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## Pathogenicity and effects of Soil Physicochemical Properties on Fungal Disease Incidence and Severity of Cassava (*Manihot esculenta* Crantz.) in Bamenda, Cameroon.

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### ABSTRACT

**Objective:** Cassava (*Manihot esculenta* Crantz.) is considered as one of the primary food crops in Cameroon. Its cultivation is challenged by numerous pests and diseases, yet proper identification of the pathogenic agents is still ongoing. Fungal pathogens of cassava have been previously under looked, since researchers dwell more on viral pathogens. This research aims to evaluate the pathogenicity and effects of soil physicochemical properties on fungal disease incidence and severity of cassava (*Manihot esculenta* Crantz.) in Bamenda, Cameroon.

**Methodology and results:** In Nkwen and Bambili, 20 cassava farms were evaluated for disease incidence and severity and soil characteristics. A greenhouse study involved inoculating 16-week-old cassava plants with five common fungal isolates using stem injection at  $10^4$  conidia/ml. *Fusarium oxysporum* caused the highest disease incidence (80%) and severity. Bambili recorded higher disease levels (66%, severity score 4) compared to Nkwen (50%, score 3). While soil physical properties were similar across sites, chemical properties (pH water, pH KCl, OC, OM, N%, P(mg/kg), C/N, Ca (Meg/100g, Mg (meg/100), K(meg/100g), Na and (meg/100g) varied. A strong positive correlation existed between pH KCl and disease severity ( $P=0.05$ ), and between disease incidence and severity ( $P=0.001$ ). All tested fungi were pathogenic, though some showed milder symptoms.

**Conclusion and application of findings:** This study confirmed that, all five fungal isolates, were pathogenic to cassava particularly *Fusarium oxysporum*. Disease incidence and severity were higher in Bambili than in Nkwen, likely influenced by variations in environmental and soil chemical conditions, especially pH KCl, which showed a significant correlation with disease severity. The soil Physical properties remained same across sites, but chemical properties varied and had an impact on disease intensity. Results from this study indicates how important pathogenicity and soil properties are in the management of cassava diseases. Monitoring soil pH can serve as an early indicator of disease risk. Developing and promoting resistant cassava varieties can control fungal diseases. The study also highlights the need for soil management and farmer

education programs to reduce cassava losses and support sustainable production, especially in regions with similar soil conditions.

**Key words:** Disease Incidence, Disease severity, Fungi, Pathogenicity, Soil Physicochemical Properties