African Journal of Agricultural Research



African Journal of Agricultural Research Vol. 4 (2), pp. 100-106 February, 2009
Available online at http://www.academicjournals.org/AJAR
ISSN 1991-637X © 2009 Academic Journals

*Full Length Research Paper*

# Influence of flooding on bambara groundnut (*Vigna subterranea* L.) germination: Effect of temperature, duration and timing

**A. Sesay**

Department of Crop Science and Production, Botswana College of Agriculture, Faculty of Agriculture, University of Botswana P/B 0027, Gaborone, Botswana.
E-mail: abusesay@yahoo.com .

Accepted 14 January, 2009

## Abstract

To evaluate the response of bambara groundnut seeds to flooding stress a laboratory study (experiment 1) and a greenhouse study (experiment 2) were conducted. In the laboratory study seeds of a brown-coloured local bambara groundnut landrace were completely immersed in distilled water (pre-sowing soaking) for 2, 4, 6 and 8 d in an incubator at 20, 25, 30 and 35°C. In the greenhouse study flooding stress was imposed on seeds of the uniswa red landrace at 1, 3, 5 or 7 d after start of imbibition. In experiment 1 pre-sowing soaking enhanced germination rate, but final germination percentage decreased drastically as the duration of soaking increased beyond 2 days. There was a significant flooding duration x temperature interaction on final germination percentage. The germination ability of bambara groundnut seeds was reduced by 60 and 80% when seeds were soaked for 6 days at 20 and 30°C, respectively, and a complete loss in germination occurred when seeds were soaked for 6 days at 35°C, and for 8 days at all temperatures used in the study. However, seeds germinated well (68%) even after 6 days of soaking at 25°C. In experiment 2,

- African Journal of Pure & Applied Chemistry
- African Journal of Food Science
- African Journal of Biotechnology
- African Journal of Pharmacy & Pharmacology
- African Journal of Plant Science
- Journal of Medicinal Plant Research
- International Journal of Physical Sciences
- Scientific Research and Essays



flooding bambara groundnut seed for 1 or 12 h at 1, 3, 5 or 7 days after start of imbibition did not reduce germination percentage significantly. However, flooding at any time for 24 or 48 h significantly reduced germination percentage, compared with non-flooded seed. These results suggest that, at least for the two landraces used in this experiment, short-term flooding of fields during the germination phase of bambara groundnut is detrimental to germination and uniform emergence, but that the response is influenced by the duration of flooding, temperature, germination stage and the interaction between flooding duration and temperature.



**Key words:** Bambara groundnut, *Vigna subterranea*, seed flooding tolerance, pre-sowing hydration, germination.


---