Agricultural Respiration Worksheet *by C. Kohn, Waterford WI*

Name: Hour Date:

Date Assignment is due: Why late? Score: + ✓ -  
 Day of Week Date If your project was late, describe why

## **Directions – read and follow carefully!**

Use the reading below to answer the accompanying questions. You can and should work in groups to complete this assignment but you are responsible for completing your own sheet. A “**+**” means that every answer is **clearly written** in **full sentences** and **takes up all the space given** or more. A “**✓**” means you met the expectations of the assignment.

**Reading:** Imagine a situation in which you are a scientist asked to improve a breed of beef cattle so that it can produce more meat. Knowing that animals need more ATP to produce more meat, you decide to focus on developing a breed of beef cattle whose cells produce more ATP.  
  
In the space below, explain 3 ways in which you would change the cells of these cattle to produce more ATP so that they can increase their meat production. Each change should involve to one of the following:

* 1. Concentration of hydrogen in different parts of the mitochondria
  2. Availability of oxygen in specific parts of the mitochondria
  3. Amount of mitochondria or ATP Synthase

Use as much of the space given as you possibly can and use as many details as you can.

Change #1:

How would this increase ATP production?

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If this change were made, what else would be needed to make it work (e.g. *Would it need more hydrogen*? *Would the animal need to eat more?)* Be sure to explain why this would be necessary.   
  
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Change #2:

How would this increase ATP production?

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If this change were made, what else would be needed to make it work (e.g. *Would it need more hydrogen*? *Would the animal need to eat more?)* Be sure to explain why this would be necessary.   
  
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Change #3:

How would this increase ATP production?

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If this change were made, what else would be needed to make it work (e.g. *Would it need more hydrogen*? *Would the animal need to eat more?)* Be sure to explain why this would be necessary.   
  
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If you were to make these same changes to the cells of a corn plant, would that corn plant produce more corn?   
  
Explain:

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