

Ag *for* Life



**AGRICULTURE &
THE ENVIRONMENT**
SUSTAINABILITY

Curriculum Connections



Science Grade 5: Outcomes

Conservation agriculture is a sustainable practice that responds to local climate and weather events.

Climate and weather events may influence agricultural practices by affecting components such as

- crop type
- crop production
- animal population
- soil quality
- water access

Conservation agriculture practices are adapted to the requirements of plants and animals farmed.

Agricultural practices involve monitoring and responding to climate or weather.

Conservation agriculture practices include :

- minimizing soil disturbance
- maintaining soil cover
- using water efficiently
- using sustainable harvesting practices

Sustainable harvesting practices support the maintenance of stable plant or animal populations over time and include :

- crop rotation
- companion planting
- limiting hunting and trapping
- considering future harvests



Curriculum Connections



Science Grade 7: Outcomes

Unit A: Interactions and Ecosystems (Social and Environmental Emphasis)

Overview: Ecosystems develop and are maintained by natural processes and are affected by human action. To foster an understanding of ecosystems, this unit develops student awareness of ecosystem components and interactions, as well as natural cycles and processes of change. Building on this knowledge, students investigate human impacts and engage in studies that involve environmental monitoring and research. By reflecting on their findings, students become aware of the intended and unintended consequences of human activity, and recognize the need for responsible decision making and action.

Unit B: Plants for Food and Fibre (Science and Technology Emphasis)

Overview: Humans have always depended on plants as a source of food and fibre, and to meet a variety of other needs. To better meet these needs, technologies have been developed for selecting and breeding productive plant varieties and for maximizing their growth by modifying growing environments. Long-term sustainability requires an awareness of the practices humans use and an examination of the impacts of these practices on the larger environment.





AGRICULTURE AND THE ENVIRONMENT - SUSTAINABILITY

In agriculture, sustainability means meeting today's food and textile needs now and in the future. Sustainability requires balancing the needs of people, profit and the planet – something farmers know is essential to the long-term success of their operations.

There are three pillars of sustainability: environmental, economic and social.

Social

As much as agriculture has mechanized, people are still central to food and fibre production. A farming family should be able to earn a living and live in a rural community with a stable population and employment base. Likewise, as a viable part of the community that employs millions of people worldwide, farms should be socially responsible for adequate wages and working conditions.

Economic

A sustainable farming operation should be a profitable business that contributes to a robust economy. Farmers can increase profitability through diversification (varying what they do or produce), creative marketing and policies that help secure fair farm prices. To have an economically sustainable farm sector, farmers must receive a price for their product that covers their production costs.

Environmental

Environmental sustainability in agriculture means good stewardship of the land and resources that farms rely on. Among other things, this involves:

- Building and maintaining healthy soil
- Minimizing air and water pollution
- Promoting biodiversity

Thanks to research and technology, farmers are adopting practices that satisfy the needs of the population while enhancing environmental quality, using resources efficiently, sustaining economic viability and benefiting society. Using science-based practices maximize production while minimizing environmental damage.

Through the adoption of sustainable conservation practices, farmers gain rich, fertile soils that grow high-yielding crops. This also protects water sources, stores carbon, reduces greenhouse gas emissions and creates fields that are more resilient to extreme weather, benefiting both farmers and the environment.

What is Agriculture's Role in Sustainability?

Using sustainable farming practices that protect air quality, water quality and soil health while providing farms with economic benefits is critical. Planting cover crops, using integrated pest management, proper soil management, crop rotation, rotational grazing, reduced tillage and regenerative agriculture are just some examples of these sustainable practices. When these are used, farmers can preserve and restore critical habitats, protect watersheds and improve soil health and water quality. Society is then challenged with ways to reconcile the three pillars of sustainability (environment, social and economic) to ensure that farming remains a profitable industry for generations to come. This balancing act requires solutions and co-operation from all of society. (Strand, Stats. Can.)

In any agricultural production system, the promotion of good agricultural practices and product stewardship is fundamental for sustainable agriculture.



Sustainability Activity #1:

Materials:

Access to a computer lab or laptops/tablets (one per group), presentation software

Procedure:

1. Read the background information on sustainability. Choose one of the topics above for further research. Your group will have 45 minutes to research this topic and answer the questions below. You will then present your findings using presentation software (PowerPoint, Keynote, Canva, Google Slides, etc.). The presentation should be no longer than 5 minutes and consist of approximately 10 slides.
2. Answer the following questions to prepare for your presentation:
 - a. What is your topic?
 - b. Why is your topic important?
 - c. How is your topic negatively affected by human activity?
 - d. What practices are farmers adopting to address your topic?
3. Be sure to include pictures throughout and an end slide with your sources. Carefully evaluate sources for credibility. Educational institution websites (.edu) and government organization websites (.gov) will provide research-based information.
4. Reflect on these questions (your teacher may ask you to either write or discuss):
 - a. How would you summarize the role farmers play in environmental sustainability?
 - b. How does technology and research guide farmers toward sustainable practices?
 - c. How can consumers support farmers in their efforts?



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Agricultural producers care deeply about the land they live on. For many producers, caring for their land is their most important job.

"Sustainability is a journey, an ongoing process, not a prescription or a set of instructions. ... [Sustainable agriculture] requires that we envision the challenges and changes the future will bring." – Fred Kirschenmann, farmer and scholar

References

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