

THE MYSTERY OF CORN
MYSTERY # 4

*THE
MIRACLE
OF WATER*

Your assignment is to calculate your water footprint. As you calculate and learn how much water you use daily, weekly and monthly, you are shocked by your totals and know you can do better at conserving water. How do farmers and other industries monitor their water consumption? Learn from experts who know how to conserve water. What you learn may help you reduce your water footprint.





WATER FACT

ALIEN CROP CIRCLES?

From an airplane, these circles might look like they were created by visitors from outer space. But they are just circular crop fields, watered by center-pivot irrigation! 26% of Kansas corn acres are irrigated.



Water All Around Kansas

DID YOU KNOW?

Kansas has a diverse climate from the east to west side of the state. In many parts of the state, corn farms are rain-fed, known as dryland or non-irrigated farms. These farmers normally receive enough rainfall to raise a crop.

As you move toward the western part of the state, the climate is more arid and more farmers supplement their crops with irrigation, with the water source coming mainly from an underground aquifer. Farmers also can irrigate their crops from other surface water sources, such as canals, rivers and ponds. Many areas of the High Plains region of western Kansas benefit from the **Ogallala Aquifer**, which supplies a water source for **irrigation**. The aquifer is a limited resource and farmers are working hard to extend its life by finding ways to use less water to produce their crops.

The Ogallala Aquifer, also known as the High Plains Aquifer, is the nation's largest aquifer and is one of the largest aquifers in the world. It is so large that it can hold as much water as Lake Huron. Due to its size, some geologists speculate it could take up to 6,000 years for the Ogallala Aquifer to be replenished with water if ran dry. The aquifer was named by geologist N.H. Darton in 1898. He named it after Ogallala, Nebraska, a nearby town. Not only does the aquifer provide water for agricultural purposes, it supplies drinking water and water for many industries in the surrounding areas.

Aquifer Regions



Watch this Farmer Bill video to learn about aquifers!



Earth's Water Is Worth Conserving

The total amount of water on the planet does not change. Water moves around on the planet and changes form, but we will never have any more water than we have right now. With our growing population and ever-increasing demand on our **freshwater** supply, it is more important than ever that we learn to conserve the limited freshwater supplies.

While the amount never changes, water has the potential to shift into different forms such as ice and glaciers. This is the same for groundwater, rivers and streams. We cannot take from a water source at a rate faster than what it can be restored without depleting its supply. A water footprint measures water available for use, expended, or polluted at certain point in time. Whatever water humans do not use for agriculture or other necessities is consumed by nature.

Since almost three-fourths of the Earth is water, some people wonder why saltwater is not more commonly used. While this can be a great solution in some cases, desalination causes a tradeoff of one scarce resource for another. A large amount of energy is required to desalinate saltwater to freshwater. There may be some areas where this process can be plausible, but often it is too expensive.

Watch this Farmer Bill video to learn how farmers conserve water!



Watch this video to learn how farmers use advanced irrigation technology to conserve water.



DISCOVERING EARTH'S WATER



- 97% of Earth's water is saltwater in the oceans.
- 3% of the Earth's water is freshwater.
- Two-thirds of our freshwater is unusable: frozen in glaciers, ice caps and mountain tops.
- Only one percent of the water on Earth is freshwater that humans can use.



Water-Related Careers in Corn

- Irrigation Agrolgist
- Watershed Technician
- Conservation & Natural Resource Policy Advisor
- Conservationist
- Agricultural Engineer



CSI CORN SCIENCE INVESTIGATIONS

Play the Journey 2050 Game!

Using **conservation** and sustainability practices ensures resources for future generations.

Try your hand by playing Journey 2050 using the link to the right. Play through Level 3 to focus on water usage and conservation.

While working through your 2050 journey, you should find answers to these questions:

- 1) How is water used in agriculture?
- 2) What methods do farmers use to irrigate their crops?
- 3) What best practices can be implemented to use water more efficiently in agriculture?



SCAN ME

INSIDE THE LAB

SHOWER CURTAIN WATERSHED

Water runoff is inevitable. The vast terrain of our land means there will always be areas that are higher than others. When water hits a steep surface, gravity pulls it down the quickest and easiest path. In **watersheds**, runoff can take place with the smallest elevation differences in soil. Runoff can carry soil, organic matter, and even fertilizers with it. Farmers work very hard to make sure that as much water **infiltrates** into soil as possible to reduce the amount of inputs like nutrients and other crop protection tools that could runoff into nearby waters. Farmers also want to reduce runoff because they paid for and applied those inputs to benefit their crops.

MATERIALS

- Plastic shower curtain
- Water soluble markers
- Spray bottle & water
- Food colorings
- Smartphone/camera

EXPERIMENT

Where does rainwater go? Your teacher will provide instructions on how to investigate human impact on watershed quality and location.



The Mystery of Corn reader series is provided by:

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