Breeding rights of sunflower **in the spotlight**

By Ursula Human

Increased investment in the agricultural and seed industry in South Africa has triggered some debate on intellectual property rights. This is according to a webinar recently hosted by the Institute of Social and Economic Research (ISER) at Rhodes University.

The webinar focussed on plant breeders' rights (PBRs) in the South African sunflower seed industry. The research on sunflower PBRs by Dr Binganidzo Muchara and Dr Charity Nhemachena of the Unisa Graduate School of Business Leadership was discussed. Their study included an analysis of the evolving landscape of sunflower PBRs in South Africa.

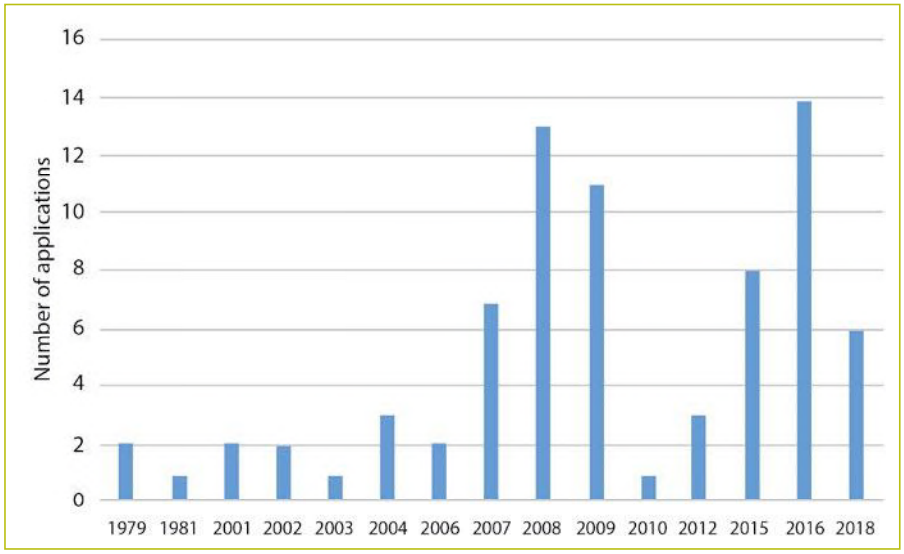
Influence of PBRs on investments

According to Dr Muchara, PBRs are crucial because if these rights are not well protected, no value can be derived from the investment in breeding. If there is no value to this arduous process, investments in breeding might be deterred, which could have a knock-on effect on the entire value chain.

Dr Muchara noted that if investors do not derive benefits from sunflower breeding, the dwindling investment could impact the productivity of the industry. For example, there will be no advancement if the industry keeps on using old varieties. With no increase in yields, the industry runs the risk of not being able to sustainably meet local demand.

Sunflower is a key commodity in South Africa and is the third-largest primary crop after maize and wheat. It can be used in several products and, locally, is the main source of vegetable oils. Sunflower can be used in the production of biodiesel and oilcake for animal feed, while the seeds serve as ingredients in products such as granola bars, margarine, and multi-seed bread.

Figure 1: Annual applications for sunflower varietal improvements by plant breeders between 1979 and 2019. (Source: Authors' compilations with data obtained from the *South African Plant Variety Journal*)

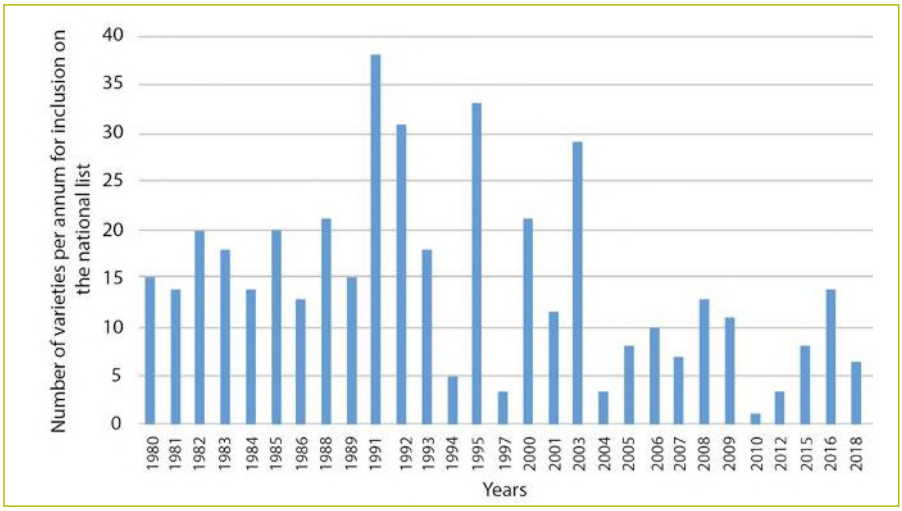


Overview of the history of PBRs

According to Dr Nhemachena, several laws have been formulated to protect intellectual property rights, both at national and international level. She shared a brief history of PBRs from around the world and said the protection of plant breeders' intellectual property rights was recognised from as far back as the 19th century.

However, it was only in 1961 that the International Union for Protection of New

Figure 2: Annual applications for the inclusion of sunflower varieties on the national variety list between 1979 and 2019. (Source: Authors' compilations with data obtained from the *South African Plant Variety Journal*)



Varieties of Plants (UPOV) was established to co-ordinate plant variety protection laws, as well as standards for protection across all member countries. South Africa has been a member of the union since 1977 and was the tenth country to join. UPOV provides standardised laws for PBRs, as well as the procedures used for testing new varieties. This assists breeders in obtaining financial rewards for their efforts, which are both time-consuming and expensive.

Breeding rights of new varieties

There is a continuous demand for high-quality, disease-resistant plants with higher yields. In South Africa, a new variety can only be granted breeding rights once it has been listed in the *South African Plant Variety Journal*.

Once the plant has been listed, breeders are awarded PBRs for a specific period. Rights for plants are granted for 20 to 25 years in South Africa, depending on the type of crop; breeding rights for sunflower are granted for only 20 years, said Dr Nhemachena. She explained that during the first five to eight years (the period during which the breeder enjoys sole rights), the breeder has the right to multiply and market propagation material of the specific variety.

During the next 15 years, the rights holder is required to issue licences to others who want to use the material, with the breeder collecting royalties from the licence holders. After 20 years, the new sunflower variety will become openly available to anyone who might need it.

Private sector vs public sector

A database was created for the study using the *South African Plant Variety Journal*, to determine the extent of PBRs granted in South Africa. Data on sunflower varieties in the country was collected from this list between 1979 and 2019.

The research done by Dr Nhemachena indicated that the local private sector constituted the largest share of sunflower breeding rights, accounting for 77% of applications for varietal inclusion on the national variety list. The researchers further found that the second highest percentage of applicants were collaborations between local and foreign companies, making up 19% of all applications.

Partnerships are formed with local companies when they apply for foreign sunflower varieties to be included on the national variety list. The leading companies of such partnerships include Syngenta United States (US), Syngenta France, Pioneer Hi-Bred International in the US, Dow Agrosciences Argentina, and Bioseed US.

Those in the public sector, such as the Agricultural Research Council (ARC), however, play a minor role in the development of sunflower varieties, representing only 1% of the share.

Table 1: Applicants for inclusion on the national variety list.

Applicant	Number of applications	Percentage of applications
Pannar Seed®	102	23,8
Pioneer Hi-Bred International	51	11
Saffola	42	9,8
ARC	10	2,3

Eco-friendly energy sources

According to Dr Nhemachena, the future is bright for sunflowers as a biofuel crop in South Africa. This can be seen in the ARC's research on exploring the use of crop breeding to produce advanced biofuel. Various crops in the country are identified as having potential as bio- and renewable diesel. This includes oilseed crops such as sunflowers, soya beans, and canola.

Oilseeds are widely recommended for eco-friendly, renewable energy sources, meaning a more efficient variety registration process in the least amount of time. The ARC has been exploiting selected cultivars of sunflowers for production of renewable diesel, which is known to meet the requirements for use in a diesel engine.

The study concluded that it is necessary to establish a process for registering new sunflower varieties that can be concluded sooner. It is also necessary to improve public registration so as not to rely on the private sector alone.

To access the full research report or to watch the webinar, simply scan the QR codes.

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