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CONNECTING YOU TO NEBRASKA AGRICULTURE

Issue 2

PROTECTING OUR ENVIRONMENT

AGRICULTURAL STEWARDSHIP

Agriculture is Nebraska's #1 industry. Our farmers and ranchers raise crops and livestock which feed people in our communities, our state, nation, and the world. A lot of care, thought, and purpose goes into taking care of animals, plants, soil, water, and the environment in Nebraska.

What do you know about the term "stewardship?" What do you believe it means?

Stewardship is the responsible and careful management of something entrusted to one's care. Nebraska's farmers and ranchers are committed to being good stewards. They protect and are responsible for their livestock, land, and environment which have been entrusted to their care!

WHAT DOES IT MEAN TO BE A STEWARD?

Write "Y" for yes or "N" for no next to each statement if it is something farmers and ranchers do to be good stewards.

_____Provide nutritious feed for cows and their calves

_____Make sure corn has proper nutrients by applying fertilizer

_____Call the veterinarian for care and medicine when a pig gets sick

_____Use no-till practices (not disturbing the soil) to prevent soil erosion

_____Ensure cattle in the feedlot have plenty of fresh water

_____Apply proper amounts of fertilizers and chemicals to keep water safe and clean

_____Properly manage manure (livestock waste) to maintain soil, water, and air quality

_____Keep accurate records on all pigs, cattle, and sheep to account for every animal

WHY SHOULD WE CARE

Think about everything you have done today. The food you eat, clothes you're wearing and the fuel that got you to school are all a part of your life because of agriculture. Farmers and ranchers provide each of these to you by taking care of natural resources. Some resources are non-renewable: limited and not easily replenished; and some are renewable: replenished by the environment over short periods of time.

It is necessary for all people – farmers, ranchers, and each of us- to protect and take care of our resources now so we make sure that people 100 years from now also enjoy safe and plentiful food, fuel, and fiber in their daily lives.

A SLICE OF SOIL

1. Imagine the earth as a pie. Draw a circle (pie) in the space to the left. Using your pen, "cut" the pie into four equal parts. Color 3 of the quarters blue—these represent all the water on the earth. The remaining "piece" represents the total land area in the world.
2. Cut the land piece in half, making two 1/8 pieces. Color one of these pieces black—this is inhospitable to people (polar areas, deserts, swamps, mountains, etc). The other 1/8 piece is suitable for living, but not necessarily where crops are grown.
3. Cut that 1/8 piece into four sections, making four 1/32 pieces. Color three of these brown—they are too rocky, wet, cold, steep or infertile to produce food or are areas of land that could produce food, but are national parks, cities, highways, etc.
4. This leaves 1/32 slice of earth. Divide a small piece of this section. This tiny section represents surface or top soil, used for food production to feed the world.

LEARN ABOUT LIVESTOCK

Farmers and ranchers raise livestock: defined as animals used for meat production; accessory production (like wool from sheep), or by-products used for human consumption (milk, cheese, eggs, etc.). Examples of livestock include: beef and dairy cattle, sheep, pigs, goats, and poultry.

Livestock is raised all over the world and in all 50 states in the U.S. Livestock is raised and produced 365 days of the year. There is a big demand for animal-sourced foods (think hamburger, chevon (goat meat), and bacon) because of population growth and increased wealth in much of the world. Environment and culture also influence where livestock is produced. There is competition for limited land and water available for growing livestock throughout the world.

READ THE INFORMATION ABOUT LIVESTOCK. FILL IN THE WHO, WHAT, WHERE, WHEN, AND WHY ABOUT RAISING LIVESTOCK.

WHO _____

WHAT _____

WHERE _____

WHEN _____

WHY _____

STEWARDSHIP IN NEBRASKA AGRICULTURE

Draw a line from each item on the list into the outline of Nebraska if it is an agriculture product grown in our state.

DRY EDIBLE BEANS
CATTLE
SHEEP
ALFALFA HAY
ALMONDS
SOYBEANS
SUGAR
ORANGES
BEETS
WHEAT
DAIRY (MILK)
GRAPEFRUIT
SUGARCANE
POTATOES
POPCORN
PIGS
POULTRY & EGGS
LETTUCE
SUNFLOWERS

WATER, WATER, EVERYWHERE!!

Think about a time you were outside playing or working and it was HOT! You couldn't wait to drink an ice cold glass of water! Not only did it taste good, it also provided much needed hydration for you. Did you know plants drink water just like we do? Animals, too! Plant roots absorb water from the soil and animals need plenty of clean, fresh water to grow and stay healthy.

Having an abundant, safe, and clean water supply is critical for agriculture. Water for plants comes in two forms: rainfall and irrigation. The state of Nebraska averages more than 30 inches of rain per year. In areas of the state that don't get enough rainfall, farmers need to irrigate their crops. Irrigation is providing water for plant growth, most often through a center pivot sprinkler system.

Where does the water come from? It starts with the Ogallala Aquifer!

WHAT IS AN AQUIFER?

An aquifer is an underground body of saturated rock through which water can easily move.

THE OGALLALA AQUIFER:

One of the world's largest aquifers covers about 174,000 miles.

Stretches across 8 states. A major portion lies in Nebraska.

The primary source of water for irrigation purposes in Nebraska.

Provides drinking water.

NEBRASKA FARMERS & RANCHERS - STEWARDS EVERY DAY

Farmers and ranchers are dedicated to caring for their land and livestock across Nebraska. Let's meet some of the people who work daily to protect natural resources in our state.

CARING FOR SOIL AND CORN

Dave Merrill and his family farm 1,200 acres of corn and soybeans in Boone County in Nebraska. Dave cares for his land by planting cover crops. Cover crops prevent water erosion, keep nutrients in the soil, and increase soil health. Soil is a valuable resource that farmers need to plant their crops.

"I believe it is important to take care of the land and its resources so that it can be handed down to the next generation."

– Dave Merrill, Corn Farmer

DIGGING DEEPER...

Why is it important for farmers to be good stewards of their soil?

CARING FOR PIGS AND PEOPLE

Leslie McCuiston works for The Maschhoffs—a family farm focused on caring for and raising pigs. Her role is to help coach and teach the people that work on the farm every day. She problem solves and analyzes information to help people understand why it is important to provide quality food, water, air, and care to the animals every day.

"We work with our nutritionists to make sure every animal has the proper nutrition. Our pig farmers provide fresh water and ensure the temperature and air in the barn is fresh and comfortable. We make sure the pigs are warm and dry, and have full bellies. If they become sick, we work with our veterinarians to identify proper treatment or care. We provide an environment that is comfortable so they can be happy and healthy pigs!"

"We have to be good stewards because we need the land to provide food for families. If we don't take care of our animals and our land, they don't take care of us."

– Leslie McCuiston, Pig Farmer

CARING FOR CATTLE AND PASTURE

The Tim Hruby family operates a ranch in Dawes County Nebraska. They have 250 cows, which they calve out (have babies) in March and sell the calves in October.

The Hrubys believe in taking good care of their animals. Each day, they give cows the right amount of hay and feed. It doesn't matter if it is snowing, windy, or cold. During the winter the Hrubys go outside and feed cows and chop ice off of water so the cows can drink. During calving season, they bring the cows close to a building so the baby calves can get inside if it is cold. In the summer, the cows and calves go to pasture. The Hrubys make sure they have water, salt, and mineral to keep them healthy. The cows and calves are on a complete health care program, and they get shots at birth, branding, and weaning.

The Hruby family also takes care of the land the cattle are on by using rotational grazing: the practice of moving livestock between pastures on a regular basis. Certain grasses grow at different times of the year—there are early and late season grasses. One year, cows will go into a pasture early in the season—the next year they will go into that pasture later. It makes a healthier pasture because cows graze off areas, which will grow back with healthier grass. The cows graze grasses that are lush with more protein. After they eat that grass, the Hruby's move them to another pasture that is already lush with more grass. This makes it better for the cattle, because they get better quality, higher protein grass.

"We take care of our cattle and land because it is the right thing to do and it is something we love."

– Tim Hruby, Cattle Rancher

DIGGING DEEPER...

Why is it important for farmers and ranchers to be good stewards of livestock?

91% OF NEBRASKA'S LAND IS USED FOR FARMING AND RANCHING.

FARMERS CARE ABOUT SOIL & WATER

Rain is essential for plants to grow, but too much rain can be a problem. With heavy rainfall, water can carry soil away through water erosion. Wind, too, can be a problem that farmers have to manage. Strong winds can lift soil off of a field and carry it away. This is called wind erosion. Soil is a valuable resource that farmers want to keep on their fields.

BUFFER ZONES

Buffer zones are sections of plants between fields, streams, creeks, lakes and wetlands. Buffer zones filter water runoff and help stop soil from washing off the fields. They also provide wildlife habitat and help rain water absorb into the ground naturally.

COVER CROPS

Farmers can plant cover crops in the fall after harvest. The growing plant roots help hold the soil in place during winter and early spring. Wind and water erosion are reduced. Cover crops also absorb extra nutrients in the soil (like nitrogen). This prevents them from running into watersheds. Cover crops can increase soil health, water retention, and even crop yield.

CARING FOR LAND AND SOYBEANS

The Ryan Ueberrhein family farms 2,000 acres of soybeans and corn near Valley, NE. Ryan shares: "We use no-till practices on our sandier ground, planting corn into the soybean stubble. By doing this, we are not disturbing the soil with tillage and reduce the risk of erosion primarily from the wind. This allows us to keep moisture in the soil so we don't have to irrigate the crops as much."

"My goal is to produce more on the land I have using less fertilizer, less chemicals, less water, and less fuel."

– Ryan Ueberrhein, Soybean Farmer

Soybeans are a crop Nebraska farmers often plant using no-till practices. What do you know about soybeans in our state? Using the words provided, fill in the blank with the word that completes the sentence. There are more words than you will use!

1. Nebraska ranks _____ in U.S. soybean production.
2. _____ county Nebraska produces the most soybeans in our state.
3. Soybeans are planted in the _____ and harvested in the _____.
4. Farmers harvest the _____ of the soybean plant.
5. In 2017, soybeans were planted on _____ acres of Nebraska land.

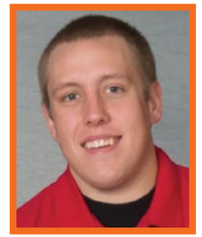
92nd	Gage	Stem
Seed	5th	Winter/Summer
Spring/Fall	5.7 million	Grant

Answers:
1. 5th; 2. Gage; 3. spring/fall; 4. seed; 5. 5.70 million

CAREER SPOTLIGHTS

Did you know 1 in 4 jobs in Nebraska are related to agriculture? Let's meet individuals with careers involving agriculture and technology.

HOW ARE THESE CAREERS RELATED TO STEWARDSHIP?



Scott Speck
Regional Leader, CropMetrics
From Gothenburg, NE

What is CropMetrics?
CropMetrics works with technology, software, and agronomy to help farmers answer the questions: "When do I irrigate?", "How much water do I put on?" and "Where should the water go?". We develop and supply technology solutions that increase efficiency of water, nutrients, and energy use and conserve natural resources.

How does CropMetrics help farmers be good stewards?
Everything we do is in partnership with the farmer, and using different tools, such as soil moisture probes in the ground, can help farmers manage water use.

DIGGING DEEPER...
How does CropMetrics use technology to help farmers be good stewards?

Chafik Barber
Director of Technology, GrainBridge
From Lincoln, NE

What is GrainBridge?
GrainBridge is a web program and app that helps producers make a plan for their farm to estimate what it will cost to grow their crop. Once the crops are raised, we help the farmer keep track of where the crop is sold, along with all the other money coming in and out of the farm so the farmer can make the best decisions on how and when to sell crops.

How can students be involved in agriculture?
Technology is very important in areas such as agronomy to manage yields, artificial intelligence in farming equipment and drones, all the way to marketing and financial applications like at GrainBridge. There's never been a more exciting time to be in agricultural technology. What we see today is just the beginning, and it only gets more fun and exciting from here.

DIGGING DEEPER...
How is Chafik's career important in agriculture?

HOW ARE YOU A STEWARD?

Stewardship is the responsible and careful management of something entrusted to one's care. Someone who is a good steward exhibits positive personal character traits: respect, care, responsibility and good citizenship toward land, air, water, plants, animals, and people.

You may not grow crops or raise livestock, but you can be a steward of what is around you. When you are a good steward of your own environment, you make a positive impact for future generations, just like Nebraska's farmers and ranchers do each day.

HOW AM I A STEWARD?

Check the box next to the positive ways you are a steward.

- ☐ **Pick up trash and put it in a trash can**
- ☐ **Don't stand with the refrigerator door open**
- ☐ **Turn the water off while I brush my teeth**
- ☐ **Pull weeds in my yard**
- ☐ **Recycle cans, bottles, and paper**
- ☐ **Walk to events instead of driving**
- ☐ **Turn the lights off when no one is in the room**
- ☐ **Make sure my pets have plenty of food, fresh water, and a warm place to sleep**
- ☐ **Reuse old paper for scratch paper**
- ☐ **Reuse items instead of throwing them away**

WRITE THREE OTHER WAYS YOU CAN BE A GOOD STEWARD:

_____

_____

_____

Nebraska Agriculture in the Classroom is a program of the Nebraska Farm Bureau Foundation whose mission is to engage youth, educators, and the general public to promote an understanding of the vital importance of agriculture in the lives of all Nebraskans. To learn more or access an electronic version of this publication, visit us at **www.nefbfoundation.org** or contact the Nebraska Farm Bureau Foundation.

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NEBRASKA AGRICULTURE IN THE CLASSROOM
NEBRASKA FARM BUREAU FOUNDATION

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