

5G and 5G-enabled technologies could increase global agriculture GDP by 7 to 9 percent.

5G Impact on Agriculture

Key challenges faced by the agriculture industry include increasing production to support continuing growth in the global population; changes in weather patterns induced by climate change; increasing soil degradation; pervasive water scarcity; and food wastage stemming from inefficient farming, transportation, and consumption practices.

5G will enable innovative applications that could help address food sustainability challenges and optimize farming practices. These digital 5G solutions include distributed arrays of wireless soil sensors that enable remote plant monitoring and smart irrigation; real-time monitoring and routing of livestock; connected farm machinery; predictive building and equipment maintenance and adjustment; remote drone surveillance and intervention; and smart greenhouses.

These 5G solutions could increase farmland productivity; increase crop and livestock yields; optimize water, pesticide, herbicide, and fertilizer use; reduce farmer expenditures; decrease food wastage and increase traceability; mitigate environmental contamination; and enhance predictive maintenance of assets.

Research reviewed for this report found that leading edge smart technologies could: increase global farmland productivity by 6%; add an estimated US\$500 billion to global GDP by 2030 (a 7 to 9% improvement); and reduce fossil fuel use by 16%. Based on a case study for this report, it is estimated that 5G-enabled precision application technologies could reduce pesticide use in the canola industry in Canada by to 85%.

Policy recommendations

- ❖ Cultivate digital innovation in the sector by supporting collaborations between farmers, technologies providers, and research institutions.
- ❖ Support the reskilling of the agriculture workforce for the digital economy through training programs designed for the agriculture sector.
- ❖ Measure, track, and report on the deployment of 5G solutions to demonstrate the quantitative linkages between 5G use and the sector's performance.