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# High tech, high yields? The Kenyan farmers deploying AI to increase productivity

## Level 2: Intermediate

## 1 Warmer

**a. These countries are the world's leading producers of the following crops. Match the countries with the crops.**

| | |
|---|---|
| 1. Brazil | a. olives |
| 2. China | b. sunflower seeds |
| 3. Ivory Coast | c. coffee |
| 4. Spain | d. potatoes |
| 5. Russia | e. maize |
| 6. the USA | f. cocoa |

## 2 Key words

**a. Find the following words in the text. The paragraph numbers are given to help you.**

1. a noun meaning the set of numbers that gives the exact position of something on a map _____ (paragraph 1)
2. a noun meaning a natural or chemical substance added to soil in order to help plants grow _____ (paragraph 1)
3. a noun meaning knowledge that is needed to do something, especially something practical _____ (paragraph 4)
4. a noun meaning the amount of something that is produced _____ (paragraph 4)
5. a noun meaning an insect or small animal that damages plants _____ (paragraph 7)
6. a noun meaning the possibility to develop or achieve something in the future _____ (paragraph 10)
7. an adjective meaning very large _____ (paragraph 10)

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8. a noun meaning a piece of land used for a particular purpose _____ (paragraph 11)
9. a noun meaning the amount of water in the air _____ (paragraph 13)
10. an adjective meaning not changing _____ (paragraph 14)

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*AI apps are increasingly popular among small-scale farmers seeking to improve the quality and quantity of their crop*

**Carlos Mureithi**

**30 September, 2024**

1 In Kenya, coffee farmer Sammy Selim sent his farm's coordinates to Virtual Agronomist, a tool that uses artificial intelligence to provide advice. The chatbot asked some questions before producing a report saying that Selim should target a yield of 7.9 tonnes and use three types of fertiliser in specific quantities to achieve that goal.

2 "My God!" Selim said when he received the report. He had planned to use much more fertiliser than Virtual Agronomist was recommending. "I could have wasted money."

3 AI apps are increasingly popular among small-scale farmers seeking to improve the quality and quantity of their crop

4 Pests, diseases and a lack of technical knowhow mean farmers have become used to suffering crop losses on a large scale. Selim started using Virtual Agronomist on his 0.4-hectare farm in 2022. Following its recommendations, his farm produced 7.3 tonnes of coffee, his highest yield ever. He's optimistic that the new recommendations will work too. "Technology helps," he said.

5 Before he started to use Virtual Agronomist, Selim would simply apply fertiliser using what he described as "general farmer's knowledge", putting different types at different times of the year without knowing the soil health. The farm's productivity was low. In one season, he only produced 2.3 tonnes of coffee.

6 "A big challenge for farmers is not knowing exactly what their soil needs," said Florah Maritim, factory manager at a cooperative society, which buys coffee from local farmers.

7 The story is similar for farmers trying to determine what pests and diseases have affected their crops. Musau Mutisya said he used to rely on his own knowledge to identify pests and diseases, but he wasn't always right.

8 On a recent sunny morning on his 0.6-hectare (1.5-acre) farm, he stood next to a maize plant, pointing his phone's camera at a torn leaf using PlantVillage, an AI-powered app for diagnosing pests and diseases.

9 A voice assistant instructed him on where to hold the phone, identified the pest and gave him advice on how to control it. "We were just guessing in the past," he said. "You end up using more money treating what you don't know."

10 A report released in July found that most uses of AI in Kenya were in agriculture and food security. The report said the potential for the technology to support socioeconomic growth on the continent was massive, but to realise that potential, efforts needed to be made to improve digital skills and get more smartphones in people's hands.

11 Both PlantVillage and Virtual Agronomist use a "lead-farmer" model, which means that farmers with smartphones are trained to use the tools not only on their own farms but also on neighbouring plots. PlantVillage is free to use and so is Virtual Agronomist for all crops apart from coffee, for which it charges 300 Kenyan shillings (about 1.70 British pounds) for advice.

12 Despite the potential, some scientists warn about dependence on AI tools for agriculture. Angeline Wairegi, who has researched the use of the technology in agriculture in east Africa, said most AI training datasets exclude local knowledge, meaning the information they provide can exclude successful local practices.

13 But for farmers such as Boniface Nzivo, AI is a game changer. He uses a system called FarmShield to monitor temperature, humidity and soil moisture, and advise him on when to water his cucumbers – aspects that he used to have problems with.

14 "I don't waste time trying to work out how much water to use," he said while inside a greenhouse for growing the plants, which need a consistent water supply. "It's a great technology."



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## 3 Comprehension check

**a. Are these statements true (T) or false (F) according to the article? Correct any that are false.**

1. Virtual Agronomist provides help to farmers using AI.
2. The report Sammy Selim received saved him a lot of money.
3. Farmers in Kenya suffer large crop losses as a result of wet weather.
4. Selim's farm produced 2.3 tonnes of coffee after he started using Virtual Agronomist.
5. Musau Mutisya was always able to identify pests and diseases.
6. PlantVillage helps farmers to identify pests and diseases.
7. In Kenya, AI is mostly used in agriculture and food security.
8. Selim's farm is bigger than Mutisya's farm.
9. Under the 'lead-farmer' model, farmers with smartphones help their neighbours.
10. Boniface Nzivo enjoys working out how much water he needs for his cucumbers.

## 4 Key language

**a. Match the words to make expressions from the text.**

| | | | |
|---|---|---|---|
| 1. | small | a. | knowhow |
| 2. | artificial | b. | skills |
| 3. | technical | c. | changer |
| 4. | food | d. | scale |
| 5. | digital | e. | security |
| 6. | game | f. | intelligence |

**b. Use two of the expressions from task a to fill the gaps in the sentences.**

1. In many countries, most agriculture is still _____.
2. The invention of the jet engine was a(n) _____ for air travel.

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### 5 Discussion

**a. Discuss these statements.**

- 'AI can benefit society in so many ways'.
- 'People should pay more for agricultural products from poor countries'.

### 6 In your own words

**a. Use an internet search engine to find more information about the use of AI in farming. Find as much information as possible.**

**b. Present your findings to the class.**