Plant Topic: Maize, CRISPR, Cas9, and Cas12a
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Maize has a great importance and impact globally -especially in Africa- on different levels that includes economical level or as a dietary resource (1). Climate change is a direct threat to maize production since it is predicted that by 2055 maize production is estimated to go down ten percent (2). Certain stresses, such as drought, can be managed by regulating proteins in maize (**3**). Under environmental stress, over production of ethylene (a gas that is normally produced by all plants) heighten the sensitivity to the stress (4) and causes some of the symptoms associated with the stress (5). The overexpression of ARGOS8 gene (a negative regulator of ethylene) in transgenic maize was shown an improvement to maize grain yield and increase maize tolerance to drought by reducing ethylene production (6 & 7). Higher efficiency (63% -100%) of transgenicity is obtained through the use of CRISPR and its associated nucleases such as CAS9 or CAS12a (8 & 9). Choosing one CRISPR-associated enzymes over the other in order to increase the efficiency of genomic editing is dependent on different factors such as the targeted gene and cell type (10).

Citation:


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**Detailing the process of writing this topic paragraph**

In order to write down this paragraph I've started to read my notes on plant genome editing. I then remembered that I simply can't use what has been cited in the book I've read because it was dyed with the author opinions. However, I've chosen one general topic (corn). I can be completely honest and say that the reason I had for choosing ARGOS8 over any other gene is forgotten somewhere deep within my memory. I think I've read the name somewhere but can't recall where, sorry for that. The strategy used was starting from the big picture and narrow down to one idea. Hence, I've looked up for what is the importance of corn (I've used three websites to find all the sources for the topic: WOK, Google, and VCU lib). Then kept narrowing down as follows (corn> negative factor> possible solution> validation of transgenicity as solution> the effectiveness of gene editing by CRISPR. However, I've ended up the paragraph with an introduction of different CRISPR associated enzymes because I thought it was a good way to end this paragraph.