



**Science Grade 5
Scoring Guide for
Released Item # 17
Increasing Corn Production
Fall 2008**



A farmer in Michigan wants to increase the amount of corn her fields will produce in order to increase her profits. She divided a large field into four equal sections. She planted a different type of corn seed in each section. She recorded the following observations of her corn crop.

	Corn Seed A	Corn Seed B	Corn Seed C	Corn Seed D
Rainfall recorded	5 inches	5 inches	5 inches	5 inches
Fertilizer applied	10 kg	10 kg	7 kg	7 kg
Water applied by sprinkler	25 gallons a day	0 gallons a day	0 gallons a day	0 gallons a day
Corn produced	300 Kg	150 Kg	110 Kg	300 Kg

17 **Constructed-Response**
(3 points)

After the farmer recorded her results, she reviewed them to make a decision.

- Based on data in the table, which corn seed will *best* meet the needs of the farmer?
- Explain two reasons why the farmer should use that seed.

**MEAP, GRADE 5 SCIENCE
FALL 2008, OPERATIONAL
ITEM 17**

3 POINT RUBRIC:

3 = Identifies Seed D and two acceptable reasons.

2 = Identifies Seed D and one acceptable reason.

1 = Identifies Seed D.

0 = Lack of understanding

Examples of Acceptable Reasons:

Highest corn yield (300KG)

Lowest additional water required (0 gallons)

Lowest amount of fertilizer needed (7 kg)

Based on the data the farmer collected he would be best to chose Seed d because it produces more corn and takes less money and resources. So the farmer could produce more corn for less money.

Anchor Paper 1

Score Point: 3

The student correctly selects (Seed D) and provides two acceptable reasons for that choice (...takes less money and resources).

Based on the data from the tables I think Corn seed D would best meet the farmers needs because it doesn't need any water applied by sprinklers so then it won't drain into the water and kill animals. Also it produces 300 Kg so when she sells the crops she will get more money because there's more corn.

Anchor Paper 2

Score Point: 3

The student correctly selects (Seed D) and provides two acceptable explanations (...doesn't need any water applied by sprinkler, it produces 300Kg).

I think that corn seed D is the best. Because, it only got 5 inches of water but it produced 300kg.

Anchor Paper 3**Score Point: 3**

The student correctly selects (Seed D) and provides two acceptable explanations (... it *only* got 5 inches of water, produced 300Kg).

Corn Seed D uses 3kg less of fertilizer than Corn Seed A does. Corn Seed B, C, and D don't need water so the extra water can be used on Corn Seed A.

Anchor Paper 4

Score Point: 2

The student correctly selects (Seed D) and gives one acceptable explanation (... uses 3Kg less of fertilizer than Corn Seed A).

Seed D because
it grew the tallest. Also
it did not cost her
any extra money to pay
for her water bill because
it didn't use the sprinkler.

Anchor Paper 5**Score Point: 2**

The student correctly selects (Seed D) and gives one acceptable explanation (...it did not cost her any extra money to pay for her water bill because she didn't use the sprinkler).

She should use corn seed D She should use it
because the fertilizer is less and corn is more

Anchor Paper 6

Score Point: 2

The student correctly selects (Seed D) and provides one acceptable explanation (the fertilizer is less).

Corn seed D will best meet the needs of the farmer. It will be corn seed D because

Anchor Paper 7

Score Point: 1

The student correctly identifies (Seed D) but gives no explanation for the choice.

The ones that says
water applied by sprinkler,
no, and that would become
Seed D, because it tastes
better and last's longer.

Anchor Paper 8

Score Point: 1

The student correctly identified (Seed D) but provided an unacceptable explanation (tastes better and lasts longer).

She should use corn seed D because you
don't need to use yucky fertilizer.

Anchor Paper 9**Score Point: 1**

The student correctly identifies (Seed D) but provides an incorrect explanation (you don't need to use yucky fertilizer).

The best corn seed that will best meet the needs of the farmer is the corn seed D because it ~~receives~~ the same rainfall as the other seeds, it applies the same fertilizer as corn seed B, it applies more water from the sprinkler than the other seeds and it produces the same corn as corn seed D. The farmer should use that seed because it applies more water from the sprinkler and also it produces the same amount of corn like corn seed D.

Anchor Paper 10

Score Point: 0

The student begins by making a selection of Seed D but gives an explanation for the choice of Seed A (The farmer should use that seed because it applies more water from the sprinkler and it also produces the same amount of corn like corn seed D).

I think the farmer should use seed B because
it has 0 gallons a day and 150 kg produced

Anchor Paper 11

Score Point: 0

The student incorrectly selects (Seed B).

Corn Seed A because it got the most water from the sprinkler

Anchor Paper 12

Score Point: 0

The student incorrectly selects (Seed A).