

Washington University in St. Louis

Washington University Open Scholarship

Volume 13

Washington University
Undergraduate Research Digest

Spring 2018

Buffering against Heat, Drought, and Fungus in White Clover: Does Cyanogenesis Play a Role?

Maya Dutta

Washington University in St. Louis

Follow this and additional works at: https://openscholarship.wustl.edu/wuurd_vol13

Recommended Citation

Dutta, Maya, "Buffering against Heat, Drought, and Fungus in White Clover: Does Cyanogenesis Play a Role?" (2018). *Volume 13*. 52.

https://openscholarship.wustl.edu/wuurd_vol13/52

This Abstracts A-I is brought to you for free and open access by the Washington University Undergraduate Research Digest at Washington University Open Scholarship. It has been accepted for inclusion in Volume 13 by an authorized administrator of Washington University Open Scholarship. For more information, please contact digital@wumail.wustl.edu.

BUFFERING AGAINST HEAT, DROUGHT,
AND FUNGUS IN WHITE CLOVER:
DOES CYANOGENESIS PLAY A ROLE?

Maya Dutta

Mentor: Ken Olsen

As sessile organisms, plants are particularly vulnerable to increased drought and heat caused by anthropogenic climate change. Thus, the ability to adapt or exhibit plasticity in a changing environment is particularly important. In this research, I studied the ability of a widespread plant, white clover (*Trifolium repens*), to withstand heat/drought stress and fungal pathogens, and I further asked how these stressors might interact with a well-studied chemical defense trait (cyanogenesis). White clover is polymorphic for cyanogenesis (the production of hydrogen cyanide upon tissue damage), with both cyanogenic and acyanogenic individuals present in populations. Cyanogenesis is considered locally adaptive due to the repeated evolution of cyanogenesis clines, where higher proportions of cyanogenic plants are found in warmer and drier climates. Leveraging an F2 population of white clover plants currently growing at Tyson Research Center, I conducted an observational study during a natural period of heat and drought from late June through early August 2017. Plant height and green surface area were measured at three time points throughout the drought period, and fungal presence/absence and degree of infection were quantified. Here I present preliminary observations from one of the three replicate plots under study; analyses are ongoing. Future work may include genetic mapping to identify genetic regions that contribute to the variation we find in these traits.