Carbon Fixation 2

|  |  |  |  |
| --- | --- | --- | --- |
|  | **Calvin cycle (C3)**  | **C4**  | **CAM**  |
| # carbon atoms after C fixing |  |  |  |
| Separation of carbon fixation and carbohydrate synthesis  |  |  |  |
| Example Organisms  |  | CRABGRASS,Corn | Cacti, Pineapple |

Attack of the Crabgrass: Only \_\_\_% of plants are C4, but they do \_\_\_\_% of the photosynthesis!

The problem with RuBisCO:

 Explain:

What does this quote have to do with C4?

* **“It is not the strongest of the species that survives, nor the most intelligent that survives. It is the one that is the most adaptable to change.”**

Charles Darwin

 Explain:

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* The C4 pathway separates \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ from the carbohydrate building process of the Calvin Cycle.
	+ By doing these two processes in different locations, the Calvin Cycle can occur in a cell with little O2
		- RuBisCO can react with CO2 or O2
		- The reaction with O2 is only 50% effective
		- By using the C4 pathway to capture carbon, RuBisCO can operate in a lower O2 environment

CAM: What is it?

What plants use CAM?

Why is CAM useful?

Other Factors Influencing Photosynthesis Rates:

Draw a sketch of a graph showing the effect of all 3.