Merry Lea
Environmental Learning Center
of Goshen College

Standards Correlations

Exploring Merry Lea Teaching Farm K - 5

Program Synopsis

Merry Lea Teaching Farm is a unique edible ecosystem where students taste their way to an understanding of humans, farm and habitat connections. Students delve into soil ecosystems, search for pollinators at work and meet our animals living at the farm. Making apple cider provides students a memorable example of how food can be processed before we consume it.

Indiana Academic Standards for Science

Kindergarten

ETS1.A Defining and Delimiting an Engineering Problem: Asking questions, making observations, and gathering information are helpful in thinking about problems. (K-2-ETS1-1) (secondary to K-ESS3-2)

LS1.C Organization for Matter and Energy Flow in Organisms: All animals need food in order to live and grow. They obtain their food from plants or from other animals. Plants need water and light to live and grow. (K-LS1-1)

K.LS.1 Growth and Development of Organisms: Animals engage in characteristic behaviors that increase the odds of reproduction. (MS-LS1-4)

ESS3.A Natural Resources: Living things need water, air, and resources from the land, and they live in places that have the things they need. Humans use natural resources for everything they do. (K-ESS3-1)

1st Grade

LS1.A Structure and Function: All organisms have external parts. Different animals use their body parts in different ways to see, hear, grasp objects, protect themselves, move from place to place, and seek, find, and take in food, water and air. Plants also have different parts (roots, stems,leaves, flowers, fruits) that help them survive and grow. (1-LS1-1)

LS1.B Growth and Development of Organisms: Adult plants and animals can have young. In many kinds of animals, parents and the offspring themselves engage in behaviors that help the offspring to survive. (1-LS1-2)

2nd Grade

LS2.A Interdependent Relationships in Ecosystems: Plants depend on animals for pollination or to move their seeds around. (2-LS2-2)

LS4.D Biodiversity and Humans: There are many different kinds of living things in any area, and they exist in different places on land and in water. (2-LS4-1)

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2nd Grade, Cont.

LS2.A | Interdependent Relationships in Ecosystems: Plants depend on water and light to grow. (2-LS2-1)

3rd Grade

LS1.B | Growth and Development of Organisms: Reproduction is essential to the continued existence of every kind of organism. Plants and animals have unique and diverse

LS2.A | Interdependent Relationships in Ecosystems: Populations live in a variety of habitats, and change in those habitats affects the organisms living there (3-LS4-4)

LS4.D | Biodiversity and Humans: Populations live in a variety of habitats, and change in those habitats affects the organisms living there. (3-LS4-4)

4th Grade

ESS3.A | Natural Resources: Energy and fuels that humans use are derived from natural sources, and their use affects the environment in multiple ways. Some resources

LS1.A | Structure and Function: Plants and animals have both internal and external structures that serve various functions in growth, survival, behavior, and reproduction. (4-LS1-1)

5th Grade

ESS3.C | Human Impacts on Earth Systems: Human activities in agriculture, industry, and everyday life have had major effects on the land, vegetation, streams, ocean, air, and even outer space. But individuals and communities are doing things to help protect Earth's resources and environments. (5-ESS3-1)

LS2.A | Interdependent Relationships in Ecosystems: The food of almost any kind of animal can be traced back to plants. Organisms are related in food webs in which some animals eat plants for food and other animals eat the animals that eat plants. Some organisms, such as fungi and bacteria, break down dead organisms (both plants or plants parts and animals) and therefore operate as "decomposers." Decomposition eventually restores (recycles) some materials back to the soil. Organisms can survive only in environments in which their particular needs are met. A healthy ecosystem is one in which multiple species of different types are each able to meet their needs in a relatively stable web of life. Newly introduced species can damage the balance of an ecosystem. (5-LS2-1)

LS2.B | Cycles of Matter and Energy Transfer in Ecosystems: Matter cycles between the air and soil and among plants, animals, and microbes as these organisms live and die. Organisms obtain gasses, and water, from the environment, and release waste matter (gas, liquid, or solid) back into the environment. (5-LS2-1)

LS1.C | Organization for Matter and Energy Flow in Organisms: Food provides animals with the materials they need for body repair and growth and the energy they need to maintain body warmth and for motion. (secondary to 5-PS3-1)

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Middle School

LS2.B Cycles of Matter and Energy Transfer in Ecosystems: Food webs are models that demonstrate how matter and energy is transferred between producers, consumers, and decomposers as the three groups interact within an ecosystem. Transfers of matter into and out of the physical environment occur at every level. Decomposers recycle nutrients from dead plant or animal matter back to the soil in terrestrial environments or to the water in aquatic environments. The atoms that make up the organisms in an ecosystem are cycled repeatedly between the living and nonliving parts of the ecosystem. (MS-LS2-3)

LS2.C Ecosystem Dynamics, Functioning, and Resilience: Ecosystems are dynamic in nature; their characteristics can vary over time. Disruptions to any physical or biological component of an ecosystem can lead to shifts in all its populations. (MS-LS2-4)

LS2.A Interdependent Relationships in Ecosystems: Similarly, predatory interactions may reduce the number of organisms or eliminate whole populations of organisms. Mutually beneficial interactions, in contrast, may become so interdependent that each organism requires the other for survival. Although the species involved in these competitive, predatory, and mutually beneficial interactions vary across ecosystems, the patterns of interactions of organisms with their environments, both living and nonliving, are shared. (MS-LS2-2)

High School

ESS3.C Human Impacts on Earth Systems: The sustainability of human societies and the biodiversity that supports them requires responsible management of natural resources. (HS-ESS3-3)

ETS1.B Developing Possible Solution: When evaluating solutions it is important to take into account a range of constraints including cost, safety, reliability and aesthetics and to consider social, cultural and environmental impacts. (secondary to HS-LS2-7) (secondary to HS-LS4-6)

LS4.C Adaptation: Changes in the physical environment, whether naturally occurring or human induced, have thus contributed to the expansion of some species, the emergence of new distinct species as populations diverge under different conditions, and the decline–and sometimes the extinction–of some species. (HS-LS4-5),(HS-LS4-6)

LS4.D Biodiversity and Humans: Humans depend on the living world for the resources and other benefits provided by biodiversity. But human activity is also having adverse impacts on biodiversity through overpopulation, overexploitation, habitat destruction, pollution, introduction of invasive species, and climate change. Thus sustaining biodiversity so that ecosystem functioning and productivity are maintained is essential to supporting and enhancing life on Earth. Sustaining biodiversity also aids humanity by preserving landscapes of recreational or inspirational value. (secondary to HS-LS2-7) (HS-LS4-6)

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Indiana Environmental Literacy Guidelines

for up to 4th Grade

Questioning, Analysis and Interpretation

- Develop questions that help them learn about organisms, objects, places and relationships in the local environment, especially in nearby outdoor areas with which students have a personal connection.
- Locate and collect information about the environment and environmental topics by using tools, maps, technology and basic field skills (observing, interviewing, measuring).
- Develop and communicate simple explanations that address their questions.

Knowledge of Environmental Process and Systems

- Be able to tell the difference between and give examples of natural, human influenced and human-built ecosystems in Indiana.
- Define a healthy ecosystem and list the components of one.

Skills for Understanding and Addressing Environmental Issues

- Identify environmental problems and issues in local environments and communities.
- Identify some of the decisions and actions related to an issue and explain why those decisions and actions occurred.
- Determine what types of citizen action are appropriate.

Personal and Community Action

- Connect with their local environment through a variety of positive outdoor experiences.
- Understand how their civic responsibilities promote personal actions that support their environment.
- Understand what is meant by the term 'environmental stewardship.'

Document prepared by Merry Lea according to current Indiana Academic Standards from the Indiana Department of Education website and according to Indiana Environmental Literacy Guidelines from the Environmental Education Association of

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