An Effort to Develop System of Sweet Potato Cutting Multiplication in Timor Leste

Asep Setiawan, Simão M. Belo, Fernando Soares, Paulo Soares, Luis Siki

Seeds of Life, Ministry of Agriculture and Fisheries, Republic Democratic of Timor Leste

Introduction

Healthy cutting is an important factor to achieve good production of sweet potato. Virus disease is the most common problem that could lead to reduction of total sweet potato yield up to 35 % (Gutierrez, et al., 2003) even more.

Transmission of the viral disease occurs through the plant's sap. Contaminated equipment and insects become the main medium for the spread of the diseases caused by the virus. Two major vector of sweet potato virus are White fly and Aphids . SPFMV viral disease is transmitted by Aphids while SPCSV viral disease is transmitted by Whitefly. Combination of SPFMV and SPCSV causing SPVD viral disease that could affect severe yield losses. (Gutierrez, et al., 2003)

The use of mother plants which have been identified as pathogen tested sweet potato followed by careful propagation under a screen house screen is a key technique in the multiplication of pathogen tested sweet potato cutting.

System of Sweetpotato Cutting Multiplication

The order of sweet potato seed class are Generation 0 (G0), Generation 1 (G1), Generation 2 (G2), Generation 3 (G3), and Generation (4).

Theoretically, the higher the grade the better is their seed health level. G0 and G1 seeds should be 100% pathogen-free, G2 seed should has minimum of 90% pathogen free, and G3 and G4 seed should have minimum of 80% pathogen free.

The G2 plants should be grown under a screen house that is free from pests and disease. Screen house to prevent virus vector such as aphids and whitefly has been established at Loes Research station in 2015 (Fig 1). Furthermore G2 plants will be propagated further in the field to produce G3 cuttings (Fig 2.)

Cutting of G3 is harvested from cutting multiplication plot of Loes research station. Plant cultivation is performed optimally in order to grow healthy plants. If necessary, the use of pesticides to suppress the virus vector can be implemented.

In order to control and maintain high level of seed health condition, production of G3 is generally also carried out in a research station.

G4 seed production is done in the farmer field at center of cutting propagation (Fig 4). Seed production of G4 should be supervised by seed officer. Supervision is done primarily to ensure that the crops produced are true to type, and relatively free of pest and disease. Plant rotation is needed in production of G4 cutting, it is not recommended to produce G4 in consecutive time in the same location (The field should be fallow or previously planted by crop other than *convolvulace* family).

Sweet potato farmer should renew their cutting if there is an indication of declining in storage root production or the crop visually looks unhealthy. It is recommended to renew the cutting after 3 – 5 growing cycle.

Flow of Stem Cutting Distribution

Figure 1. Screen house to prevent virus vector and other insects at Loes research Station

Figure 2. Multiplication plot at Loes Research Center

Figure 3. Cutting is Ready for Distribution

Figure 4. Farmer's field plot

Distributed Source Cutting

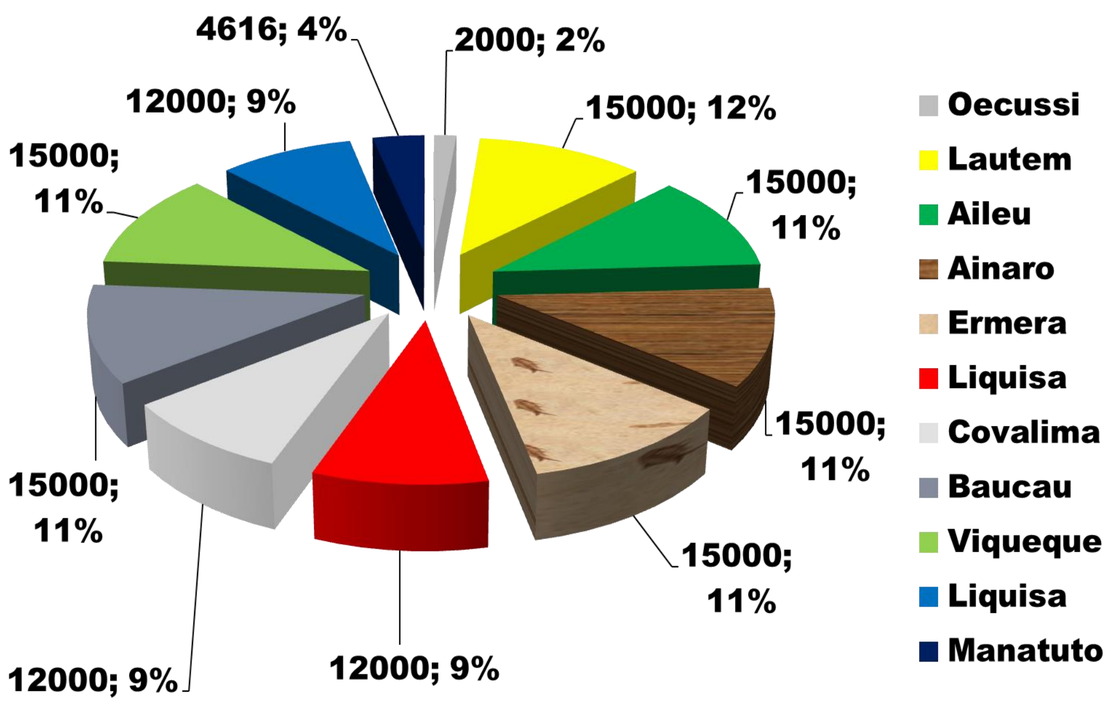

Figure 5. Distributed Source Cutting of Sweetpotato for Further Multiplication at Municipal level in 2014/2015 season

Reference: D.L. Gutierrez, S. Fuentes, and L.F. Salazar, 2003. Sweetpotato Viral Disease (SPVD): Distribution, Incident and Effect on Sweetotato Yield in Peru. Plant Disease Vol 87 No. 3: 297 - 302 .

Acknowledgment

Australian Government
Australian Centre for International Agricultural Research
THE UNIVERSITY OF WESTERN AUSTRALIA
Seeds of Life
Fini ba Moris
Australian Aid