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Yams (*Dioscorea* spp), are one of the most important staple crops in West Africa. They belong to the family *Dioscoreaceae*, which produce economically important tubers and bulbils. They are vegetatively propagated by small whole tubers or pieces (>200 g) of tubers. Yam (*Dioscorea* spp.) originated from Africa and Asia and later spread to other parts of the world. There are many cultivars of yam, though only six are important as staple foods in the tropics. The economically important species grown are *Dioscorea rotundata* (white yam), *Dioscorea alata* (water yam), *Dioscorea bulbifera* (aerial yam), *Dioscorea esculenta* (Chinese yam) and *Dioscorea dumetorum* (trifoliate yam).

Yam is very important in West Africa where approximately 60 million people individually obtain huge calories of energy of about 800 KJ per day; and especially in Nigeria where it is massively grown and serves as an indigenous source of food among the people. Most of the world's annual production of the crop, running into over 27 million tons comes from Nigeria; hence, sustainable production and utilization of the crop are important steps in enhancing food security and alleviating poverty particularly in West Africa.

The tuber (edible part of yam) serves as the conventional propagules of the crop. Thus, about 30% of the previous harvest is normally utilized to raise a new crop during a new planting season. In this regard, some marketable tubers must be reserved for planting making the cost of planting material to be more than 33% of the total outlay for yam production, hence, the need to improve the rate of yam multiplication. Yam propagation also faces difficulties that arise from poor sprouting and sensitivity to moisture stress in the soil despite the advancements in the yam mini sett technology, a condition that has placed the crop under threat in many traditional areas of production.

For the distribution of high quality and improved varieties of yam, techniques of rapid multiplication and devoid of contaminants are desirable. Propagation using vine cuttings is one of such techniques with the following proven merits. First, it excludes transfer of nematodes to seed tubers. Second, it reduces usage of tubers for seed production and third,

it produces whole mini tubers which promise high sprouting rate and uniformity compared with mini-setts. Media like carbonized rice husk have produced mini tubers of *Dioscorea alata* of up to 3 g in weight by vine cuttings with about 63% of mini tubers sprouting after 77 to 105 days of storage. Shiwachi *et al* in 2005 and Kikuno *et al.* in 2006 have achieved greater success in seed tuber production through vine cuttings. Root development by vine cuttings of yam has been successful but growth and tuber production were limited. Stimulation of development of small tubers and significant enhancements of number of roots has been achieved via the treatment of vines of

Dioscorea rotundata in indole butyric acid (IBA). This approach is very expensive due to the high cost and scarcity of hormones to farmers. Hence, methods for successful rooting of yam vines without the use of synthesized auxins are required to enhance adoption of vine cutting techniques by farmers in the developing countries. Matsunmoto *et al.* in 2013 reported that in vine cuttings of *Dioscorea alata*, rooting rate decreased by the increase in age of the mother plant. Up to 3 months old plants showed more than approximately 80% of rooting rate of vine cuttings while 4 and 5 months aged plants showed less than 80% of rooting rate. There is a possibility of vine cutting techniques in yam using natural materials which can be adopted by farmers. About 5% of rice straw ash enhanced rooting rate, number of roots and tuber formation from vine cuttings of yam.

The objective of this research, which was to evaluate the potential of mini tuber production, through vine cutting propagation techniques on three local varieties of white yam (*Dioscorea rotundata* Poir.) and one variety of water yam in various propagation media, has already been carried out by the authors.

References

Gbadamosi, A.E., Ajayi, A.T. and Osekita, O.S. Vine Cutting Propagation in Four Varieties of Yam (*Dioscorea* Spp) Using Different Planting Media. *Ife Journal of Science* vol. 21, no. 2 (2019) <https://dx.doi.org/10.4314/ijss.v21i2.17>

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