

Got Worms?

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Most of us were taught that worms are essential for soil health in grade school. Instead of this message genuinely resonating with me, I took a liking to the slimy and squirminess of the worms themselves like most grade school children did. Whether it was seeing the worms come out in droves on the sidewalk when it rained or lifting rocks around my house to find worms for bluegill bait, I enjoyed the presence of worms. It was not until much later in my life that the importance of worms resurfaced, and the message truly stuck.

It is a common conception that earthworms positively affect soil attributes and thus positively affect plant growth and production (Lemtiri, 2014). Many agriculturalists apply various tilling methods that can affect earthworm populations in any given area. Conventional tillage has been shown to be detrimental to earthworm populations. Systems such as no-till and conservation tillage produce higher levels of carbon, higher populations of earthworms, and better soil health (Brown, 2003). If agriculturalists are trying to obtain the greatest yields from their field, it is believed that they should discontinue methods such as discing and tilling and apply better management practices such as no-till. Plants grown with earthworms and/or with earthworm castings have higher levels of nutrients such as molybdenum (important in plant metabolism), fixed nitrogen (necessary for plant structure and production of chloroplast), and have higher levels of polysaccharides (important in physical soil structure) (Tomati and Galli, 1995). The importance of worms cannot be underestimated. For both the health of the soil and the health of plants, worms play a critical role. To help show the importance of earthworms, students from College of the Ozarks created a study that looked at the effects earthworms had on common sunflowers in a controlled environment.

This study was designed to evaluate the effect of the quantity of red earthworms, genus *Eisenia*, on the growth of the common sunflower, *Helianthus annuus*. It was hypothesized that as the number of red earthworms increases, the common sunflowers will be positively impacted and will have increased height, leaf widths, and overall biomass.

It was found that the pots with the highest population of worms had the highest biomass and the widest leaves. The results determined that as the number of red earthworms (Genus *Eisenia*) increased, the *H. annuus* was positively impacted. Statistical analysis did show significance in this area. By the end of the study, all the *H. annuus* were approximately the same height, and ANOVA statistical analysis showed no significance within the height data. However, the average wet biomass, average dry biomass, and the widths of the leaves on the plants showed a positive correlation trend as the number of red earthworms increased. The plants with higher amounts of red earthworms appeared to have larger stems and a larger overall leaf surface. Single-way ANOVA again supported these findings with p-values well within the ninety-five percent confidence range. The data found in the study did reject our hypothesis since the plant heights did not show any correlation with the number of worms per container. However, the rest of the hypothesis pertaining to the positive correlation between overall biomass and leaf widths failed to be rejected. This study helped show the positive correlation between earthworms and their effects on plant growth. If this study is any indication of the importance that earthworms have in your food plots or hayfields, then the way farmers and wildlife managers turn dirt is important.

LITERATURE CITED

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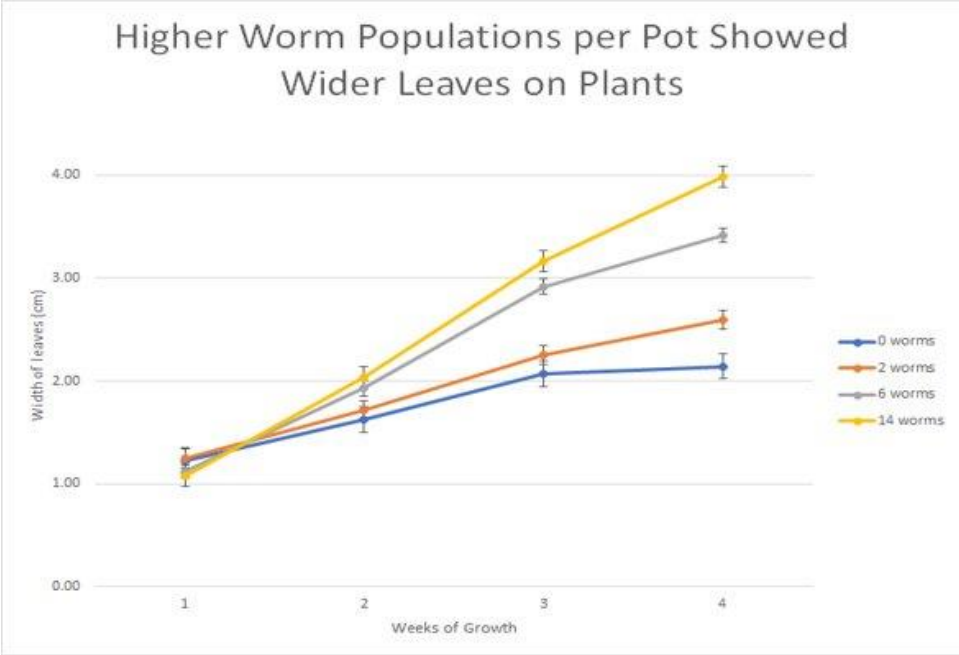


A physical gradient can be seen in sunflower biomass with 0 worms per pot on the far left and 14 worms per pot on the far right.



On the left is an average plant from a pot with 14 worms per pot.

On the right is an average plant from a pot with 0 worms per pot.



This graph shows the relationship between the population of worms and how it correlates to the growth in width of the leaves.