

THE SOUTH AFRICAN SEED POTATO CERTIFICATION SCHEME

by

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Introduction

Certified seed potatoes underpin the multi-million rand South African potato industry which currently produces about 2.3 million tonnes of potatoes per year with a total estimated value of around R6.5 billion.

All sectors (fresh/table and processing) of the South African potato industry rely upon certified seed production to ensure the efficient production of high quality food products to consumers.

The South African Seed Potato Certification Scheme was published in 1998 as a Government Notice¹ in terms of the Plant Improvement Act² and was born out of an in-depth consultation between representatives of the South African seed potato industry and government regulators.

In terms of the Scheme, the Minister of Agriculture, Forestry & Fisheries designated the Independent Certification Council for Seed Potatoes (ICCSP) as the authority to exercise the powers, perform the functions and duties conferred upon, assigned to or imposed upon such authority under the Scheme. The ICCSP, in turn, has contracted the Potato Certification Service to exercise, perform and carry out its powers, functions and duties.

The Council consists of democratically elected seed potato growers from the respective production areas, appointed table potato producers, as well as representatives of the Department of Agriculture, Forestry & Fisheries, the Agricultural Research Council, a representative of the nucleus material producers, the Manager of Potato Laboratory Services and the Managing Director of Potato Certification Service. The Council has an independent chairman appointed by the seed potato growers.

Objectives

The South African Seed Potato Certification Scheme has two main objectives:

- To supply quality seed potatoes to the domestic potato industry; and

¹ Government Notice (No. R. 664 of 15 May 1998)

² Plant Improvement Act, 1976 (Act No. 53 of 1976)

- To certify seed potatoes which are true to type and whose phytosanitary status with respect to diseases and pests falls within predetermined norms.

Aims

The Certification Scheme involves:

1. Certification of seed potatoes that comply with specific quality standards for each generation within the Scheme.
2. Multiplication of disease-free *in vitro* material (test tube plantlets) as starting material.
3. The production of Generation 0 seed (mini tubers) in ICCSP approved greenhouses that are free from pests and diseases.
4. Distinct identification of generations 0 to 8.
5. Dual phasing-out of planting material.
6. Downgrading of planting material.
7. Promotion of the use of early generation planting material.
8. Promotion of the planting of certified seed potatoes.

Dual Phasing Out

The Scheme is based on a dual phasing-out system, which takes the generation and quality class of the seed into consideration. This information is indicated on the certification label. The permissible disease content of seed potatoes increases with consecutive generations. Seed potatoes may be multiplied for eight consecutive generations, after which they may not be registered in terms of the Scheme again. In practice, however, seed potatoes are usually phased out at generation 5.

Provision is made for three quality classes which reflect the phytosanitary status of the seed potatoes in respect of tuber-borne diseases as determined by visual inspection. These classes are known as Elite, Class 1 and Standard Grade and are identified by means of different colours on the certification label.

Seed potatoes which are certified as Elite and Class 1 of a specific generation may be used again for the production of seed potatoes. Standard Grade seed potatoes may not be used for the further production of seed potatoes.

Diagram illustrating the dual phasing out system

Generation	Material	Quality Class		
		Elite	Class 1	Standard
	Test tube plantlets			
0	Mini tubers	x	x	x
1	Tubers	x	x	x
2	Tubers	x	x	x
3	Tubers	x	x	x
4	Tubers	x	x	x
5	Tubers	x	x	x
6	Tubers	x	x	x
7	Tubers	x	x	x
8	Tubers	x	x	x

x	May not be planted again for seed
x	May be planted again for seed

The Scheme makes provision for downgrading which means that the seed potatoes may be downgraded to a following or even a lower generation during inspections if the predetermined norms are exceeded. Resorting is permissible under certain circumstances. Should the results of a laboratory analysis indicate that the virus content of the sampled seed potatoes exceeds the set virus tolerances; this may also result in downgrading to a following or lower generation.

Benefits

The Scheme has the following benefits:

1. It prevents the build-up of diseases in seed potatoes and the corresponding increase of disease-causing organisms in the soil.
2. Encourages the planting of early generation seed which gives greater assurance that only the lowest incidence of seed-borne diseases are present in seed potatoes.
3. Helps to prevent the spread of viruses and other diseases as the Scheme prohibits the planting of uncertified material in the same field as registered seed potatoes.

Application

Growers wishing to participate in the Scheme must register the unit or field within 21 days after planting. Thereafter,

1. At least two field inspections are carried out to evaluate the varietal purity and the occurrence of diseases in the planting,
2. The unit is sampled and the samples subjected to laboratory analysis to determine the presence of viruses and bacterial wilt,
3. At harvest the tubers are inspected to determine their phytosanitary status in respect of tuber diseases,
4. Certification of the seed potatoes is confirmed by attaching an official certification label to the bags,
5. Post-control samples are drawn at the time of tuber inspection for the confirmation of the virus content and variety purity.

Restricting the carryover of disease inoculums in potato seed through certification provides table potato growers with good quality seed that will allow them to achieve maximum yield and quality.

In 2015, approximately 9 800 ha of seed potatoes were registered for certification. Over the past ten years the certified yield varied between 5 and 6.5 million 25 kg bags per year while the average certified yield per hectare increased from 13.5 tons/ha to an average of 16.8 tons/ha.

Biosecurity

The seed potato certification scheme plays a fundamental role in the biosecurity of the South African Potato Industry against the introduction of exotic pests. The scheme is the only seed scheme in South Africa with a long history of soil testing for Potato Cyst Nematode (PCN), and as such has helped to minimise the spread of this plant - parasitic nematode throughout the Republic.

A zero tolerance applies to Potato Cyst Nematode (PCN) (*Globodera rostochiensis*), Bacterial wilt (*Ralstonia solanacearum*) and Wart disease (*Synchytrium endobioticum*). The presence of any one of these organisms automatically prevents the crop from being certified and may incur the imposition of regulatory quarantine restrictions in terms of the Agricultural Pests Act³.

Conclusion

Since its implementation some 20 years ago, the seed potato certification scheme has made a significant contribution to the productivity and growth of the South African potato industry. The successful development and administration of the seed certification scheme in South Africa has resulted in:

³Agricultural Pests Act 1983 (Act No. 36 of 1983)

- Reliable high quality seed production
- Increased yields and product quality of commercial crops in the fresh and processing industries.
- Enhanced efficiency in the use of land and water
- Better management of diseases that limit yield and quality.

Seed potatoes are one of the most expensive of inputs of commercial potato production, while at the same time making a significant contribution to improved yield and a better quality of the crop. Therefore, should the gross profit margins of potato crops continue to decrease, the value of seed certification will become of even greater importance.

Although the area of land under table potato production in South Africa has remained fairly static over the past decade, fluctuating between 50 000 ha and 54 000 ha, over the same period yields have increased by 38%. This has been made possible by the continued adoption of modern farming practices, introduction of new potato varieties as well as the implementation of seed certification. It is therefore reasonable to assume that certified seed potatoes will continue to provide stability to a crop that forms such a significant part of South Africa's national diet and economy.