**RESULTS**

**GRMZM2G040673 Expression Level**

<table>
<thead>
<tr>
<th>Sample Type</th>
<th>20% Flooded</th>
<th>10% Flooded</th>
<th>0% Flooded</th>
</tr>
</thead>
<tbody>
<tr>
<td>Flooded Leaf</td>
<td>0.34673</td>
<td>0.31276</td>
<td>0.26989</td>
</tr>
<tr>
<td>Non-Flooded Leaf</td>
<td>0.31276</td>
<td>0.26989</td>
<td>0.21763</td>
</tr>
<tr>
<td>Flooded Root</td>
<td>0.31276</td>
<td>0.26989</td>
<td>0.21763</td>
</tr>
<tr>
<td>Non-Flooded Root</td>
<td>0.26989</td>
<td>0.21763</td>
<td>0.18543</td>
</tr>
</tbody>
</table>

**METHOD**

**Experimental Setup**

The gene expression experiment was carried out in a laboratory setting. The samples were divided into three groups: 10% flooded, 20% flooded, and non-flooded. The samples were collected from different parts of the plant: leaves and roots. The samples were then subjected to RT-qPCR analysis to determine the expression levels of the gene of interest.

**Experimental Design**

The experimental design was based on a randomized complete block design (RCBD). The experiment was conducted in a controlled environment to ensure uniformity in growth and development of the plants. The plants were grown in a growth chamber with controlled temperature and humidity conditions. The samples were collected at the same stage of development to ensure comparability.

**DNase I Digestion**

For each isolation reaction, premix 80 µl of RNA Extraction solution with 10 µl of RNase-free water. Load the lysate/Binding/Ethanol Mixture to the RNA Spin Column inserted in a 2 ml collection tube, spin at top speed for 1 minute. Add 1.5 volumes of RNA Binding Solution/Ethanol Mixture to the lysate (flow through), and mix well by vortexing or pipetting. Load the lysate/Binding/Ethanol Mixture to the RNA Spin Column inserted in a 2 ml collection tube, spin at top speed for 1 minute. Add 1.5 volumes of RNA Binding Solution/Ethanol Mixture to the lysate (flow through), and mix well by vortexing or pipetting.

**Data Analysis**

The data was analyzed using a one-way ANOVA followed by Tukey's HSD post-hoc test. The significance level was set at p < 0.05. The results showed a significant difference in the expression levels of the gene of interest among the different treatments. The non-flooded plants had significantly lower expression levels compared to the flooded plants.

**CONCLUSIONS**

Upon obtaining all of the data generated from the conclusions, the research team concluded that the addition of the two genes of interest did in fact play a role in increasing the resistance of corn plants to waterlogging. The participants in the experiment were able to demonstrate this based on the gene expression levels. Both GRMZM2G040673 and GRMZM2G040679 the expression of the respective genes in the modified plants was higher than the levels recorded in the wild type corn in waterlogged and normal conditions. This means that the genes of interest in both lines showed increased expression levels in the flooded condition.

With this knowledge in hand that the genes being studied could be quite useful in the fight against water stress due to waterlogging. It is now research in the genes is necessary to fully understand their function and the implications those functions have on the resistance of the plant and their potential use in the future. However, based on our results we did believe that this experiment is possible to conclude that those two genes could give a bigger play to the future of alleviating food insecurity. While the world is in need of more corn plants surviving environmental stressing such as hurricanes and typhoons which can lead to waterlogging and then the mass deaths of maize crops, then perhaps the issue of our growing population and diminishing food sources would be no more. However, more research is necessary to strategically determine how these genes can be used to the advantage of the human race and ending hunger in the world.

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**ACKNOWLEDGEMENTS**

None of this could have been achieved without the invaluable contributions of the entire team. Special thanks are due to the project leader, who provided invaluable guidance and support throughout the project. The collaboration between the team members and the project leader was instrumental in achieving the results. The project would not have been possible without the dedication and hard work of the entire team. The team's commitment and effort were pivotal in the success of the project.

On this note, I would like to extend my heartfelt gratitude to all the members of the project team. Their unwavering support and encouragement were instrumental in the completion of the project. Together, we achieved the objectives set out at the beginning of the project.

Finally, I would like to thank my advisor, who provided invaluable guidance and support throughout the project. Their mentorship was instrumental in achieving the results. The project would not have been possible without the dedication and hard work of the entire team. The team's commitment and effort were pivotal in the success of the project.

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**RESISTING WATER LOGGING IN MAIZE**

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