The Berry Decision

Weigh the benefits and risks of changing inherited traits

L.8.2B.4 "Debate the ethics of artificial selection (selective breeding, genetic engineering) and the societal impacts of humans changing the inheritance of desired traits in organisms."

NAME _____ DATE _____

1 READ AND MARK

Read it twice

YOUR JOB Underline two possible benefits of changing strawberry traits, circle two possible risks, and number two groups of people affected. Use your marks to help you weigh the choices.

Should Strawberries Resist Mold?

1 After a wet summer, gray mold can rot strawberries before they reach a store. A farmer might save seeds from plants that stay healthy and cross them with other strawberry plants. Over generations, selective breeding may produce plants that resist the disease. Scientists could also use genetic engineering to change DNA involved in disease resistance. Either method changes which traits future plants can inherit. If fewer berries rot, farmers may waste less food and need fewer sprays to control the fungus. Neither method guarantees a disease-free crop.

2 But a berry that resists mold might raise new questions. Selective breeding can pass along unwanted traits, such as less flavor, while farmers seek resistance. A genetic change might affect other traits, so scientists test new plants before they are widely grown. Strawberry pollen can reach nearby strawberry plants, making it important to study whether a new trait could spread. Using just one resistant variety across many farms could also reduce crop diversity. A different disease might then harm many farms at once.

3 The choice affects people as well as plants. Farmers might save money if they lose fewer berries, and shoppers might find more fruit at lower prices. However, some engineered varieties may come with rules that limit how farmers can save and replant them. Smaller farms may struggle to pay for new plants or testing. Other people want to know how their food was produced before buying it. A community deciding whether to use either method can weigh expected benefits against costs, environmental risks, and who gets a voice.

2 ANSWER WITH EVIDENCE

Use the passage

1. What is one benefit both methods might offer farmers, and why is that benefit not certain?

2. A farmer chooses selective breeding. What possible trade-off from the passage should the farmer consider?

3. Why might people want scientists to study engineered strawberries before they are widely grown?

4. How might farmers and shoppers experience the costs and benefits of engineered strawberries differently?

3 YOUR TURN

Your own words

A coastal town is considering salt-tolerant rice for its farms. Write a five- or six-sentence recommendation that chooses selective breeding or genetic engineering. Explain a possible benefit, an ethical concern, who would be affected, and one way to address the concern.

ANSWER KEY

The Berry Decision

GRADE 8 · L.8.2B.4

PART 1 · READ AND MARK

Underline two possible benefits of changing strawberry traits, circle two possible risks, and number two groups of people affected. Use your marks to help you weigh the choices. Accept any marking that follows this job and points at the right text.

PART 2 · ANSWERS

#	QUESTION	ANSWER
1	What is one benefit both methods might offer farmers, and why is that benefit not certain?	**Both might reduce fruit lost to mold, but neither method guarantees a disease-free crop.**
2	A farmer chooses selective breeding. What possible trade-off from the passage should the farmer consider?	**Plants bred for mold resistance might also inherit an unwanted trait, such as less flavor.**
3	Why might people want scientists to study engineered strawberries before they are widely grown?	**A genetic change might affect other traits, and pollen could carry the new trait to nearby strawberry plants.**
4	How might farmers and shoppers experience the costs and benefits of engineered strawberries differently?	**Farmers might save money by losing fewer berries, but smaller farms may struggle to pay for new plants or testing. Shoppers might find more fruit at lower prices, while some want to know how it was produced.**

PART 3 · YOUR TURN (SAMPLE ANSWER)

I recommend selective breeding to develop rice that can grow in salty soil. This could help coastal farmers harvest more rice when salt reaches their fields. However, breeding for salt tolerance might also pass along an unwanted trait. Farmers and families who buy rice would be affected if the new rice had a lower yield. Before planting it widely, farmers could test several varieties in small plots. They could also keep growing different rice varieties so one problem does not threaten every field.

Accept other passage-supported benefits and concerns in the short answers. For the recommendation, accept either method if the student explains a plausible benefit, an ethical concern, an affected group, and a relevant response to the concern.