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Australian Patents for Plants

Protecting Plant Varieties in Australia

In Australia there are two ways of obtaining intellectual property protection for plants:

- Standard patents for plants in general and for specific cultivars, and
- Plant Breeder's Rights (or PBR) for plant cultivars only.

Information about Plant Breeder's Rights protection can be obtained from IP Australia by phoning 1300 65 10 10 or visiting www.ipaustralia.gov.au.

Standard Patent Applications

Patentable subject matter

The range of patentable subject matter for plants includes:

- new plant varieties;
- plant components such as genes or chromosomes;
- reproductive material, for example, seeds, whole plants, cuttings, cells or protoplasts;
- products from plants including fruit, flowers, oils, starches, chemicals or pharmaceuticals; and
- plant material used in industrial processes, for example, cell lines to produce processes relating to plants, including genetic engineering techniques,

plant tissue culture, cell and protoplast culture, mutagenesis and breeding and cultivation methods.

This fact sheet deals mainly with the requirements for patenting plant varieties. IP Australia has additional fact sheets on genetically manipulated organisms (*Australian Patents for Biological Inventions and The Budapest Treaty and Australian Patents*).

Standard Patents

A standard patent is granted for an invention that is a new idea and provides a practical solution to a technological problem. In this context, a standard patent would only be granted for subject matter that meets all the following tests:

- involves the technical intervention of a technologist applying their inventive ingenuity to produce something distinguishable from the natural source material. (A patent cannot be granted for a mere discovery of biological material — you cannot go out into the country side, discover a new plant and get patent protection for it without technical intervention. Neither can you patent a new plant you have by chance found in your back-yard);
- is new in the sense of not previously being publicly available. That is, a patent cannot be granted for materials in their naturally occurring state or for materials



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which have previously been made publicly available;

- is inventive when compared to the prior art;
- has been fully described so that sufficient information is provided to allow the technologist to make the product or perform the process without having to resort to invention. The best method of performing the invention known to the applicant must also be described; and
- has a demonstrated use. The use to which the invention is to be put, for example, for the treatment of human diseases such as cancer or multiple sclerosis, must also be fully described. This means that there must be an actual use for an invention rather than speculation as to future uses.

The written description

The specification must include a full description of the plant or plant variety itself as well as the best method of performing the invention known to the applicant. That is, the best way of obtaining the new product or performing the new process must be described in detail. Full description of the plant or plant variety means an inclusion of the full morphological, biochemical and taxonomic characteristics of the organism known to the applicant. It should also include a full description of any scientific testing characteristics (e.g. isozyme analysis, DNA profiling), if available. There must be sufficient clear information to enable the specialist to perform the invention without conducting undue experimentation or resorting to invention to discover the conditions necessary for the invention to work.

Where the invention is a plant product, for example an isolated gene, or a specific method, there should be sufficient details in the specification for a specialist in the field to identify and repeat the invention. For a plant variety, a full description must be given of exactly how the plant you are seeking protection for is prepared.

This may include for example a description of the parental lines, and how they were crossed in order to arrive at the plant variety. In addition, the parents of the variety must be easily available to the public in Australia (for example, commercially available or in an accessible deposit) or be fully described themselves.

Where the invention resides in a complete plant, the entire organism must be described fully, with particular emphasis on the characteristics, or combination of characteristics, that are significantly different from known and related plants. Such a description enables the plant to be clearly identified and distinguished from known close relatives.

Applicants should be wary of subjective descriptive characteristics (e.g. robust, tall, extensive, bright, large, small, distinctive, etc.). If there is no point of reference or objective standard, these terms will be meaningless. For the requirements of full description to be met, there must be a detailed taxonomic description of the plant. Characteristics to be included in the description, as appropriate, may include:

1. leaf characteristics (e.g. shape and length);
2. flower characteristics (e.g. colour, size, number of petals, presence or absence of sepals, pollen morphology, carpal and stamen number, etc.);



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3. stem characteristics (e.g. branching habits);
4. root characteristics;
5. fruit characteristics;
6. herbicide or pest resistance (if any); and
7. scientific testing characteristics (e.g. isozyme analysis, DNA profiling, etc.), if available.

It is essential that all biochemical data presented is fully explained and figures must incorporate scales of graphs or indicate the conditions under which the biochemical assays were run.

In the description of a plant variety, photographs must be included in the specification. These photographs should capture each of the major characteristics used for full description. If the colour of a flower is important, there should either be a colour chart on the photo, or colour should be described with reference to a standard horticultural colour chart.

In order to satisfy full description requirements in the case of an invention involving a plant variety, in addition to the broad description, all steps required to reproduce the plant variety must be disclosed in the specification. In other words, there may be a number of ways to achieve the desired result, but the best way of obtaining the invented product or performing the invented process must be described in detail.

Repeatability

A patent monopoly is granted in return for a full written description of an invention. Such a description is required to ensure that other people are able to make a product or repeat

a process once the patent period is over. A specialist in the particular technology must be able to repeat the process or reproduce the product from the directions given in the written description.

The main difference between inventions involving living and non-living systems is that many processes involving living systems are not 100% repeatable. In some cases the probability of repeating the invention, even using the best method known to the applicant, can be very low.

Each technology has its own standard of repeatability and this must be taken into consideration when assessing repeatability of an invention. The issue when considering repeatability is not the numerical probability of achieving the specified result, but whether the result can be reproduced to a practical level acceptable to the person skilled in that particular technology.

In a case involving the 'Scarlet Queen Elizabeth' rose, the method of production was a chance genetic mutation. It has been estimated that the chance of such a variety occurring is 1 in 100,000,000. IP Australia would consider this process essentially unrepeatable and would not grant the patent.

Repeatability is not likely to be an issue where the description of an invention, such as a novel organism, relies on a deposit made under the Budapest Treaty, because access to the deposited microorganism by a skilled third party enables the invention to be repeated. See the fact sheet *The Budapest Treaty and Australian Patents*.

The issue of repeatability is best considered through the following examples:

- (i) *Mutagenesis* — With our increased understanding of molecular inheritance



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of, for example, plant and animal characteristics, breeders now have an armoury of techniques to make mutational events occur more frequently — irradiation, drugs that alter the genetic coding for the characters, and sometimes manipulation of the genes for the characters themselves. The use of these techniques means that repeatability is sometimes an issue. The description would need to clearly identify the organisms used, the type and amount of mutagenic agent, how the organism was treated and how the mutants were subsequently identified and recovered. Provided the inventor gives sufficient clear instructions for the specialist to follow and repeat the invention, then this may be acceptable.

- (ii) *Genetic engineering* — A more common approach has been through genetic engineering where genes are taken from one quite unrelated organism and put into a second.

This approach permits not only the accurate introduction of characteristics into plants but also the introduction of characteristics from unrelated species — impossible by the normal routes of sexual propagation. The description requires additional details about the genes used, such as, the sequence of the gene used to transform the organism. Repeatability is rarely an issue in genetic engineering inventions, provided the invention is fully described.

Transgenic plants and seeds thereof

The characteristics of the gene introduced into the plants must be described (preferably including the complete sequence of the gene) as well as the best method of transformation, regeneration and selection of the transformed plant or plant parts (e.g. protoplast or pollen). The host plant material must also be fully described and be readily

available to the public.

Mutant plants

The parent strains must be fully described and readily available to the public. The method of mutagenesis (e.g. chemical or UV radiation) must be disclosed.

Hybrid seed

The parent must be fully described and be readily available to the public. The different crosses conducted must be disclosed.

Innovation Patent Applications

According to the Australian Patents Act 1990 certain inventions are not patentable inventions for the purposes of an innovation patent. Plants and animals, and the biological processes for the generation of plants or animals, are not patentable subject matter for an innovation patent. With reference to plants this includes:

- genetically modified whole plants, plants produced by cross-breeding of one strain with another strain, or selection of a plant from a range of plants; or
- seeds of plants, plant tissue cultures, or any matter that could give rise to a plant.

However it is possible to apply for an innovation patent on processes which use a plant or animal, or part thereof, but which does not result in the generation of a plant or animal.

Examples of Standard Patent Applications

Application	Subject
70089/81	Orchid Cultivar.
43318/85	Nitrate tolerant soybean.
75801/91	Production of improved rapeseed exhibiting a



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- 14710/92 reduced fatty acid content.
Herbicide resistant wheat.
- 32313/97 Suppression of specific
classes of soybean seed
protein genes.
- 28073/99 Olive plant.
- 72501/00 Improved chrysanthemum
varieties.
- 84955/01 Plants infected with non-
toxic endophytes.
- 2001243939 Construct permitting site
specific expression for
plants.
- 2001276169 Modification of plant
resistance to diseases
and/or pests.
- 2002214804 Barley with reduced SSII
activity and starch
containing products with a
reduced amylopectin
content

For a list of IP professionals, visit the IP Australia website www.ipaustralia.gov.au or search your local Yellow Pages Directory.

Disclaimer:

This information is intended to help the reader gain a basic understanding of some IP principles. It is not designed to provide legal, business or other relevant professional advice. IP Australia recommends that you seek independent legal, business or other relevant specialist advice.

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Further information

For further information on obtaining patents for plants, visit the IP Australia website www.ipaustralia.gov.au or phone 1300 651 010.

Seek professional advice

This sheet provides only basic information. Patent matters can involve complex legal issues and it may be in your best interests to consult a patent attorney, solicitor experienced in intellectual property matters, or your business adviser.