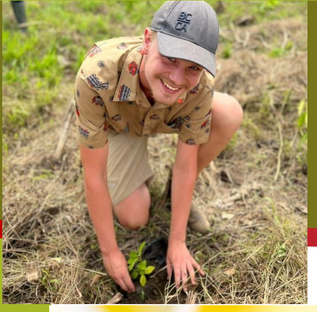
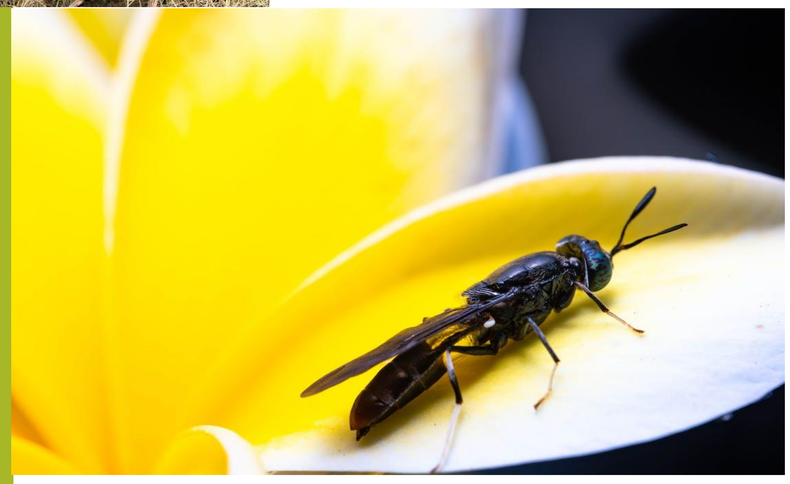


Oliver Rondou

Department of Sustainable Agriculture

Effects of Frass as a Nitrogen Source for Kale and Basil Seedlings



Attempting to Attract Black Soldier Fly (*Hermetia illucens*) to Farm Waste in Ghana

Objectives

- Comparing attraction and cultivation rate of Black Soldier Flies using different combinations of organic matter and animal waste

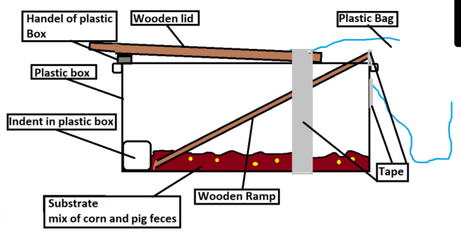
Methods

- Study conducted in a palm plantation with evidence of Black Soldier Flies in the Eastern Region of Ghana
- Originally 3 different treatments at 3 locations. Later changed to 9 different treatments in one location.
- Weekly observation made by myself.

Problems

- Heavy rainfall and flooding lead to flooding of chambers
- Locals tampered with chambers before they were isolated in the forest
- Health problems cause me to leave Ghana 1.5 months early

Trapping/ Incubation chambers perched on a bamboo stand in a palm oil plantation, Ghana.



Original design for trapping/Incubation chamber.

Introduction

- Black soldier fly larvae are a low input, high protein insect that is easy to cultivate.
- Black soldier flies are found in many areas of the world, but not typically cultivated.
- Little is known about optimal feed and attractants for wild black soldier flies.
- Black soldier fly waste (frass) has an incredibly high nitrogen content.
- Little is known about the effects of black soldier fly frass on seedlings.

Elevating the concentration of black soldier fly frass as a nitrogen source for seedling production leads to a reduction in overall yield

Objectives

- Observe if Black Solider Fly Frass influences seedling height
- Observe if Kale and Basil show any significant differences

Methods

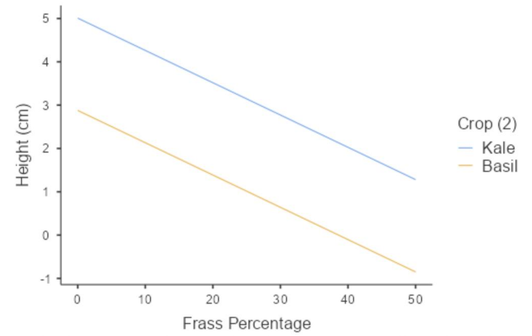
- 1 tray with 72 soil cubes hosted in KPU Dome
- Completely randomized design.
- Both Kale and Basil tested 6 replicates
- 6 treatment of frass tested in 10% intervals from 0-50% (0,10,20,30,40,50)
- Monitor seedlings weekly and collect seedling height data after 3 weeks
- Seedlings watered daily

Plot Map

10, Basil	50, Basil	50, Basil	10, Basil	40, Kale	40, Kale
10, Kale	0, Kale	20, Kale	30, Basil	50, Kale	50, Kale
20, Basil	0, Basil	0, Basil	50, Basil	30, Basil	0, Basil
10, Kale	30, Kale	20, Basil	0, Kale	40, Kale	30, Kale
50, Kale	40, Basil	20, Kale	50, Kale	40, Basil	40, Kale
50, Kale	50, Basil	20, Kale	40, Kale	20, Basil	20, Kale
40, Basil	30, Kale	10, Basil	0, Basil	0, Kale	10, Basil
40, Basil	30, Basil	0, Kale	20, Kale	30, Kale	30, Kale
40, Basil	0, Basil	40, Basil	20, Basil	30, Kale	30, Basil
0, Kale	10, Kale	10, Kale	30, Basil	20, Basil	40, Kale
10, Kale	30, Basil	20, Basil	10, Basil	50, Basil	10, Kale
0, Basil	50, Basil	10, Basil	20, Kale	0, Kale	50, Kale

Results

- A clear relationship was observed between frass and seedling height
- Frass accounted for 15% of the variation in seedling height
- Kale and basil showed similar height trend in relation to concentration of frass



Graph showing relationship between seedling height and percentage of frass in potting mix

Tray on third week right before measurements were taken

Discussion

- High nitrogen concentration of the frass could be causing nitrogen toxicity. Preventing germination and reducing growth.
- High salinity or other nutrient in frass could be preventing germination
- Further research on using frass for seedlings or as a fertilizer in general needs to be conducted.

Acknowledgments

Huge thanks to the Staff at the Ho Teaching Hospital, Ben Saccone and the Ghana Reddit Community for saving my life.
Thank you to Dr. Mike Bomford and all the faculty at the KPU Sustainable Agriculture department for supporting me
Thanks to EBJ and all my Ghanaian family for providing me with support and a location to conduct my research.
Thanks to Albert for guiding me on the ground and supporting my experiment in time of turbulence.