



One Health
Student Conference
USAMV București



YOUR
LOGO

Assessment of the Environmental Impact of Amaranth on Urban Ecology

Comfort Adedokun and John Alabiss

December 3-6, 2023, București



Introduction

- **Urbanization is the rapid expansion of cities that transforms the natural ecosystems.**
- **It causes urban degradation, soil erosion, biodiversity loss, and climate change impacts (UN, 2018).**
- **Urban ecology studies these effects and promotes sustainable restoration.**



Introduction

- **Nature-based solutions have been identified to help build the ecosystem. This includes the use of resilient plants like Amaranth to restore balance.**
- **Amaranth (*Amaranthus* spp.) is fast-growing, nutrient-rich, and highly adaptable (Ziter et al., 2019).**



Materials and methods

- **The experiment was carried out outside the screen house of Department of Crop and Horticultural science, University of Ibadan.**
- **Two varieties of Amaranth seeds (NHAc3 and NHA_v2) were obtained from National Horticultural Research Institute (NIHORT) Ibadan and planted in a CRD design.**



Materials and methods

- **Laboratory analysis on the following environmental impact assessment parameters: soil health, microbial activity, biodiversity, carbon sequestration.**
- **Analysis of variance for plant diversity and insect diversity was done using R software (version 4.3.2)**

Results and discussions

Table 2. Rate of carbon sequestration

Varieties	Organic carbon (%)	Organic matter (%)
<i>Amaranthus curentus</i>	31.160	53.720
<i>Amaranthus viridis</i>	36.860	63.547

Table 1. Microbial activities in the soil before planting and after harvesting

Micro-organisms	Before	After
Bacteria	1.12×10^4	1.18×10^4
Fungi	2.9×10^2	1.8×10^2

CFU/g (colony forming unit per gram)

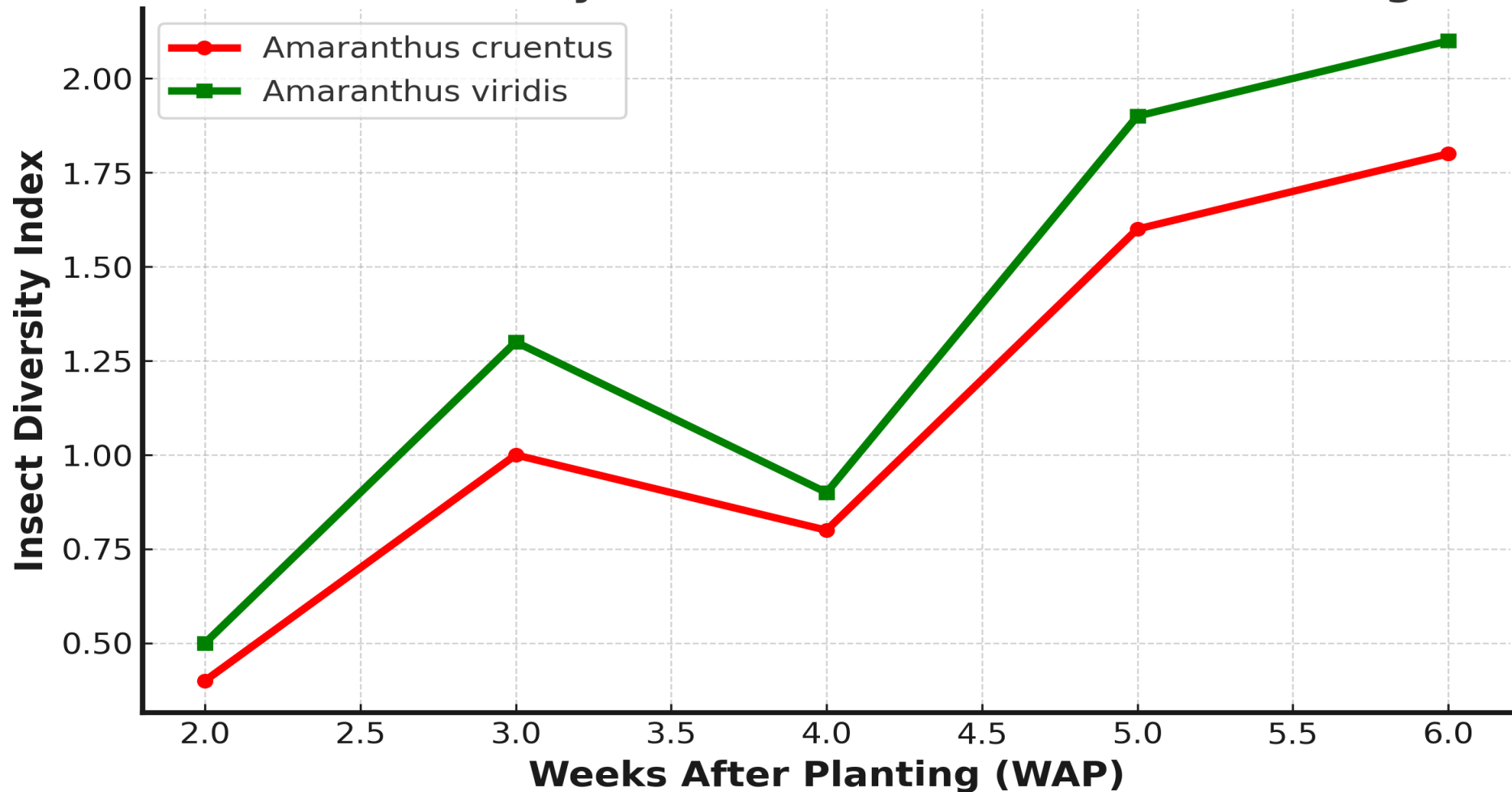
Table 3. Pre-planting and Post-harvest Soil Chemical Properties

Soil property	Before planting	After harvesting
pH	5.730	5.83
Organic Carbon (%)	1.596	1.786
Total Nitrogen (%)	0.166	0.190
Organic Matter (%)	2.752	3.079



Figure 1. Insect diversity over time

Insect Diversity Over Time (Weeks After Planting)





Conclusions and recommendations

- **Amaranth improved soil fertility, microbial ecosystems, and carbon storage.**
- **It increased pollinator presence and supports SDGs 11, 13, and 15 (Ziter et al., 2019).**
- ***Amaranth viridis* offers higher carbon sequestration potential.**



References

Adebo, O. A., Kayitesi, E., & Njobeh, P. B. 2023. Nutritional composition and functional properties of Amaranthus species: A review. *Journal of Food Biochemistry*, 47(1), e13928.

Brown, C., & Williams, P. 2019. Urban agriculture as a strategy for climate change adaptation in megacities. *Urban Climate*, 27, 100490.

Thank you for your attention!

Comfort Adedokun

Mobil: +2348168004976

E-mail: adeoladokun31@gmail.com

Address: Oyo State, Nigeria



YOUR
LOGO

December 3-6, 2023, București



One Health
Student Conference
USAMV București