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GROWTH AND YIELD RESPONSES OF SELECTED COWPEA (*Vigna unguiculata* L. Walp) GENOTYPES TO *CUCUMBER MOSAIC VIRUS* DISEASE

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Introduction



- Cowpea is a short day leguminous crop in the tropics and subtropics and a drought tolerant and warm-weather crop
- It has the ability of fixing atmospheric nitrogen into the soil (Asiwe *et al.*, 2009)
- Nigeria is the largest producer and consumer of cowpea in the World (FAO, 2016)
- *Cucumber mosaic virus* (CMV) constitutes a serious problem to cowpea productivity as it affect yield, quality and quantity (Alegbejo, 2015)

Objectives



The objectives were to determine:

- incidence and severity of *Cucumber mosaic virus* infection on the selected cowpea genotypes
- growth and yield parameters of CMV on infected plants

- **Study Location:** In the screenhouse at the Teaching and Research Farm, Federal University of Technology, Minna, Niger State. Two trials were conducted simultaneously
- **Experimental design :** Completely Randomised Design (CRD) with three replications
- Cowpea seedlings were inoculated mechanically at ten days after sowing
- **Treatments:** 23 cowpea genotypes (IFE BROWN, TVU 408, 11D-15-40, 04K-267-8, 07K-230-2-9, 07K-291-69, 08K-125-24, 08K-125-107, 08K-193-15, 09K-480, 10K-819-4, 10K-836-3, 12K-261, 12K-515, 12K-809, IT08K-125-100, IT08K-187-5, IT10K-292-10, IT10K-822-7, IT10K-828-3, IT10K-830-9, IT10K-837-1, IT10K-837-1, IT12K-113)

Experimental Setting



- **Disease incidence (%)** : percentage of plant indices showing symptoms after inoculation.
- **Disease severity** : 5- point scale (Abdulrahman *et al.*, 2017) was used.
- Growth and yield parameters were also recorded
- The data collected were subjected to cluster and analysis of variance
- Means of the cowpea genotypes were separated using Duncan Multiple Range Test (DMRT) at 5 % probability level

Results and Discussion



- All inoculated plants in first and second trials showed typical foliar symptoms of CMV infection at different level.
- The symptoms were mild leaf chlorosis and mosaic on the secondary leaves of the infected plants.
- The genotype 09 K- 480 was observed to have the lowest disease incidence (22.2%).
- However, the genotypes IID15- 40, 12 K- 261 and 12 K- 809 exhibited the lowest disease severity (score = 2.3).
- Seed weight (1.5 g) per plant were highest in 08 K - 125 - 107.

Results and Discussion



- The mosaic symptoms observed on the infected plants revealed that none of the twenty-three cowpea genotypes was completely resistant to the virus
- Disease severity varied among the cowpea cultivars owing to the differences in their genetic background
- The variability in the impairments of the growth and yield parameters was an indication of the differences in genotypes' genetic architecture.
- None of the cowpea cultivars exhibited consistent performance for the morphological and yield attributes probably due to different gene actions required for each plant trait.

Conclusions & Recommendations



- This study has established the virulence and pathogenic CMV on the evaluated cowpea genotypes.
- Moreover, the results obtained revealed **08K-125-107** as the best cowpea genotypes for seed production and **04K-267-8** for fodder (**the most tolerant to CMV infection**).
- Therefore, the genotype **08 K - 125 - 107** is recommended for cultivation in areas that are prone to CMV disease.
- Additionally, this genotype probably combined desirable seed yield with CMV tolerant genes that could be explored for breeding purposes

References



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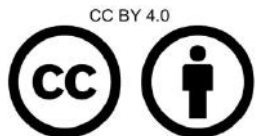
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