



2023 CALL for PROPOSALS

"The best way to predict the future is to invent it" Alan Kay

Potatoes South Africa has a mandate to identify research projects to optimise efficiency of potato production and position potatoes to meet consumer requirements. Funding for these research projects will be approved by the Potato Industry Development Trust (PIDT). Research projects are needs-driven and identified through consultation with our stakeholders and prioritised by the Potatoes SA Research Committee.

With the 2023 call for proposals, researchers are invited to submit proposals for the following research areas:

Project Focus Area 1: Packaging feasibility study

Project Focus Area 2: Optimising potato shelf life

Project Focus Area 3: Investigating export opportunities for South African potatoes

Project Focus Area 4: Cultivar tailored solutions & recommendations

Project Focus Area 5: Weather modelling

Project Focus Area 6: Soil health

Project Focus Area 7: South African fresh potato supply chain analysis

Our ambition is to initiate projects that promote interaction between different research disciplines and knowledge hubs at universities and research centres. This has the intention of building capacity in potato research. Joint funding collaboration between organisations with the view of creating value to the potato industry is also encouraged.

Interested researchers are encouraged to address these objectives in the development of research proposals.

Application process

A Call for Proposals should be completed on our online application on the following link on the [Potatoes SA website](#) . Submissions must be submitted no later than **14 February 2023**.

These Project Proposals will be evaluated by the Research Committee. During the application process, project leaders will be required to present their proposals by means of a voice-over presentation of 10 minutes, followed by a question-and-answer session. A final evaluation will be conducted by the Potatoes SA Research Committee on 9 March 2023 based on the submissions received. Successful project leaders will be notified by 12 May 2023.

Project evaluation criteria

Projects will be assessed based in the following parameters:

- Estimated benefit to the potato industry (30%)
- Cost of execution (15%)
- Risk mitigation towards the potato industry (30%)
- Probability of failure or success (25%)

Projects that are co-funded through third parties such as funding organisations are encouraged:

- In anticipation of approval of the research budget for the financial year 2023/2024 by the PIDT by 30 June 2023, project leaders of projects recommended by the Research Committee will be contacted to initiate administrative processes according to the Potatoes SA Supply Chain Management Policy to ensure timely commencement of projects. (Note: until approval of the budget by the PIDT, the project may be rejected or postponed).
- Following the approval of the budget by the PIDT, the Research Agreements and Terms of Reference will be finalized and signed. Funding for approved projects will be available from 01 July 2023, provided that the research agreements are signed by all parties to coincide with the Potatoes SA financial year which is from 01 July – 30 June.

Duration of Projects

The duration of projects may vary between one to four years depending on the requirements to complete the project.

Reporting

The transfer of information and knowledge generated during the execution of projects to the potato industry, is critically important. Successful projects will be required to:

- Submit a brief bi-annual project progress report by 31 December followed by an annual report by 30 June of each year.
- Prepare a popular article in our CHIPS magazine.
- Researchers are also expected to verbally report on progress during the annual Potato Research Symposium on completion of their project.

Funding

Funding will be released in accordance with the funding schedule agreed upon, provided satisfactory progress as set out in the Terms of Reference of the research agreement Potatoes South Africa CALL for PROPOSALS.

- Thirty percent (30%) of the funding of the final year of the project will be withheld until approval of the final report and at least one CHIPS article.
- Researchers are encouraged to source additional funding to address opportunities and problems in the potato industry.

- Preparation of a dissertation/thesis, overseas travel or attendance of congresses and symposia other than the annual Potato Research Symposium are not funded.

Research Proposals

Project 1 Packaging Feasibility Study

Problem Statement

It is estimated that 20%-30% of potatoes are wasted annually in South Africa. Potatoes are marketed in 10kg and to a lesser extent in 7kg paper bags through the following channels:

- Fresh Produce Markets
- Pre/Re-packers
- Directly to retailers

The South African consumer buying habits prefers smaller pack size which does encourage repacking at different levels in the value chain. As a result, potatoes are often repacked into smaller units. This does result into loss due to:

- Product damage during the handling process
- Waste of packaging material
- Current packaging has limited recycling properties due to its bag composition

Packaging Standard

Potatoes packaging standards are based on the SANS 1756 standard (https://www.gov.za/sites/default/files/gcis_document/201409/28151d0.pdf)

This adheres to the following quality criteria

- Drop Test
- Wet Strength
- Paper thickness

Bags only have limited recycling properties and is an aspect that requires attention

The current Packaging Standard can be referenced at:

[file:///Users/dirkuys/Downloads/Urgent%20notice%20regarding%20compliance%20with%20the%20specifications%20of%20SANS%20458,%20289%20and%201649\(3\).pdf](file:///Users/dirkuys/Downloads/Urgent%20notice%20regarding%20compliance%20with%20the%20specifications%20of%20SANS%20458,%20289%20and%201649(3).pdf)

Scope

Potatoes SA identified the requirement to review the packaging concept for potatoes in South Africa to address the following research topics:

Economic and consumer feasibility study of packaging systems

An economic feasibility assessment is required to address the economic impact of the following scenarios:

- Comparison between current packaging standard with smaller pack sizes and packaging types
- Financial and logistical impact of down-packing 10kg & 7kg to smaller pack sizes
- Feasibility of direct packing at farm levels

This will include a feasibility study on

- Packing cost
- Cost of logistics
- Waste reduction
- Recycling possibilities
- Shelf-life

This study should consider

- Consumer preferences
- Shelf-life optimisation (Refer to Part 2)
- Enabling sustainable recycling initiatives

Project 2 Optimising Potatoes Shelf Life

Problem Statement

Potatoes shelf life is dependent on the quality of produce that is packed and the logistics of the packing process. This is related to the in-field nutritional status and agronomy of potatoes particularly related to the interaction between:

- Cultivar and nutritional interactions
- Mechanical process of packaging and harvesting
- Pre- and post-harvest treatment
- Packaging types
- In-store presentation to optimise shelf life (e.g., In-store lighting)

Shelf life is determined by the

- Nutritional status
- Status of starch and sugar conversion
- Prevention of disease and insect causing organisms
- General appearance

Scope

This study will review the impact of the following:

Evaluation of post-harvest treatments during packing including

- Environmentally acceptable post-treatment options
- Sprout reduction and shelf-life optimisation
- Practices to optimise shelf life
- Impact of packaging on shelf life

Ideally a model should be developed to predict the shelf-life potential of a potato based on its physical characteristics such as Specific Gravity (SG) or Nutrient content during its growth cycle.



Project 3

Investigating export opportunities for South African potatoes

Problem Statement

South Africa produces 2.6 mio tons of potatoes per annum on 51 000ha at an average of 50t/ha. South Africa has the capacity to increase production to 58 000 ha with a potential average yield of 55t/ha resulting in a potential of 3.2mio tons of potatoes. This will result in an additional 0.6 mio tons/annum which provides an opportunity to establish an export market. Export destinations have specific trade agreements and regulatory hurdles which need to be fully understood and prioritised.

The export opportunity will be supported by research projects with the ambition to create new uses for potatoes through processing as well as the extension of shelf life as set out in Project 2.

Scope

Potatoes SA would like to investigate export opportunities for potatoes to suitable markets. This project should evaluate potential countries that could meet export requirements based on

- Market access
- Existing trade agreements
- Windows of export opportunities
- Export requirements including regulatory barriers
- Average price windows
- Product preferences
 - Cultivar preferences
 - User preferences
 - Opportunities for seed potatoes
 - Opportunities for processed products to meet local demands

A scope is required to quantify export opportunities to enable South African potato farmers to access new market opportunities



Project 4

Cultivar tailored solutions & recommendations

Problem Statement

Diversity in cultivars is relevant to sustainable potato production. Many good performing cultivars are not considered as they are not treated to their optimal growth conditions. Often cultivars are treated with a generic nutritional program which can result in wasted fertilisation as well as reduced shelf life.

Scope

To enable seed variety owners to introduce diversity in varieties, a project will be initiated to evaluate optimal production conditions. This will be evaluated in production conditions associated with the four main production areas:

- Limpopo
- Eastern Free State
- Western Free State
- Sandveld

The following criteria will be assessed:

- Yield
- Shelf life
- SG
- Cooking criteria
- Frying criteria
- Tasting
- Cultivar specific nutritional status

Results will be presented as a comparison to

- Local industry standard (to be defined)
- Comparison to a benchmark index

This project will be coordinated by Potatoes SA and interested Seed Companies will be required to pay an entry fee per entry per cultivar to evaluate their varieties.

Project 5

Weather modelling

Problem Statement

To ensure the optimal utilization of environmental data, a need has been identified to develop a scalable and uniform weather data capturing model. This will include identification of suitable sites to position weather stations to ensure reliable data to enable growers to make an informed and timely decision. This should also be compatible with existing weather prediction models and scalable to other crops to ensure that economy of scale is achieved.

Scope

The ideal system should be compatible with the environmental data requirements for crops cultivated in the same production region to optimise cost. This should evolve into a viable and sustainable business model covering multi-crops.

The Sandveld region has been identified as a pilot area.

The following criteria should be included

- Provision of long-term climatic information relevant to local potato production conditions
- Link to a remote sensing network to provide water use data per field
- Providing on-time Evapotranspiration data (ET_o).
- Provide regular NDVI Crop Response parameters
- Prediction of climatic risks such as frost and wind
- Data must be convertible to use in reliable disease and insect prediction models
- Provide a regional picture of future weather patterns
- Data must be accessible by the grower through a dashboard linked to the Potatoes SA Application (APP)
- Scalability to all potato production regions in South Africa

Outcomes will include data for decision making for

- Cultivar selection and planting time
- Disease and insect modelling
- Water use efficiency
- Preventative mitigation against risks such as frost and heat damage
- Accessibility through the Potatoes SA App

Project 6 Soil Health

Problem Statement

The South African potato industry requires well managed rotation systems to reduce the impact of diseases such as Bacterial wilt, *Fusarium* spp., *Verticillium* spp. *Rhizoctonia solani* and *Sclerotinia sclerotiorum* as well as the increasing threat of Nematodes. The status of the soil biology is relevant to ensure sustainable potato production systems. Currently a long-term rotation system has been included in the Eastern Free State to evaluate rotation systems with crops in the summer rainfall area which include maize, soybeans, green manure, and sunflower. The need has been identified to expand this to other potato production regions.

Scope

This project which is in its 6th cycle is evaluating the long-term impact on the following:

Abiotic factors

- Soil pH
- Nutritional status
- Carbon content
- Organic content
- Yield and quality

Biological parameters including

- Define a base assessment to evaluate soil health in potato fields
- Disease management and pathogen interactions
- Nematodes (beneficial and plant parasitic)
- Beneficial soil organisms

To enable the scalability of this process, it is proposed to replicate this trial in the Sandveld area as well as the Limpopo area. This is a long-term trial which will be built in each area based on the local cropping cycle.

Funding: This project is currently co-funded by Grain SA.



Project 7
Supply Chain Analysis for the South African Potato Industry

Problem Statement

South African Potatoes are traded through various channels including the Fresh Produce Markets, pre-packers, and retailers. The Fresh Produce Markets also act as the price forming mechanisms for potatoes. The ratios of volumes traded through these channels have changed significantly over the last decade. A need has been identified to develop a clear understanding of the South African Potato Value Chain.

Scope

A Value chain analysis is required to review the complete potato channel in South Africa to quantify the volumes and value of each channel segment including but limited to.

- Fresh Produce Market
- On Farm sales
- Direct Sales
- Processing
- Seed
- Exports

This analysis will require:

- The different segments in the value chain
- Market split per segment and organisation including
 - Annual volumes per channel
 - Percentage of volumes per channel segment
 - Value per segment
- Value of each segment

Conclusion

Interested parties will be required to submit their proposals by **14 February 2023** via the **Potatoes SA** webpage [click here](#)

Funding will be provided in accordance with the funding schedule agreed upon, provided satisfactory progress as set out in the Terms of Reference of the research agreement.






All applications should include

1. Completed application
2. Budget
3. Project detail including any literature studies that may be relevant

The final decision will be made by the Potatoes SA Research Committee.

Do not hesitate to contact me should you require more information.

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