

Effects of Temperature on Germination of Seeds of Three Pigeonpea (*Cajanus cajan*) Genotypes

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Two sets of incubator experiments to determine the effects of temperature on germination of three pigeonpea genotype seeds were carried out in the Crop Science Laboratory of the Faculty of Agriculture, University of Nairobi. The pigeonpea genotypes were NPP 670, Katheka and Kioko. In the first set of experiments, the pigeonpea seeds were germinated at 15, 20, 25, 30, 35 and 40°C in darkness. In the second set of experiments the seeds were germinated at different 12 hour day and 12 hour night temperature combinations of 15/15, 20/15, 25/15, 30/15, 20/20°C, 25/20, 30/20 and 35/20°C for day and night, respectively. A broad temperature range (20–35°C and 20/15°C to 30/20°C day/night) maximum 13-day germination was obtained for all genotypes. Overall genotype NPP 670 had the highest per cent germination while Kioko had the lowest. However, Kioko had the highest per cent germination at 15°C. Initial germination was delayed at 15°C and 40°C for all genotypes. Time to 50 per cent germination was only significantly ($P = 0.05$) increased at 15°C. Maximum per cent germination was observed at 25°C. At 40°C, genotypes Kioko and Katheka seeds imbibed water at a faster rate and exuded brownish substances that started smelling after 36 hours. A bacterial ooze from the seeds was observed for genotype Katheka at 30°C, 20/15 and 25/20°C. NPP 670 showed low amounts of the bacterial ooze at all temperatures. The bacteria fluoresced under ultraviolet light suggesting that they belonged to the Pseudomonadaceae family. The results showed that per cent germination of pigeonpea seeds is decreased by both low and high temperatures. Other factors which include presence of seed borne micro-organisms may also affect the germination of seeds.

KEY WORDS: Pigeonpea, *Cajanus cajan*, effects of temperature, genotypes, germination