EFFECT OF MANAGEMENT PRACTICES, MATURITY STAGES, DRYING, PACKAGING AND STORAGE CONDITIONS ON SEED QUALITY OF SPIDERPLANT (*Cleome gynandra* L.)

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ABSTRACT

Spiderplant *(Cleome gynandra* L.*)* is gaining popularity among small-scale farmers in Kenya. The major challenge facing farmers is the production of high quality seed. The production practices, handling and storage of spiderplant seeds could be contributing to the poor quality of seeds planted by farmers.

The aim of this study was to investigate the effects of seed maturity stages, packaging and storage conditions and varying management practices on the seed quality of spiderplant with a view to finding out the optimal method of production, handling and storing of these seeds. The degree to which seeds of spiderplant could be dried was also researched, so as to determine the critical moisture content for long-term storage of spiderplant seeds.

To achieve the above objectives, three experiments were conducted. In the first experiment, the effect of nipping of flowers when 70% of plants had flowered was compared to the control (no intervention). Seeds were harvested at three developmental stages: yellow pods - 55 days after tagging (DAT); yellow-green pods - 45 DAT; green pods -15 DAT. For each maturity stage, viability and vigour tests were carried out. Spiderplant seeds obtained from the two management practices did not differ significantly ($P>0.05$) in quality. Seeds obtained from yellow pods gave the highest quality. According to the findings of this study it is recommended that in the production of spiderplant seed, farmers should nip the first flower heads and harvest at yellow pod maturity stage.

The second experiment determined the critical moisture content of spiderplant seeds. Seeds harvested at the three maturity stages as in experiment one were dried above silica gel to 20, 10, 5 and 2% moisture contents. The study showed that seeds from green pods were desiccation intolerant and germination decreased with moisture content reduction. Seeds from yellow-green pods were intermediate and had similar trend as seeds from yellow pods. The fresh seeds from yellow pods with 27.1% moisture content

had 6.5% germination and when moisture content was reduced to 5%, germination percentage increased to 14.5% but reduced to 14% at 2% moisture content. Hence, according to the findings of this study, the critical or lowest safe moisture content for spiderplant seeds could be between 5% and 2%.

The third experiment investigated the best combination of storage conditions for storing spiderplant seeds. Seeds dried above silica gel to four target moisture levels: 20,10, 5 and 2% moisture content were sealed in aluminum foil and polythene packets and stored at three storage temperatures: ambient, 5°C and –20°C for three and six months. After each storage period, seed samples were drawn and viability and vigour tests carried out. In this study, a germination of 85% was recorded for seed stored at room temperatures and 5% moisture content. Seed stored for six months at 5% moisture content and –20°C recorded the highest seed quality. There were no significant differences ($P>0.05$) in quality between seeds packaged in foil and polythene. Therefore on the basis of these findings, farmers can dry their seeds at about 5% moisture content, package them in polythene (since readily available) and store at room temperatures for six or more months.