Demystifying potato breeding lines, trial varieties, varieties, varietal listing and plant breeders’ rights

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Breeders, seed potato companies and individuals are continuously looking for improved potato varieties. The potato industry’s constant demand for better varieties for processing, improved quality and increased disease resistance and yield, are some of the drivers to develop new varieties. _Potato breeding lines and trial varieties_ are regularly imported to address this constant need for improved varieties.

The aim of this article is to clarify the procedures involved when a new variety is to be introduced into South Africa.

**Varieties and breeding lines**

New varieties are obtained from foreign breeding programmes or from the local breeding programme. When varieties are sourced from abroad, the import requirements and procedures, in terms of the Agricultural Pests Act, 1983 (Act No. 36 of 1983) and Section 26 of the Plant Improvement Act, 1976 (Act No. 53 of 1976), have to be adhered to regarding import permits and import
authorisation. Application forms and information can be obtained from PlantHealthPermits@daff.gov.za for permits and PIPP@daff.gov.za for authorisations.

A potato breeding line is a potential potato variety developed by a local or international plant breeder. Breeding lines mostly do not have a variety name yet and are still being evaluated in trials or in small plantings to determine their potential. Breeding lines usually have a code allocated to them, for example C1991/01/45, where 1991 is the year, 01 was the cross made and 45 is the plant number in the cross used. While a breeding line is still under evaluation, it is not yet listed on the South African varietal list. If the breeding line shows good potential and the breeder wants to commercialise the breeding line, he gives the breeding line a variety name and applies for a plant breeder’s right (PBR) and/or varietal listing (VL). At this stage the breeding line becomes a trial variety.

**Trial varieties (experimental varieties)** are varieties with potential that are obtained by importers/agents, and brought to South Africa (if not locally bred) for evaluation to determine the performance of the variety under local climatic conditions. The variety may already be registered abroad for PBR and/or VL, but not yet in South Africa.

A potato variety is a variety used for commercial potato production. In South Africa there are both protected and open varieties on the national varietal list. Protected varieties are those with valid plant breeders’ rights, while open varieties are those that either never had PBR or of which the rights have expired or were surrendered. If a person wants to commercialise a potato variety in South Africa (sell seed potatoes), the Plant Improvement Act requires that the variety must be listed on the national varietal list.

**Varietal Listing**

After evaluation, but before commercialisation, the breeder or agent of a new variety is required to submit an application for VL for the variety to the Registrar of Plant Improvement. An application consist of a VL application form, technical questionnaire, proof of payment of the prescribed fee and a proxy from the breeder, if an agent is submitting the application on behalf of the breeder. If the variety has already been granted rights or listed in another country, the proposed variety denomination must be the same as approved in the country of origin.

All application forms, general information, as well as the varietal list, are available from the office of the Registrar of Plant Improvement or on the web page of the Directorate Plant Production.


**Sale of potato propagation material**

The sale of potato propagation material is regulated by the Plant Improvement Act, 1976 (Act No. 53 of 1976). Section 13 regarding the requirements relating to the sale of plants and propagation material, states in subsection 1: (1) Plants and propagating material shall only be sold for the purposes of cultivation- (a) if the plants and propagating material are of a variety which is entered in the varietal list; and (b) under the denomination entered in respect thereof in the varietal list.

The Plant Improvement Act, however, provides for the introduction of potato varieties that are not listed yet, by means of authorisation issued by the Registrar when a written application is received before the respective action is performed:
- for import of unlisted varieties/breeding lines in terms of Section 26(2)
- for the selling/distribution of seed of unlisted varieties for evaluation purposes in terms of Section 13(2).

In case of imported varieties/lines, the authorisation to import and sell is granted in the same document, stating the conditions that must be adhered to, amongst others, marking containers, invoices, etc relating to the unlisted variety, with a red sticker with the wording “EXPERIMENTAL VARIETY/LINE – UNAUTHORISED PROPAGATION/SALES/ DISSEMINATION OF SEED IS PROHIBITED” and keeping record of every grower to whom seed has been sold. These conditions need to be adhered to until approval for varietal listing of the varieties/breeding lines or destruction of propagating material, if the variety is not desirable and terminated. The limitation on the amount of propagating material to be imported is 10 000 mini tubers or a limited number of in vitro material as specified by the permit office in terms of the Agricultural Pests Act.

In case of locally developed varieties, authorisation must be obtained from the Registrar for selling of propagating material of the unlisted variety and the same conditions as imported varieties need to be adhered to. Locally developed varieties are subject to the same limitation on amount of propagating material applicable for imported material, namely 10 000 mini tubers.

The purpose of the authorisation for evaluation is to allow performance evaluation and testing to ensure that the varieties introduced into South Africa are suitable for our needs and climate.
Variety and breeding line evaluations prior to varietal listing is not a requirement by legislation and applications may be submitted at any time for PBR and/or varietal listing. The information, however, provides valuable production and marketing information.

Plant Breeders’ Rights

Plant Breeders’ Rights (PBR), also known as Plant Variety Protection (PVP), is a type of Intellectual Property Right granted to the breeder of a new plant variety that gives the breeder legal rights in terms of the Plant Breeders’ Rights Act, 1976 (Act No 15 of 1976). The owner of the variety can therefore obtain financial returns on investment for the work he performed in developing the new variety for the duration of the right.

Requirements for applying and granting of Plant Breeders’ Rights

- Applicants from any other country must appoint a South African agent to deal with all matters pertaining to the PBR application.
- The variety must still fall within the novelty period, in other words, propagating material of the variety has not been sold (except for multiplication and testing purposes) in South Africa for more than 1 year and not more than 4 years elsewhere in the world, in the case of potatoes. If sold for more than 4 years elsewhere, no rights can be granted in South Africa.
- Propagating material must comply with the DUS (distinctness, uniformity and stability) requirements:
  - The variety must be clearly distinguishable from any other potato variety.
  - The plants of the variety must be uniform; all the potato plants of the variety planted on a unit must look similar and have the same plant characteristics.
  - The variety must be stable; plants must, after repeated cultivation, still look like the original plants.
- The variety name must be an acceptable denomination that distinguishes the variety from other potato varieties.

In South Africa, the PBR on a potato variety is valid for a period of 20 years. The potato industry has requested for the term to be aligned with the European term of 30 years. This will be addressed during the amendment of the new PBR Regulations. During the first five years of the term, the owner/agent has the sole right to multiply, produce and market propagating material of the variety. For the next 15 years, the holder must issue licences to other persons, who want to multiply and market the variety. If the holder of the right unreasonably refuses to issue licences to other persons, such a person may apply to the Registrar for a compulsory licence. The holder of the right may still claim royalties from all licensees for any propagating material of his variety that is produced and marketed for the remainder of the term. After the expiry or upon surrendering of the PBR, the variety is in the public domain and anyone may then propagate and sell the variety, subject to compliance with the requirements of the Plant Improvement Act.

The holder of a PBR must protect his/her own interests relating to the variety to ensure that it is not exploited illegally by any unauthorized person.

The plant breeders’ rights can be terminated by the Registrar, if the breeder/agent of the variety does not ensure that the variety is maintained and ensure that propagating material is available for the duration of the PBR. The holder of the right may also surrender the right at an earlier date than the expiry date.

Provisional protection of a variety

To protect a variety between the time of application and the grant/refusal of a PBR, an applicant may apply for provisional protection when submitting the application for a plant breeder’s right. The applicant has to give an undertaking not to sell any seed potatoes of the variety, until a decision has been made on granting of the PBR. The applicant may sell seed potatoes of the variety for multiplication and testing purposes only, subject to the requirements of all applicable legislation. It is recommended that provisional protection be applied for.

A PBR is only valid in the country where it has been granted, therefore a breeder must submit an application for PBR in every country where he/she would like to have protection and be mindful of the novelty period within which varieties must qualify for PBR.
How does one know which potato varieties are protected by PBR?

All matters relating to Plant Breeders’ Rights are published quarterly in the South African Plant Variety Journal (SAPVJ) and a list of all valid PBR is published annually in the Special Edition of the SAPVJ. For ease of reference, varieties protected by PBR are indicated with an asterisk (*) in the Potato Varietal List and the owner/agent is indicated with the respective address code in brackets. The varietal list is maintained by the Registrar of the Plant Improvement Act. If a variety originated from abroad, the address code of the local agent is indicated, while if the variety was bred locally, the breeder is indicated as well as the agent, if the breeder is using an agent to market the variety. The varieties are listed, for example, as follows:

- **BP1**, which is an open variety (no asterisk), with no maintainer.
- *Rotharo* (254, 1280) has a valid PBR, indicated by the asterisk (*), and the codes in brackets indicate the local breeder and agent of the variety.
- **Hoëvelder** (254) of which the PBR has expired, and the breeder (maintainer) is indicated.

For more information on the Varietal List and Plant Breeders’ Rights, please visit DAFF’s official website:

http://www.daff.gov.za/daffweb3/Branches/Agricultural-Production-Health-Food-Safety/Genetic-Resources/Plant-Breeders-Rights

The Independent Certification Council for Seed Potatoes (ICCSP) was appointed by the Minister of Agriculture, Forestry and Fisheries as the authority responsible for the South African Seed Potato Certification Scheme. The ICCSP has appointed Potato Certification Service (PCS) in terms of Section 24(2) of the Plant Improvement Act, to perform the duties and functions of the Scheme.

The ICCSP approved the limitation on the multiplication of varieties or breeding lines not listed on the varietal list as proposed by the Registrar of the Plant Improvement Act at its meeting on 8 June 2016. **The multiplications will be limited to three field multiplications after the first registration in the Scheme, or when a total area of one hectare is planted, whichever occurs first.** When the respective limit is reached, the application for varietal listing must be submitted. If the evaluation process is not completed and the breeder or agent wishes to continue with evaluation for a longer period before submission of the varietal listing applications, the Registrar may grant authorisation upon the written request (with motivation and supporting data) from an importer, a plant breeder or an agent. In order to register units for seed production beyond the 3 field multiplications or 1 ha in area, PCS requires written proof of the VL application (acceptance letter) or authorisation for extension of the period to be submitted with the registration application of the unit.

Breeding lines, trial varieties and varieties are registered in the Scheme according to the names appearing on the release notes from DAFF when the material is imported and registered under the Scheme for the first time. When a breeding line is registered with PCS, the name/number of the breeding line appears on all inspection reports and the same name must be indicated on the grower label. When a breeding line is given a variety name, the agent/importer/breeder needs to inform PCS in writing of the name change, in order that the information in the system can be updated accordingly.

When seed potato units are registered for certification of varieties with PBR, the seed potato grower must provide Potato Certification Service with a letter of authorization from the agent/breeder, confirming that he may multiply the seed potatoes of the protected variety.

The South African Seed Potato Certification Scheme (Scheme)
The Scheme applies to all varieties listed on the varietal list, as well as varieties and breeding lines under evaluation.