



Rice plants grow in water.



The Most Important Seed

Did you know that people eat grass seeds? It's true. You probably will eat one or more kinds of grass seeds today. Wheat, corn, rice, oats, millet, and sorghum are all grasses. They are important sources of nutrition for humans. But rice is the most important. Billions of people depend on it for their food every day.

Rice was one of the first crops to be grown. In fact, it has been grown in Asia for at least 8,000 years! The countries that produce the most rice are China and India. In the United States, six states are known for growing rice. They are Arkansas, California, Louisiana, Mississippi, Missouri, and Texas.

Rice is a wetland crop. The rice plants actually grow in water. The flooded fields where the rice seeds are planted are called paddies. The rice plants are kept in the water until 2 or 3 weeks before they are ready to be harvested. It takes about 6 months for rice to grow.



This rice is ready to harvest. The rice grains are covered by a hard hull.

The rice seeds we eat grow on long, droopy **stems**. Each plant has several stems. One rice plant produces hundreds of new rice seeds. That's plenty of seeds to eat and to plant next year.

Each rice seed is covered by a hard protective shell called a hull. After the rice is harvested, the hull is removed to get to the edible grain inside. Many varieties of rice grow around the world. Some are short-grained, some are long-grained, and some are beautiful colors.



Short grain rice



Long grain rice



A mixture of rice varieties

Changes in the Environment

Rice is one of the most important food sources around the world. For this reason, people use a lot of land to grow rice. The **environment** changes when a rice paddy is created. **Terrestrial** (dry land) environments are changed into **aquatic** (water) environments.

Terrestrial organisms cannot live in aquatic environments. Animals, such as ground squirrels, snakes, and ants, must find new places to live and raise their young. Oak trees, sunflowers, and thistles cannot live in water. The creation of a rice paddy is **detrimental**, or harmful, to terrestrial organisms.

However, the rice paddy creates a new place for aquatic organisms to live. Crayfish and frogs live among the rice plants. Aquatic insects, such as damselflies, mayflies, and mosquitoes, **thrive**. Ducks and geese find water and food in rice paddies. Rice paddies are **beneficial** to aquatic organisms.



A rice paddy is an aquatic environment.



Frogs live in water.



Damselflies thrive in aquatic environments.

**A muskrat
in a rice
paddy**



Making a rice paddy changes the environment. Humans cause these changes. Other organisms change the environment, too. The changes to the environment can affect the well-being of other organisms.

Musk rats live in aquatic environments. They make their homes by tunneling into the banks of streams and ponds. Muskrats can live in the earthen walls that surround rice paddies. The muskrat tunnels can weaken the walls and cause them to break. When the wall breaks, the water flows out. The paddy changes back to a terrestrial environment. When this happens, the muskrat and all the other aquatic organisms must find new homes.

Musk rats causing rice paddy walls to break is one example of how an organism can change the environment. The change in this example is detrimental to the organism and to the other aquatic organisms. But the land organisms benefit because there is more terrestrial environment.

Thinking about Changing Environments

1. Grains are grass seeds used for human food. What other kinds of seeds do humans use for food?
2. How do environments change when humans make rice paddies?
3. How can muskrats change their environment, and what are some of the results?



Glossary

adaptation any structure or behavior of an organism that allows it to survive in its environment

antenna (plural **antennae**) the thin feeler on the head of an animal like a crayfish, an isopod, or an insect

aquatic referring to water

behavior the actions of an animal in response to its environment

beneficial good or advantageous

biologist a scientist who studies living organisms

camouflage an adaptation that allows an organism to blend into its environment

carapace a hard outer shell that covers the main part of the body of an animal

carnivore an animal that eats only animals

cartilage the smooth, flexible material that connects some bones and gives shape to some body parts

chromosome a structure that carries genes

chrysalis the hard-shelled pupa of a moth or butterfly

contract to become smaller or shorter in length

cotyledon the plant structure that provides the germinated seed with food

crustacean a class of mostly aquatic animals with hard, flexible shells

detrimental harmful or bad

DNA (deoxyribonucleic acid) a material that carries the genetic messages of heredity

dormant inactive or resting

egg the first stage in an animal's life cycle

embryo the undeveloped plant within a seed

endanger to be at risk of becoming extinct

environment everything that surrounds and influences an organism

evidence data used to support claims. Evidence is based on observations and scientific data.

exoskeleton any hard outer covering that protects or supports the body of an animal

fingerprint the ridges in your skin at the tip of your fingers. [Arches](#), [loops](#), and [whorls](#) are fingerprint patterns.

flower a plant structure that grows into fruit

food chain a description of the feeding relationships between all the organisms in an environment

fossil any remains, trace, or imprint of animal or plant life preserved in Earth's crust

fruit a structure of a plant in which seeds form

function an action that helps a plant or an animal survive

gastropod the family of snails

gene a message carried by a chromosome

generation a group of organisms born and living at the same time

genetics the study of how living things pass traits to their offspring

herbivore an animal that eats only plants or algae

hibernate when animals sleep through the winter

inherited trait a characteristic that is passed down from generation to generation

invasive an organism that thrives in a new area but causes problems to the organisms in that ecosystem

joint a place where two bones come together

leaf (plural **leaves**) a plant structure that is usually green and makes food from sunlight, water, and carbon dioxide

life cycle the sequence of changes or stages an organism goes through as it grows and develops

ligament tissue that connects bone to bone

mast year a year when trees produce a lot of seeds

mature fully developed

migrate when animals move from places with cold weather to places with warm weather

molt to shed an outer shell in order to grow

muscle tissue that can contract and produce movement

nutrient a material needed by a living organism to help it grow and develop

offspring a new plant or animal produced by a parent

omnivore an animal that eats both animals and plants

organism any living thing

paleontologist a scientist who studies fossils

parent an organism that has produced offspring

petrify to change into stone over a long period of time

pincer an animal's claw used for grasping

population all organisms of one kind that are living together

predator an animal that hunts and catches other animals for food

prey an animal eaten by another animal

proboscis a long, strawlike mouth

protect to keep safe

pupa the stage of an insect's life cycle between the larva and the adult stages

reproduce to have offspring

riparian along a river or stream

root the part of a plant that grows underground and brings water and nutrients into the plant

sediment pieces of weathered rock such as sand, deposited by wind, water, and ice

sedimentary rock a rock that forms when layers of sediments get stuck together

seed the structure in a fruit that holds the undeveloped plant, or embryo

stem any stalk supporting leaves, flowers, or fruit

structure any identifiable part of an organism

survive to stay alive

swimmeret a small, soft leg under the tail of a crayfish

tendon ropelike tissue that connects muscle to bone

terrestrial referring to land

thrive to grow fast and stay healthy

