

# SOUTH AFRICAN AGRICULTURAL BUSINESS INNOVATION SURVEY 2019–2021

## INCLUDING FARMING, FORESTRY AND FISHERIES



This survey collects information on your firm's innovations and innovation activities between 2019 and 2021 inclusive.



**Please note:** In order to compare firms with and without innovation activities, we request **all firms** regardless of sector or size, to **respond to all questions**, unless otherwise instructed.

**YOUR UNIQUE COMPANY ID\***  
(required field):

\* This number was provided by email to the company official contacted by our research team. Need help getting this? Contact [innovation@hsrc.ac.za](mailto:innovation@hsrc.ac.za).

**ADDRESS:** *If your address has changed, please update here.*

Name (with title)

Designation

Company

Address

Province

Postal code

## IMPORTANT INFORMATION

### What is this survey about?

This survey collects information about innovations and innovation activities in the agricultural business sector, including farming, forestry and fisheries, during the three-year period 2019–2021 inclusive. The survey is meant to produce statistical information for understanding the sector's innovation performance, its determinants and impacts. Among other uses, the statistics will inform the government in developing policies to stimulate innovation, productivity and competitiveness.

### What is an innovation?

An **innovation** is the introduction of a new or significantly improved product, process, organisational method, or marketing method by your firm/business. The innovation must be new to your firm, although it could have been originally developed by other firms.

### What is the scope of this survey?

The statistical unit for the survey is the **enterprise** as defined by Statistics South Africa: an enterprise is “a legal unit or a combination of legal units that includes and directly controls all functions necessary to carry out its production activities”. It refers to a registered formal business, company or firm that is capable in its own right to own assets, incur liabilities and conduct economic activities. While the survey targets formal businesses, it excludes informal enterprises. In this survey we use the terms enterprise, business, company and firm interchangeably.

### Who is the authority of this survey?

The Department of Science and Innovation (DSI), as a partner within the National Statistics System, mandated the Centre for Science, Technology and Innovation Indicators of the Human Sciences Research Council (HSRC) to perform this survey.

### What about the confidentiality of my company's information?

All information gathered by this survey will be held in strictest confidence. The data may be used for statistical purposes to complement research and analysis of innovation indicators. Under no circumstances will the HSRC, DSI or Statistics South Africa publish, release or disclose any information on or identifiable with, individual firms or business units.

### Who should complete this questionnaire?

This questionnaire should be completed by the CEO, Managing Director, or a senior manager who has adequate knowledge of the strategy and innovation matters of the business.

### Who can I contact if I need assistance?

If you have any problems in completing this questionnaire and/or meeting the due date, please do not hesitate to contact any of the survey management staff listed below for assistance:

Name of staff member	Telephone	Email address
Pilela Majokweni		pmajokweni@hsrc.ac.za
Dr Yasser Buchana	021 466 7840	ybuchana@hsrc.ac.za
Gerard Ralphs	021 466 7916	gralphs@hsrc.ac.za
Dr Glenda Kruss	021 466 8086 / 082 459 4455	gkruss@hsrc.ac.za
Dr Moses Sithole	021 466 7862	msithole@hsrc.ac.za

KEY:



Definition



Instruction

### DETAILS OF PERSON COMPLETING THE QUESTIONNAIRE:

Name (with title)	<input type="text"/>
Company Name	<input type="text"/>
Job Title	<input type="text"/>
Telephone	<input type="text"/>
Email	<input type="text"/>
Signature/ Initials	<input type="text"/>



# Factors that support/promote agricultural innovation



If your business is part of a group of firms, please answer **all questions about your firm only**, for its own activities in South Africa. Exclude all subsidiaries or parent companies.

1.1 During the three years 2019 to 2021, how important were the following factors in supporting/promoting your innovation activities or projects or influencing a decision to innovate?

*Tick 'Not relevant' if there were no innovation outcomes.*

Factor	Degree of importance			
	High	Medium	Low	Not relevant
Access to finance	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Access to land	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Access to water	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Access to Information Communication Technologies	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Access to training/skills (farming skills, business skills, ICT skills, etc)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Access to agro-chemicals, including fertiliser, herbicides, pesticides, etc.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Labour	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Weather/Climate change	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

Factor	Degree of importance			
	High	Medium	Low	Not relevant
Government support	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Agricultural policies/Regulations	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Competition from other farmers and food businesses	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Competition from external players (i.e. non-traditional agricultural businesses)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>



## Factors that impede agricultural innovation

2.1 How important were the following factors in hampering your innovation activities or projects or influencing a decision not to innovate?

Factor	Degree of importance			
	High	Medium	Low	Not relevant
Lack of access to finance	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Lack of access to agricultural land	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Lack of access to water	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Lack of access to Information Communication Technologies	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Lack of access to training/skills (farming skills, business skills, ICT skills, etc)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Lack of access to agro-chemicals, including fertiliser, herbicides, pesticides, etc.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Lack of labour	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

Factor	Degree of importance			
	High	Medium	Low	Not relevant
Weather/Climate change	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Lack of government support	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Difficult agricultural policies/Regulations	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Too much competition from other farmers and food businesses	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Too much competition from external players (i.e. non-traditional agricultural businesses)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Lack of access to markets	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

2.2 Are you aware that the South African government offers financial support for innovation? Yes ☐ No ☐ If **No**, please go to section 3.1

2.3 Have you applied for financial support from the South African government? Yes ☐ No ☐

2.4 Are you aware that the South African Government offers access to research facilities for innovation? Yes ☐ No ☐

2.5 Have you applied to use the South African government research facilities for innovation? Yes ☐ No ☐



3

## Product (goods or services) innovation



A product innovation is the introduction to market of a **new** or **significantly improved** good or service with respect to its capabilities, such as improved taste, user-friendliness, components, software or sub-systems. The innovation **must be new to your enterprise**, but it **does not need to be new to your industry sector or market**. It does not matter if the innovation was originally developed by your enterprise or by other enterprises. A **good** is usually a tangible object such as a phone, wheelbarrow, or packaged food. A **service** is usually intangible, such as educational courses, consulting, etc.

**Please note:** The latest terminology classifies “**products**” as consisting of both “**goods**” and “**services**”. The provision of innovative services is of increasing importance in competitive economies.

3.1 During the three years 2019 to 2021, did your firm introduce:

→ **Entirely new goods**

*Exclude the simple resale of new goods purchased from other firms and minor changes that only alter the appearance of goods*

→ **Significantly improved goods**

*An existing good whose performance has been significantly enhanced or upgraded*

→ **Entirely new services**

→ **Significantly improved services**

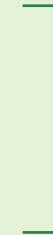
Yes No

☐☐☐☐☐☐☐☐

If **No** to all, please go to section 4.1

### 3.2 By whom were these product innovations developed?

- Mainly your firm
- Other firms in your group of firms
- Your firm together with other firms or institutions
- Your firm by adapting or modifying goods or services originally developed by other firms or institutions
- Mainly other firms or institutions

☐  
☐  
☐  
☐  
☐

*Tick all that apply*

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### 3.3 Were any of your product innovations during the three years 2019 to 2021 new to the market, new to your firm, or new to the world?

→ **New to the market (in South Africa)**

*Your enterprise introduced a new or significantly improved good or service onto your market before your competitors (it may have already been available in other markets).*

Yes

No

☐☐

→ **New to your firm**

*Your enterprise introduced a new or significantly improved good or service that was already available from your competitors in your market.*

☐☐

→ **New to the world**

*Your enterprise introduced a good or service that is entirely new to the world.*

☐☐



## 4 Business process innovation



A business process innovation is a **new** or **improved** business process for one or more business functions that differs significantly from the firm's previous business processes and which has been implemented within the firm.

### 4.1 Did your firm introduce new or improved:

Business processes within the organisation to improve farming or production objectives/targets?

Logistics, delivery or distribution methods?

Methods for information processing or communication?

Business practices for organising procedures or external relations

Improved methods to deal with the effects of climate change (e.g. Droughts, Floods)

Yes No

<input type="checkbox"/>	<input type="checkbox"/>
<input type="checkbox"/>	<input type="checkbox"/>
<input type="checkbox"/>	<input type="checkbox"/>
<input type="checkbox"/>	<input type="checkbox"/>
<input type="checkbox"/>	<input type="checkbox"/>

### 4.2 By whom were these business process innovations developed?

→ Mainly your firm

→ Other firms in your group of firms

→ Your firm together with other firms or institutions

→ Your firm by adapting or modifying goods or services originally developed by other firms or institutions

→ Mainly other firms or institutions

<input type="checkbox"/>
<input type="checkbox"/>
<input type="checkbox"/>
<input type="checkbox"/>
<input type="checkbox"/>

*Tick all that apply*

4.3 Were any of your business process innovations during the three years 2019–2021 new to the market, new to the firm, or new to the world?

Yes No

**New to the market (in South Africa)**

*Your enterprise introduced a new or significantly improved good or service onto your market before your competitors (it may have already been available in other markets).*

☐☐

**New to your firm**

*Your enterprise introduced a new or significantly improved good or service that was already available from your competitors in your market.*

☐☐

**New to the world**

*Your enterprise introduced a good or service that is entirely new to the world.*

☐☐





## 5 Ongoing or abandoned innovation activities



Innovation activities include the acquisition of machinery, equipment, software, licenses, engineering and development work, training, marketing and research and experimental development (R&D) when they are **specifically** undertaken to develop and/or implement a product or process innovation.

### 5.1 During the three years 2019 to 2021:

→ Did your firm have any innovation activities that **did not** result in a product or business process innovation because the activities were **abandoned**?

Product innovation

Business process innovation

Yes No

☐☐☐☐

### 5.2 During the three years 2019 to 2021:

→ Did your firm have any innovation activities that **did not** result in a product or business process innovation because the activities were **still ongoing** at the end of 2021?

Product innovation

Business process innovation

Yes No

☐☐☐☐



## Innovation activities

6.1 During the three years 2019 to 2021, did your firm engage in the following innovation activities?

A Intramural (in-house) research and experimental development (R&D)  
*Creative work undertaken on a systematic basis within your enterprise to increase the stock of knowledge and its use to devise new and improved products and processes (including software development).*

Yes

No

☐☐

If Yes, did your enterprise perform R&D during 2019 to 2021: Continuously ☐ Occasionally ☐

B Extramural or outsourced R&D  
*Same activities as above, but performed by other companies (including other firms within your group) or by public or private research organisations and purchased by your firm.*

☐☐

C Acquisition of agricultural land

☐☐

D Acquisition of agricultural machinery and equipment  
*Acquisition of advanced machinery and equipment to produce new or significantly improved products and processes.*

☐☐

E Acquisition of other external knowledge  
*Acquisition of existing know-how, copyrighted works, patented and non-patented inventions, etc. from other firms or organisations for the development of new or significantly improved products and processes.*

☐☐

F Training  
*Internal or external training for your personnel specifically for the development and/or introduction of new or significantly improved products and processes.*

☐☐

G Other activities  
*Other in-house or contracted out activities to implement new or significantly improved products or processes such as feasibility studies, testing, tooling up, etc.*

☐☐

		Yes	No
H	Acquisition of computer hardware	<input type="checkbox"/>	<input type="checkbox"/>
I	Acquisition of computer software	<input type="checkbox"/>	<input type="checkbox"/>

6.2 Please provide the approximate number of employees that were involved in the activities that were intended for innovation, accounted for in 6.1 above, according to the following categories:

*(Ensure that the totals are the same for each of the three demographic categories.)*

	Male	Female	Total
6.2.1 Gender	<input type="text"/>	<input type="text"/>	<input type="text"/>

	Black	South African Coloured	Indian/Asian	White	Non-SA	Total
6.2.2 Population group	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>

	18–25 years	26–35 years	36–60 years	>60 years	Total
6.2.3 Age group	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>

6.3 Please provide an estimation of expenditure of your business on innovation activities in 2021?

*(Please estimate if you lack precise accounting data)*

R&D performed in-house (Include current expenditures including labour costs and capital expenditures (buildings, machinery, equipment, software etc.) specifically for R&D)

R

R&D contracted outside of your organisation

R

All other innovation activities (Excluding R&D)

R



## Effects of COVID-19 on innovation



This section asks about the effects of the COVID-19 pandemic on the firm's innovation activities, including whether it has influenced their decision not to engage in innovation activities. Therefore, the section should be answered by all firms, regardless of whether they have engaged in innovation activities or not. If the firm has not engaged in any activities, they should answer 7.1. However, questions 7.2–7.7 are likely to be not relevant.

The respondent should count all **direct as well as indirect effects** of the pandemic on their innovation activities.

7.1 Did the COVID-19 pandemic influence your decision not to engage in innovation activities?

Yes	No
<input type="checkbox"/>	<input type="checkbox"/>

7.2 Were your innovation activities or projects put on hold, delayed or abandoned as a result of COVID-19?

Yes	No
<input type="checkbox"/>	<input type="checkbox"/>

7.3 Did you engage in any new innovation activities as a result of COVID-19?

Yes	No
<input type="checkbox"/>	<input type="checkbox"/>

7.4 Did the COVID-19 pandemic lead to a reprioritisation of existing innovation activities?

Yes	No
<input type="checkbox"/>	<input type="checkbox"/>

7.5 Were existing, innovation-related funding sources compromised/affected by COVID-19 (local and international sources)?

Yes	No
<input type="checkbox"/>	<input type="checkbox"/>

7.6 Has your expenditure on innovation activities been reduced due to the reprioritisation of funds as a result of COVID-19?

Yes	No
<input type="checkbox"/>	<input type="checkbox"/>

7.7 Has COVID-19 resulted in more innovation activities being outsourced/contracted out by your enterprise?

Yes	No
<input type="checkbox"/>	<input type="checkbox"/>



## Capabilities for agricultural innovation

8.1 During the three years 2019 to 2021, did your firm develop or use any of the following advanced technologies?

Sensor technologies/IOT technologies (e.g. air, soil, crop, livestock sensors etc.)

Artificial intelligence technologies

Blockchain technologies (e.g. crypto currencies, distributed ledgers etc.)

Precision agriculture

Drones/Robotics

Smart plant/animal breeding

Specify other:

Yes No Not relevant

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8.2 During the three years 2022 to 2024, does your firm plan to develop or use any of the following advanced technologies?

Sensor technologies/IOT technologies (e.g. air, soil, crop, livestock sensors etc.)

Artificial intelligence technologies

Blockchain technologies (e.g. crypto currencies, distributed ledgers etc.)

Precision agriculture

Drones/Robotics

Smart plant/animal breeding

Specify other:

Yes No Not relevant

☐☐☐☐☐☐☐☐☐☐☐☐☐☐☐☐☐☐



## Effects of innovation during 2019–2021

- 9.1 How successful were each of the following types of outcomes for your agricultural product (goods or services) and process innovations introduced during the three years 2019 to 2021?

*Tick 'Not relevant' if there were no innovation outcomes. Skip if you did not do any innovations in 2019–2021.*

### Innovation outcomes

### Level of success of outcomes

High Medium Low Not relevant

Increased revenue

☐ ☐ ☐ ☐

Reduced costs

☐ ☐ ☐ ☐

Increased output (eg. crop yield / livestock / farmed birds (turkeys, chickens, pigeons, geese), fish, etc. )

☐ ☐ ☐ ☐

Increased biodiversity preservation

☐ ☐ ☐ ☐

Increased water preservation

☐ ☐ ☐ ☐

Improvement in soil fertility

☐ ☐ ☐ ☐

Reached new markets

☐ ☐ ☐ ☐

Reduced greenhouse gas emissions

☐ ☐ ☐ ☐

Developed new intellectual properties

☐ ☐ ☐ ☐

Increased varieties (e.g. cultivars)

☐ ☐ ☐ ☐

## Sources of information for innovation activities

10.1 During the three years 2019 to 2021, how important to your firm's innovation activities were each of the following information sources?

*Include information sources that provided information for new innovation projects or contributed to the completion of existing projects. Skip if you did not do any innovations in 2019–2021.*

Information source		Degree of importance			
		High	Medium	Low	Not used
<b>Internal sources</b>	Sources within your firm	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
<b>Market resources</b>	Suppliers of equipment, materials, components or software	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
	Clients or customers	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
	Competitors or other firms in your sector	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
	Consultants, commercial laboratories	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
<b>Education &amp; research</b>	Universities/higher education institutions	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
	Government or public research institutes	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
	Private research institutes	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
<b>Other sources</b>	Conferences, trade fairs, exhibitions	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
	Scientific journals and trade/technical publications	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
	Professional and industry associations	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>



## General information about your business

11. Please provide a short description of your main business activity.

11.1 Is your firm part of a group of firms?

*A group consists of two or more legally defined firms under common ownership. Each firm in the group may serve different markets, as with national or regional subsidiaries, or serve different product markets. The head office is also part of a group of firms.*

Yes

☐

No

☐

In which country is the head office of your group located?

11.2 Does your firm have a subsidiary(ies) outside South Africa?

Yes

☐

No

☐

11.3 Please provide the year in which your firm was established.



11.4 In which geographic markets did your firm sell goods or services during the three years 2019 to 2021?

South Africa (national) ☐  
 South Africa (only some provinces) ☐  
 Rest of Africa ☐  
 Europe ☐  
 United States ☐  
 Asia ☐  
 Other countries, please specify:

11.5 Please indicate which of these markets were the largest in terms of turnover?

11.6 What was your firm's total number of employees in 2019 and 2021?

*Annual average number of employees, both full-time and part-time. If not available, give the number of employees at the end of each year.*

2019   
 2021

11.7 Approximately what percentage of your total employees had a university degree or diploma?

in 2019  %  
 in 2021  %

11.8 What was your firm's approximate total turnover for 2019 and 2021?

*Turnover is defined as the total amount received for goods sold and services rendered for the financial year (including amounts received for work done, services rendered, rent and or lease payments received for land and buildings, rent, leasing and hiring received for machinery, vehicles and other equipment; but excluding value added tax (VAT), net profit or loss on sales or revaluation of fixed assets (including profit or loss on foreign exchange), export freight charges, interest received). Please give exact turnover e.g. one million Rand should be entered as 1 000 000.*

2019 R   
 2021 R

You've come to the end of the questionnaire. Thanks for taking the time to respond to our questions, and for interacting with us in the process.

We're planning to deliver results to your business and the rest of South Africa at the beginning of 2023.

What next? If you have completed this questionnaire using Adobe Acrobat Reader, please save the file to your desktop and return the file to us via email. Alternatively, if you would like to post the completed questionnaire to us, please use the address given (see right).

Your participation matters.

**The Agricultural Business Innovation Survey 2019–2021 Team**



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and Innovation Indicators  
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Vlaeberg  
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[innovation@hsrc.ac.za](mailto:innovation@hsrc.ac.za)

**Keen to stay in touch?**

We're blogging about innovation data

<https://sabizinnovationsurvey.blog/>

And tweeting, too

@BizInnovationSA

**AGRICULTURAL  
BUSINESS INNOVATION  
SURVEY 2019-2021**



For a more innovative South Africa

\*INCLUDING FARMING, FORESTRY AND FISHERIES

