

BIOCHEMICAL BASIS OF COWPEA SEED RESISTANCE TO BRUCHID DAMAGE

D.C.A AKINTOBI

Department of Plant Breeding and Seed Technology,
University of Agriculture, P.M.B. 2240, Abeokuta, Ogun State, Nigeria

ABSTRACT

The biochemical factors responsible for the resistance of cowpea (*Vigna unguiculata*) seeds to storage bruchid (*Callosobruchus maculatus*) were investigated in a study using seeds of 10 cowpea genotypes grown in four locations in Nigeria; Kano, Mokwa, Ibadan and Onne. Biuret method of analysis was used to determine the in albumin and globulin contents. The total protein content of the seeds were determined using BIO-RAD DC Protein Assay Method and the trypsin inhibitors were also analyzed. Hemagglutinating activities were analyzed using the twofold serial dilution techniques. The determination of the relative and specific hemagglutinating activity was used to measure lectin content of seeds. Relative index was calculated for all the bioactive compounds in each genotype across the four locations. The result showed that Tvnu 72, (a wild *Vigna* species) had the maximum index (4.7) indicating it contained the highest amount of hemagglutinin, trypsin inhibitors, tannin, and globulins and was also the most resistant to bruchid damage. The high resistance of *C. maculatus* and the high content of trypsin inhibitors in *V. vexilata* suggested that protease inhibitors may promote the plant's defense mechanism when present in high amount. As regards the locations, Ibadan in the Derived/Moist Savanna (Forest transition zone) had the highest amount of these compounds and Mokwa in the Southern Guinea Savanna had the lowest amount.

Keywords: Biochemical compound, cowpea bruchid, genotypes, resistance, *Vigna unguiculata*