Name: _____ Date: _____

Beans Feed the Soil: A Farmer's Crop Rotation

Circle group

Plants need food from the soil. Corn needs a lot of nitrogen. If a farmer grows corn in the same field every year, the soil runs low on nitrogen. Then the corn grows smaller.

Farmers found a fix. It is called crop rotation. They plant a different crop in the field each year. They change the crops in a pattern.

Beans and peas help a lot. Their roots have tiny lumps. Living things in the lumps take nitrogen from the air and make it into food for plants. When the bean plants die, some nitrogen stays in the soil. Next year the corn has more to eat.

Rotation helps in another way. Pests that like one crop may not like the next. They have less to eat.

A farm with rotation looks like a patchwork quilt. Each patch is growing something new.

Questions

1. What nutrient does corn need a lot of?

_____

_____

2. What happens if corn grows in the same field every year?

_____

_____

3. What is crop rotation?

_____

_____

4. How do beans and peas help the soil?

_____

_____

5. Why might changing crops give pests less to eat?

_____

_____

6. Why does a farm with rotation look like a patchwork quilt?

_____

_____

Words to know

nitrogen: a plant food found in soil and in the air
rotation: a repeating pattern of change
pests: small animals or insects that harm crops
patchwork: made of many different pieces sewn side by side

Talk together (every group has these)

1. Find one fact that every group read. How did your sheet say it?
2. What did your sheet tell you that you think another group's did not? Ask them.
3. What is one question about this topic that none of the sheets answered?

Name: _____ Date: _____

Beans Feed the Soil: A Farmer's Crop Rotation

Triangle group

Plants take their food out of the ground. Corn is hungry for nitrogen, a nutrient that is easy to use up. A farmer who grows corn on one field season after season will find that the soil runs low, and each crop comes in smaller.

The fix is a plan called crop rotation. Instead of repeating a crop, the farmer grows something new in each field every year and moves the crops around in a set order.

Beans and peas are the stars of a rotation. Their roots have tiny lumps, and living things inside the lumps pull nitrogen out of the air and turn it into plant food. After the bean plants die and rot, some of that nitrogen stays behind. The next year, corn planted there has more to eat.

Rotation helps in another way. Pests and diseases that like one crop may not like the next. If the crop changes, the pests that were waiting in the soil have less to eat.

A farm that rotates its crops may look like a patchwork quilt. Each patch is growing something different from last year.

Questions

1. What nutrient does corn need a lot of?

_____

_____

2. What happens if corn is grown in the same field year after year?

_____

_____

3. What is crop rotation?

_____

_____

4. How do beans and peas help the soil?

_____

_____

5. Why might changing crops give pests less to eat?

_____

_____

6. Why does the passage say a rotating farm looks like a patchwork quilt?

_____

_____

Words to know

nitrogen: a plant food found in soil and in the air
rotation: a repeating pattern of change
pests: small animals or insects that harm crops
patchwork: made of many different pieces sewn side by side

Talk together (every group has these)

1. Find one fact that every group read. How did your sheet say it?
2. What did your sheet tell you that you think another group's did not? Ask them.
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Name: _____ Date: _____

Beans Feed the Soil: A Farmer's Crop Rotation

Square group

Every plant depends on nutrients from the soil, and corn requires an especially large amount of one nutrient called nitrogen. If a farmer plants corn in the same field year after year, the soil gradually becomes depleted of nitrogen, and the corn grows smaller and weaker.

Farmers solved this problem with a method known as crop rotation. Instead of repeating the same crop, they plant something different in each field every year and shift the order in a regular pattern.

Beans and peas are particularly valuable in a rotation. Their roots carry tiny lumps, and living organisms inside those lumps capture nitrogen from the air and convert it into a form that plants are able to use. When the bean plants die and decay, some of that nitrogen remains in the soil, so corn planted the following year has more to feed on.

Rotation offers another advantage. Pests and diseases that favor one crop may ignore the next, so when the crop changes, the pests waiting in the soil find much less to eat.

A farm that rotates its crops may resemble a patchwork quilt, since each patch is growing something different from the year before.

Questions

1. Which nutrient does corn require in an especially large amount?

_____

_____

2. What happens when corn is planted in the same field year after year?

_____

_____

3. What is crop rotation?

_____

_____

4. How do beans and peas improve the soil?

_____

_____

5. Why might changing crops leave pests with less to eat?

_____

_____

6. Why might a rotating farm resemble a patchwork quilt?

_____

_____

Words to know

nutrients: the things in soil that help plants grow
nitrogen: a plant food found in soil and in the air
rotation: a repeating pattern of change
pests: small animals or insects that harm crops
patchwork: made of many different pieces sewn side by side

Talk together (every group has these)

1. Find one fact that every group read. How did your sheet say it?
2. What did your sheet tell you that you think another group's did not? Ask them.
3. What is one question about this topic that none of the sheets answered?

For the teacher: Beans Feed the Soil: A Farmer's Crop Rotation

Each student sheet carries a shape, not a level. The same topic and facts, written three ways.

Circle: Beans Feed the Soil: A Farmer's Crop Rotation

Easier · 142 words · Flesch-Kincaid grade 1.9

1. Nitrogen.
2. The soil runs low on nitrogen and the corn grows smaller.
3. Planting a different crop in the field each year, in a pattern.
4. Living things in lumps on their roots make nitrogen from the air into food for plants.
5. Pests that like one crop may not like the next one.
6. Each patch is growing something different from last year.

Triangle: Beans Feed the Soil: A Farmer's Crop Rotation

This passage · 186 words · Flesch-Kincaid grade 4.6

1. Nitrogen.
2. The soil runs low on nitrogen and the corn grows smaller.
3. Planting a different crop in a field each year, in a pattern.
4. Living things in lumps on their roots turn nitrogen from the air into a form plants can use.
5. Pests that like one crop may not like the next one, so they do not find their favorite food.
6. Each patch is growing something different from last year.

Square: Beans Feed the Soil: A Farmer's Crop Rotation

Harder · 196 words · Flesch-Kincaid grade 9.5

1. Nitrogen.
2. The soil becomes depleted of nitrogen and the corn grows smaller and weaker.
3. Planting something different in each field every year and shifting the order in a pattern.
4. Living organisms in lumps on their roots turn nitrogen from the air into a form plants can use.
5. Pests that favor one crop may ignore the next, so they cannot find their usual food.
6. Each patch is growing something different from the year before.