of the Registrar to apply it within different contexts.

Our Recommendations

We recommend that the phrase “retains the essential characteristics” be clarified. In particular, its relationship with section 4(c) should be explicated. Options for how to treat section 4(b) and 4(c) are discussed in more detail below. If these sections are combined, no clarification will be required.

If section 4(b) is retained rather than combined with section 4(c), clarity should be provided on whether an “important (as distinct from cosmetic) feature” is different from an “essential characteristic”, and if so, what the difference is. This clarification should include whether a variety with no distinguishing important feature can nonetheless fail to retain the essential characteristics of the initial variety (and therefore not be an essentially derived variety). Such clarification could be in the Act itself, or in supplementary materials published by IP Australia. Providing information on the operation of this subsection will improve the transparency and clarity of the law. The resource expenditure required could be minimised by publishing this information as supplementary information, rather than amending the Act itself.

3.3.4 Combine sections 4(b) and 4(c) into a single criterion

A major source of confusion about essential derivation arises from the overlap between sections 4(b) and 4(c). Section 4(c) states that an EDV must not exhibit any important (as distinct from cosmetic) features that differentiate it from the first variety. ‘Important’ features are not defined in the Act. It has been suggested that ‘important’ denotes ‘significant changes that affect performance, value, or place in the market.’⁶⁶ In line with this, important characteristics have been widely interpreted by IP Australia and stakeholders to mean those which are commercially valuable. In this sense, ‘important’ is about the market performance and value of a variety. This has clear overlap with ‘essential characteristics’, which “contribute to the principal features, performance or value of the variety”.

It has been suggested that the requirement in section 4(b) that the variety ‘retains the essential characteristics that result from the genotype or combination of genotypes of that other variety’ are already adequately covered by 4(a) and 4(c). This is because a predominantly derived variety which does not exhibit any important differentiating features would necessarily retain the essential characteristics which result from the genotype or combination of genotypes of that initial variety. As section 4(c) currently provides that *any* difference in important features

⁶⁶ Department of Agriculture, Fisheries and Forestry, Standing Committee on Agriculture and Resource Management Review of Plant Breeder’ Rights (1999). Llewelyn M. and Adcock M., *European Plant Intellectual Property* (2006), 184, note 120.

precludes a variety from being essentially derived, this means that a single difference in essential characteristics will likely suffice to take a variety outside the scope of section 4. If this is the case, essential derivation provisions could be effectively simplified by removing this redundant criterion.

Put another way, section 4(c) is widely considered to be the determinative factor for the assessment of essential derivation in Australia. If the variety has one or more important features that differentiate it from the initial variety, the application as a whole will fail. In this situation, there is no need to consider whether the variety complies with section 4(a) or 4(b).

If the variety does *not* have any important features that differentiate it from the initial variety thus satisfying section 4(c), it is then necessary to consider whether it also satisfies sections 4(a) and 4(b). There is a sense in which if section 4(c) is satisfied, section 4(b) will also necessarily have been satisfied, effectively making them redundant. This will, however, depend on how ‘essential’ and ‘important’ are defined. If ‘essential’ and ‘important’ characteristics are interpreted analogously, it follows that a variety with no important changes will retain the essential characteristics of the initial variety. For section 4(c) to be satisfied but not section 4(b), the second variety would need to exhibit the same ‘important’ characteristics as the initial variety but, at the same time, not retain the initial variety’s ‘essential characteristics’: an improbable interpretation.

To overcome some of the difficulties associated with the interpretation of section 4(c), it has been suggested that the test for ‘important features’ should be replaced by a test for ‘essential characteristics’.⁶⁷ This could combine sections 4(b) and 4(c) into a single section, as these criteria measure functionally the same thing. This new criterion could read, for example, “retains all of the essential characteristics that result from the genotype or combination of genotypes of that other variety”. Like section 4(c), this would mean that a single change in an economically valuable characteristic would remove a subsequent variety from the ambit of essential derivation.

Benefits:

- It is highly likely that any ‘essential characteristic would also be an ‘important characteristic. As a result, having both criteria is largely redundant.
- Using the phrase “essential characteristics” instead of “important (as distinct from cosmetic) features” would bring the wording of the Australian Act closer to the wording of the UPOV Convention.
- This change would reduce confusion and clarify the operation of the essential derivation concept.

Costs:

- This uncertainty has not been highlighted as a major issue by stakeholders.
- The costs associated with legislative change may not be justifiable when similar objectives could be achieved by releasing educational materials.

⁶⁷ Australian Government Advisory Council on Intellectual Property, ‘A review of enforcement of Plant Breeder’s Rights, Final Report’ (2010) 70
<https://www.ipaustralia.gov.au/sites/default/files/acip_final_report_review_of_enforcement_of_pbr_archived.pdf>.

- If ‘essential’ is interpreted in such a way that questions about degree arise (depending on how ‘principal features, performance or value of the variety’ is defined), the shift would remove the clear test provided by section 4(c).

Our Recommendations

We recognise that there are problems in relation to the definition of essential and important characteristics, and the significant overlap which exists between these concepts. It seems likely that combining these into a single criterion could improve the clarity of the essential derivation concept, while bringing the wording of the Australian Act closer to that of the UPOV Convention. Accordingly, this should be considered as an avenue for reform. If this route is taken, it should be made clear that this will be interpreted in the same way as the previous section 4(c).

However, stakeholders have not identified this as a major issue, and similar ends could be achieved by releasing educational materials and information. As such, we do not think that legislative reform is required, provided that more information on these criteria is made available.

3.3.5 Introduce measures to ensure that an EDV declaration is not abused

One of the features of the EDV system is that it creates overlapping rights in a single variety. This means that the owner of the second variety will need the consent of the owner of the initial variety to exercise any PBR protected activities. One of the potential problems that this creates is the owner of the initial variety might use the EDV declaration to prevent the owner of the second variety from exploiting their rights.

One possible solution to this problem is provided by section 19, which guarantees reasonable public access to plant varieties. Reasonable public access is “taken to be satisfied if propagating material of reasonable quality is available to the public at reasonable prices, or as gifts to the public, in sufficient quantities to meet demand.”⁶⁸ If this is not provided by the PBR owner, the Act empowers the Registrar to “license a person whom the Registrar considers appropriate: (a) to sell propagating material of plants of that variety; or (b) to produce propagating material of plants of that variety for sale”.⁶⁹ It is possible that this section could be used to compel commercialisation in the event that one owner is attempting to block the release of a variety, as the initial breeder is defined as a “grantee” for the purposes of section 19, and restricting commercialisation would not be taking “all reasonable steps to ensure reasonable public access”.

In some cases, the effective protection of varieties is achieved through “closed loop” arrangements, where the circulation of varieties is controlled contractually. If the variety has plant breeder’s rights, this raises an additional question in relation to section 19: has reasonable public access been provided if propagating material is only distributed within closed loop systems? This situation could be clarified, although it was not raised as a concern by stakeholders.

Benefits:

⁶⁸ Section 19(2), *Plant Breeders Rights Act 1994*.

⁶⁹ Section 19(3), *Plant Breeders Rights Act 1994*.

- Ensuring that essentially derived varieties can be commercialised on reasonable terms would help fulfil the original intention of the breeder’s exemption by allowing cumulative breeding to take place, with appropriate sharing of any profits.

Costs:

- This could restrict the freedom of initial breeders by effectively compelling them to allow the commercialisation of essentially derived varieties.
- Legislative change may not be justified due to an absence of evidence that this is an issue being faced by breeders.

Our Recommendations

We have not encountered any situations where the owner of an initial variety prevented subsequent commercialisation. Accordingly, it seems unlikely that major reform would be justifiable.

It is likely that section 19 of the Act could be employed to resolve such issues if they do arise. We recommend that IP Australia make this known to the public, through publication of supplementary materials and through ongoing public education.

3.3.6 Assess applications for essential derivation during the grant process

Essential derivation provisions do not apply until the owner of an initial variety identifies a putative EDV and makes an application for a declaration of essential derivation. Some stakeholders have commented that this introduces a degree of uncertainty and inconsistency into the law, as the outcome of essential derivation situations can depend on whether (and when) derivation is identified.

This could potentially be addressed by changing the law so that essential derivation is assessed by IP Australia for each new application during the grant process. A determination could then be made prior to the point of grant.

Benefits:

- Remove (or at least reduce) the need for breeders to monitor other varieties for essential derivation.
- Reduce uncertainty and inconsistency in the operation of essential derivation by ensuring that all varieties are assessed for essential derivation at the same time.

Costs:

- Could substantially increase the workload of applications for IP Australia.
- Could lead to an increase in declarations of essential derivation, and potentially more disputes.
- Requires a robust and efficient way of identifying potential initial varieties and assessing essential derivation.
- Moves the onus from breeders to a government body for enforcing private rights. This is contrary to how intellectual property regimes typically operate.

Our Recommendations

We recommend that the system remain as it is. We do not feel that the certainty gained by PBR owners would justify such a significant imposition on IP Australia.

3.3.7 Change the forum where essential derivation is decided

In Australia, essential derivation is determined by the Plant Breeder's Rights Office, with a right of appeal to the Administrative Appeals Tribunal if the applicant is dissatisfied with the outcome. Commentators have questioned whether the PBR Office is the most appropriate forum for this decision and have suggested that these disputes should be resolved by the court system in the first instance.⁷⁰

This suggestion is motivated in part by a belief that IP Australia does not have the expertise to assess the performance, value, or merit of differences between varieties. It has also been suggested that IP Australia does not have the expertise to undertake the DNA testing which may be required to establish the degree of similarity between varieties. Other arguments for changing the forum include that all PBR owners should not bear the cost of EDV actions by individuals seeking to protect their own interests, and that EDV allegations are dealt with by courts in other jurisdictions.

Benefits:

- The cost of taking a matter to court would deter frivolous actions.
- It would bring Australia into alignment with practice in other countries.
- Costs would be borne by the parties involved, and not by the system as a whole.
- Courts specialise in making complex legal determinations.

Costs:

- IP Australia does have the in-house expertise to assess essential derivation (this includes when genetic testing is used)
- Using courts to decide essential derivation would increase the cost and duration of the declaration process.
- Court actions are beyond the financial resources of many breeders due to the relatively small profit margins from many plant breeding investments.
- Moving essential derivation determinations to the courts may make the practicalities of enforcement of PBR more difficult, not less.⁷¹
- There is no evidence that frivolous applications are a problem.⁷²
- IP Australia offers a quicker and cheaper process than that which would be provided by the courts.⁷³

⁷⁰ The Expert Panel recommended that the responsibility to determine essential derivation be moved from the PBRO to the courts. While the Government accepted the Expert Panel's recommendation, these were not Expert Panel on Breeding in 2002 implemented. See also Australian Government Advisory Council on Intellectual Property, 'A review of enforcement of Plant Breeder's Rights, Final Report' (2010) 65 <https://www.ipaustralia.gov.au/sites/default/files/acip_final_report_review_of_enforcement_of_pbr_archived.pdf>.

⁷¹ Australian Government Advisory Council on Intellectual Property, 'A review of enforcement of Plant Breeder's Rights, Final Report' (2010) 69 <https://www.ipaustralia.gov.au/sites/default/files/acip_final_report_review_of_enforcement_of_pbr_archived.pdf>.

⁷² Australian Government Advisory Council on Intellectual Property, 'A review of enforcement of Plant Breeder's Rights, Final Report' (2010) 70 <https://www.ipaustralia.gov.au/sites/default/files/acip_final_report_review_of_enforcement_of_pbr_archived.pdf>.

⁷³ Australian Government Advisory Council on Intellectual Property, 'A review of enforcement of Plant Breeder's Rights, Final Report' (2010) 69 <https://www.ipaustralia.gov.au/sites/default/files/acip_final_report_review_of_enforcement_of_pbr_archived.pdf>.

- Dissatisfied applicants have the right to appeal the decision to the Administrative Appeals Tribunal if they wish to take the case through the formal justice system.

Our Recommendation

We see no reason to change the current practice whereby EDV declarations are made by the Registrar. Frivolous claims and jurisdictional inconsistency have not emerged as issues for Australian breeders and stakeholders, and the Plant Breeder’s Rights Office is well equipped with the specialised knowledge required for these disputes.

3.3.8 Introduce alternative dispute resolution processes for essential derivation

It has been suggested that an EDV alternative dispute resolution system should be introduced having parties to resolve disputes before resorting to legal action. A range of alternative dispute resolution processes and organisations already exist, but these may lack the technical expertise necessary to facilitate negotiations around essential derivation disputes.

Benefits:

- Reaching agreement through ADR could provide a cost-efficient solution for parties.
- Reduces strain on the court system and on IP Australia.
- A successfully negotiated agreement could provide both parties with a satisfactory outcome.

Costs:

- If an agreement is not reached, ADR simply creates additional costs and delays.
- Establishing an ADR process with sufficient technical expertise and equipment to assess ED could prove challenging.
- ADR could be more expensive than the current approach

Our Recommendation

Given the exceedingly low number of essential derivation claims in Australia, we do not feel that the introduction of an alternative dispute resolution system is justifiable.

3.3.9 Improve the ability for IP Australia to use genetic testing

One of the criticisms that has been raised about the current system is that IP Australia lacks the expertise and resources to deal with genetic testing.

Our Recommendation

We found nothing to indicate that this was the case and recommend that no change is required here. Genetic testing may be outsourced as required.

3.3.10 Adjust differences in the standard of proof for PBR-protected and non-protected derived varieties

Where a subsequent variety is PBR-protected, the applicant has the onus of proof to make a prima facie case for essential derivation. If the Registrar is satisfied that this case exists, the onus of proof switches to the owner of the putative EDV to rebut the claim of essential derivation.

If the second variety is non-protected, the applicant has the onus of proof to prove essential derivation on the balance of probabilities. This means that the applicant must prove their case to a higher standard than in the case of protected second varieties, and “allows an interested

third party to do nothing and put the applicant for a declaration to the proof'.⁷⁴ Section 41D(4) explicitly allows the Registrar to draw an unfavourable inference against an interested person who does not provide evidence, which is intended for situations where the initial breeder is unable to provide evidence which is known only to the second breeder.⁷⁵

One possible change is adjusting these onuses of proof, by bringing them into alignment with one another. This could be done by making the burden of proof 'balance of probabilities' or 'prima facie' for both legal avenues.

Benefits:

- It is possible that the operation of the two standards work very similarly in practice, and bringing them into alignment could simplify essential derivation provisions.

Costs:

- Requiring only a prima facie case for varieties which are not PBR-protected may be too low a bar. There may be no breeder or interested person available to argue against the essential derivation argument, leading to claims being granted on a lower standard of evidence.
- Shifting the standard of proof to the 'balance of probabilities' could make it more difficult to bring essential derivation claims.

Our Recommendation

The current system is designed to provide an appropriate burden of proof depending on the situation and should be retained. We recommend the adoption of an information notice system which allows evidence to be gathered for the purposes of proving infringement or essential derivation under certain conditions.

3.3.11 Require applicants to identify important features and essential characteristics in their applications

Reducing uncertainty around 'important features' and 'essential characteristics' would improve the transparency of the PBR system. One possible avenue to achieve this is to require applicants to identify important features and/or essential characteristics at the point of application.

Intellectual property law employs a number of different types of registration systems which operate and function differently. In some cases, as with the patent system, the registration system is used to define the limits of the legal interests in the patented invention (which may be modified by the courts). In most cases, it is expected that a member of the public would be able to look at the patent application and work out the scope and limits of the patentee's legal interests. At the other extreme, intellectual property rights are sometime awarded with little or no examination (as is the case with many design regimes and in jurisdictions which require copyright works to be registered). In these cases, the scope of the intangible property right is only clarified post-registration. Australian plant breeders rights law operates in between these

⁷⁴ Explanatory Memorandum

https://www.legislation.gov.au/Details/C2018B00067/Explanatory%20Memorandum/Text#_Toc509828371 [67].

⁷⁵ Explanatory Memorandum

https://www.legislation.gov.au/Details/C2018B00067/Explanatory%20Memorandum/Text#_Toc509828371 [67].

two extremes. While the scope of the PBR owner's rights is largely determined by their application, aspects of their legal interest (particularly what they might claim to be essentially derived) will only be made clear post-grant. This potentially creates uncertainty for third parties who may not know what the essential characteristics of a variety may be. Similar problems may raise in determining what the 'important' characteristics of a plant variety are.

One potential way of remedying these problems would be to require applicants to specify the important features and the essential characteristics of their plant variety at the point in time when they apply for protection.

In the Italian decision of *Almo v Sardo Piemontese Sementi Soc. Coop. Società Agricola* (2015),⁷⁶ the court enumerated the essential characteristics of rice varieties, which seem to have been accepted from prior court-ordered technical examinations. These essential characteristics were "1) grain type; 2) duration of the vegetative cycle; 3) productive capacity; 4) quality of the rice obtained, or yield after industrial processing; 5) plant vigour; 6) tillering capacity; 7) resistance to herbicides."⁷⁷ Plant vigour and tillering capacity were subsequently excluded from consideration due to high levels of environmental dependence. Such an approach could be more generally employed by determining in advance the 'essential characteristics' for each species, although this raises the question of how 'essential characteristics' should be determined.

Benefits:

- This could increase clarity about what the essential and important characteristics of a variety are.
- This would prevent breeders from benefiting from characteristics that may not have been considered important or valuable at the time of grant.

Costs:

- Breeders will be incentivised to claim as many characteristics as possible, and the complex interconnected morphology and physiology means that this will be plausible in many instances (for example, a large number of morphological characteristics may effect yield). As a result, designing suitable criteria to limit the characteristics claimed may prove difficult, and could increase the overall complexity of the essential derivation system.
- Factors such as environment-phenotype interactions could complicate this further.
- Assessing these claimed characteristics would impose additional workload on IP Australia.

Our Recommendation

While we recognise that the complexity involved in designing and administering such a system may make it impractical, we think that this is an issue that IP Australia may wish to explore in the future if the other reforms do not produce the desired results.

⁷⁶ *Almo v. Sardo Piemontese Sementi Soc. Coop. Società Agricola*, Turin Trial Court (14 May 2015).

⁷⁷ *Ibid*, 11).

3.3.12 Require applicants to include more detailed information on varietal breeding history and parental varieties in PBR applications

One issue raised by stakeholders is that the assessment of essential derivation is complicated by incomplete and inconsistent breeding histories for varieties. Often parental varieties are not named, which makes identifying and proving essential derivation more difficult.

PBR applicants could be required to provide details about their varieties' breeding histories and parent varieties. This could facilitate the identification of essentially derived varieties. As an additional benefit unrelated to essential derivation, this could be used to ensure that parent varieties are included in DUS trials.

Benefits:

- Greatly facilitate the identification of essential derivation.
- Assist with proving essential derivation, by showing that derivation occurred in fact.
- Provide more information to the public about the origins and genetic makeup of the variety.
- Ensure that parent varieties are included in DUS trials.

Costs:

- Breeders may wish to protect their breeding lines with secrecy, to prevent unauthorised production of the variety.
- Some breeding lines may be proprietary and may not have received names that would be legible to the public.

Our Recommendation

While mandating the inclusion of breeding history and parent lines in PBR applications would have advantages for identifying essential derivation, some stakeholders raised concerns that requiring provision of the breeding history could enable competitors to achieve similar results by replicating the breeding process. At this stage, we do not think that this option should be pursued.

3.3.13 Education

One of the recurring problems with Plant Breeders Rights is a lack of awareness and understanding about the scope and nature of the law. This is evident in relation to essential derivation. There are many reasons for this. One key reason for this is that the statutory language is not as clear as it might have been. The paucity of decisions construing the language of the Act means that there is little to no judicial guidance about the meaning of the law.

Our Recommendation

To remedy these problems IP Australia's should consider:

- issuing explanatory guidelines on EDV
- expanding IP Australia's *Manual of Practice and Procedure* for plant breeder's rights to include essential derivation
- making all decisions in relation to EDV publicly available
- undertaking or encouraging stakeholders to undertake education training and awareness on EDV (and PBR more generally)