SEASONAL VARIATION OF *CAPSICUM FRUTESCENS* L. TO CRUDE OIL SPILL ON SOILS FROM OLOGBO, EDO STATE

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Introduction

- The Niger Delta region of Nigeria
- Oil pollution
- Reduce soil productivity
- Omosun *et al.* (2008) reported the highly susceptibility of plant
- Sources of oil spill
- Pepper (*C. frutescens* L.), a major arable crop in Nigeria and many African countries, was chosen for this study because it has become increasing popularity in ologbo and most farmers have adopted to the cultivation of the plant.
- This study aims to evaluate the growth performance of *Capsicum* to crude oil pollution.

(Ohanmu *et al., 2017*)

Materials and methods

- **Soil collection**
- **Seed collection**
- **Nursery and transplanting**
- 3 treatments (C, MI and HI), 3 replicates in a RBD
- The growth parameters: measured at 1 WAT for both season
- plant height, leaf number, leaf area and chlorophyll determination
- **Statistics**

Table 1: Mean plant height of *C. frutescens* treated with different crude oil concentration during the rainy season. Values are means of 3 replicates ± S.E

Crude oil Concentration	Plant height (cm) Weeks after Transplanting (WAT)					
	1	2	3	4	5	6
CF	7.47±0.81^{ab}	8.68±0.92^{ab}	11.58±0.61^{a}	17.10±0.86^{a}	22.82±1.21^{a}	26.25±1.00^{a}
MF	6.18±0.55^{c}	6.73±0.60^{c}	7.13±0.54^{c}	7.17±0.51^{c}	6.85±0.57^{c}	6.03±0.44^{bc}
HF	6.53±0.48^{b}	6.87±0.36^{bc}	6.87±0.32^{c}	7.37±0.40^{c}	6.38±0.34^{c}	5.85±0.41^{c}

Table 2: Mean Leaf number of *C. frutescens* treated with different crude oil concentration during the dry season. Values are means of 3 replicates ± S.E

Crude oil Concentration	Leaf number Weeks after Transplanting (WAT)					
	1	2	3	4	5	6
CF	3.67±0.33^{b}	5.33±0.42^{a}	7.17±0.31^{a}	9.67±0.88^{a}	18.00±2.27^{a}	24.25±3.12^{a}
MF	4.50±1.44^{ab}	3.00±0.26^{c}	2.73±0,23^{b}	2.50±0.43^{c}	2.50±0.43^{c}	2.50±0.43^{bc}
HF	4.00±0.26^{b}	3.50±0.22^{c}	3.17±0.31^{b}	2.50±0.22^{c}	2.00±0.91^{c}	0.00±0.00^{d}

Table 3: Mean Leaf Area of *C. frutescens* treated with different crude oil concentration during the dry season. Values are means of 3 replicates ± S.E

Crude oil Concentration	Leaf Area (cm^2) Weeks after Transplanting (WAT)					
	1	2	3	4	5	6
CF	0.89 ± 0.07^{a}	1.31 ± 0.15^{a}	1.91 ± 0.16^{a}	2.75 ± 0.73^{a}	4.27 ± 1.26^{a}	4.54 ± 0.74^{a}
MF	0.54 ± 0.07^{a}	0.64 ± 0.11^{b}	0.65 ± 0.09^{b}	0.69 ± 0.07^{c}	0.69 ± 0.07^{b}	1.23 ± 0.47^{b}
HF	0.84 ± 0.10^{a}	1.05 ± 0.09^{ab}	1.03 ± 0.09^{b}	0.70 ± 0.11^{c}	0.73 ± 0.24^{b}	0.00 ± 0.00^{d}

Table 4: Mean Chlorophyll content of *C. frutescens and C. annuum* treated with different crude oil concentration during the rainy season. Values are means of 3 replicates ± S.E

Crude oil Concentration	Chlorophyll content (mg/g) Weeks after Transplanting (WAT)					
	1	2	3	4	5	6
CF	0.04±0.03[a]	0.06±0.04[a]	0.09±0.03[a]	0.09±0.05[a]	0.04±0.02[a]	0.06±0.04[a]
MF	0.05±0.02[a]	0.05±0.03[b]	0.03±0.01[b]	0.04±0.03[b]	0.004±0.01[b]	0.011±0.03[b]
HF	0.04±0.03[a]	0.03±0.01[b]	0.03±0.02[b]	0.01±0.01[c]	0.004±0.01[b]	0.009±0.01[bc]

Plate 1: Growth performance of *C. frutescens* at 4WAT in the MI crude oil polluted soil during the rainy season. Arrows point to the hydrophobic nature of the soil and the chlorotic nature of the leaf.

Recommendation and Conclusion

- The present study shows that crude oil adversely affect the growth performance of *Capsicum frutescens* and the soil fertility.
- Crude oil pollution has been found to have economic implications on growth and yield of agricultural crops.
- In order to reduce the high risk of oil pollution in our environment there is need to create more awareness on the harvoc of oil spillage on the agricultural sector of the economy

Reference

- **Edokpolor Ohanmu**, Sunday Bako and Mike Adelanwa (2017). Effect of oil spillage on the productivity of pepper (*Capsicum* spp), Lambert publisher, Koln, Germany.

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