Science & Technology · GS - III

How is science interwoven deeply with our lives?

What are the striking changes in agriculture

triggered off by the science-based technologies?

EXAM YEAR	PAPER	SUBJECT
2020	GS - III	Science & Technology

MARKS	WORD LIMIT
10	~150 words

Answer Hint

Science in everyday life; healthcare; communication; transport; agricultural mechanisation; improved seeds; irrigation; biotechnology; precision agriculture; productivity; sustainability

Model Answer

Introduction

Science shapes modern life through healthcare, communication, transport, energy and industrial production. In agriculture, scientific knowledge and technology have transformed production methods, input use and market connectivity.

Science in everyday life

- **Healthcare:** Vaccines, diagnostics and modern medicines improve survival and disease prevention.
- **Communication:** Digital networks enable rapid exchange of information and access to services.
- **Transport and energy:** Engineering advances improve mobility, power generation and industrial productivity.
- **Food and sanitation:** Scientific methods improve food preservation, water treatment and public health.

Science-based changes in agriculture

- **High-yielding varieties:** Improved seeds and crop breeding have increased yields under suitable conditions.

- **Mechanisation:** Tractors, harvesters and farm machinery reduce labour requirements and improve operational efficiency.
- **Irrigation technology:** Drip and sprinkler systems improve water-use efficiency when properly managed.
- **Biotechnology:** Crop research and molecular techniques can improve resistance to pests, diseases and environmental stresses.
- **Precision agriculture:** Sensors, satellite data, drones and digital advisory services help optimise fertiliser, pesticide and water use.
- **Weather forecasting:** Better forecasts support crop planning and preparation for extreme weather.
- **Post-harvest technology:** Improved storage, processing and transportation reduce losses and expand market opportunities.

Challenges

High input costs, unequal access to technology, small landholdings and ecological pressures can limit benefits. Overuse of chemicals and groundwater may undermine long-term sustainability.

Conclusion

Science has improved productivity and quality of life, but its benefits must be distributed equitably. Climate-resilient farming, affordable technology and sustainable resource management are essential for agriculture's future.

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