



SPARK QUESTIONS AND A LEARNING EXPERIENCE FOR BIOLOGY 20

project AGRICULTURE Activity	BIOLOGY 20
	CONCEPTUAL and PROCEDURAL KNOWLEDGE
SPARK LEARNING SOURCE What food challenges should smart agriculture solve? Smart agriculture provides technologies and practices that can help meet the challenge of feeding the world. LEARNING SOURCE What does smart agriculture have to do with food security and sustainability? BUILD COMPETENCIES Get smart 	Unit B: Ecosystems and Population Change 20-B1.1k Define species, population, community and ecosystem and explain the interrelationships among them 20-B1.2k Explain how terrestrial and aquatic ecosystems support a diversity of organisms through a variety of habitats and niches; e.g., - Terrestrial: canopy, sub-canopy, forest floor, soil 20-B1.3k Identify biotic and abiotic characteristics and explain their influence in an aquatic and a terrestrial ecosystem in the local region; e.g., stream, lake, prairie, boreal forest, vacant lot, sports field 20-B1.4k Explain how limiting factors influence organism distribution and range; e.g., - Abiotic factors: soil, relative humidity, moisture, ambient temperature, sunlight, nutrients, oxygen - Biotic factors: competitors, predators and parasites 20-B1.1sts Explain how science and technology have both intended and unintended consequences for humans and the environment (SEC3) [ICT F3-4.1] - Evaluate the impact that human activity has had, or could have, on the biodiversity in an ecosystem: –land use –habitat fragmentation –urbanization –slash-and-burn and clearcutting practices –monoculturing of forests, lawns, field crops 20-B1.4s Work collaboratively in addressing problems and apply the skills and conventions of science in communicating information and ideas and in assessing results - Work cooperatively to make clear and logical arguments to defend a decision on a given issue, such as human impact on ecosystems, land reclamation or wildlife habitat preservation (CT-SEC1, CT-SEC2, CT-SEC3) [ICT C1-4.4] 20-B1.1s Formulate questions about observed relationships; plan investigations of questions, ideas, problems and issues; and define and delimit problems to facilitate investigation 20-B1.2s conduct investigations into relationships between and among observable variables and use a broad range of tools and techniques to gather and record data and information 20-B1.4s Work collaboratively in addressing problems and apply the skills and conventions of science in communicating information and ideas and in assessing results - Work cooperatively to make clear and logical arguments to defend a decision on a given issue, such as human impact on ecosystems, land reclamation or wildlife habitat preservation (CT-SEC1, CT-SEC2, CT-SEC3) [ICT C1-4.4]



The SPARK learning source can be used to introduce and “spark” discussion and investigations about the impact of human activity on the land, biodiversity and quality of life. Encourage students to explore the INVESTIGATE MORE questions for further research. Students can be asked to focus on the challenge of meeting the increasing global demand for food while considering the impact on ecosystems, the land and its resources.

The LEARNING SOURCE and BUILD COMPETENCIES activity can meet specific learning outcomes in the Biology 20 curriculum and can provide a follow up of these concepts.