

Full Length Research Paper

## Observations on *in vitro* behaviour of the zygotic axes of fluted pumpkin

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Fluted pumpkin, *Telfairia occidentalis* Hook. f., is an important leaf and seed vegetable and a local medicinal plant across West Africa. Many biological constraints have become potent threats to the existence of the plant necessitating an urgent need to collect and conserve the existing narrow genetic diversity. However, conservation by seed storage is impossible because the seed is recalcitrant, that is desiccation- and chilling-sensitive. Micropropagation is the only immediate alternative option for the conservation of fluted pumpkin germplasm. In order to facilitate this, the behaviour of excised embryonic axes and shoot tips of fluted pumpkin under *in vitro* conditions were investigated. Systemic infection of seeds from field led to frequent and high microbial contamination in culture. There was interaction between the type of microbial contamination and the storage environment of seeds prior to excision of the axes. Axes greened under low light intensity and root growth was dependent on the orientation of the axes. In general, zygotic axes of the plant are easy to grow *in vitro* under a range of nutrient media and culture conditions.

**Key words:** Fluted pumpkin, embryonic axes, greening, microbial contamination.

### INTRODUCTION

*Telfairia occidentalis* Hook. f. (fluted pumpkin) is a leaf and seed vegetable that is well-known for its high nutritional, medicinal and economic potentials in the coastal areas of West Africa. The succulent, tasty leaves and stems, and nutritious seeds make it the most popular vegetable to millions of people, ranking as one of the three most widely eaten vegetables at homes and in restaurants across Nigeria (Abiose, 1999). Young shoots and leaves of fluted pumpkin are cooked, alone or in mixtures with other vegetables, and used as soups for different kind of starchy dough. Fresh leaf concoction is a high-value health tonic for the treatment of acute anaemia (Akoroda, 1990a; Schippers, 2000). Immature seeds, eaten cooked or roasted, are preferred to mature ones because anti-nutrients increase with maturity (Akwawo et al., 2000). Seed cotyledons are also processed

into seasonings, high-protein cake, marmalade, infant weaning foods, flour bread supplement and different local fermented foods (Egbekun et al., 1998; Giami and Isichei 1999; Steinkraus 2002; Giami et al., 2003). Seeds are believed to have lactation-promoting properties and are in high demand by nursing mothers (Schippers, 2000). Mature seeds are a good source of edible unsaturated oil (Esuoso et al., 2000, Giami et al., 1999; Nkang et al., 2003). Roots have high alkaloid content and their extracts are therefore used for controlling pest and rodents (Akubue, 1980; Ajibesin et al., 2002). Therefore, the plant is the major income earner for many subsistence families and features prominently in trans-border trade especially among Nigeria, Cameroon and Benin Republic.

Non-availability of seed for planting is a major constraint to the growing and widespread interest in the mono-cropping and large scale production for the economic parts (Odiaka and Schippers, 2004). Fluted pumpkin can be propagated only by seeds, but seeds germinate and rot inside the fruits even before harvesting and they cannot be stored for long periods because they

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