

Seed Physiological Changes matoa (*Pometia pinnata*) during Storage

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Abstract—Seed matoa classified into families Sapindaceae, Proper storage process in maintaining seed viability matoa undiscovered. During the process of the seed storage undergo metabolic processes that may affect the viability of the seed after the storage process. The purpose of this study to determine the germination of seeds matoa before and after storage. The study was designed in the form of completely randomized design. Based on the test results showed that matoa seed viability decreased after storage. Matoa seed viability decline in line with the decrease in seed moisture content after it is saved.

Keywords— Power sprouts, seeds, Storage, Matoa.

I. PRELIMINARY

Matoa (*Pometia pinnata*) is a typical plant Papua, belonging to the family Sapindaceae. Matoa trees can grow tall and have a hard enough wood. Fruit flavor is a mixture of rambutan, durian and longan. Matoa a tree which has a height of 40-50 meters. This plant will be higher if planted in the open. Matoa has a distinctive flavor based on the Ministry of Agriculture Decree No. 160 / Kpts / SR.120 / 3/2006, matoa Papua has been designated as superior fruit varieties that should be cultivated. Matoa can be propagated through seeds, cuttings and tissue culture. Matoa seeds are recalcitrant and do not have a period of dormancy. Matoa fresh seeds must be germinated. Matoa germination capacity will decrease after three days. During the open storage matoa seeds undergo natural drying, which is one characteristic of recalcitrant seeds, the seeds that require storage with high moisture and humidity so that the seed remains moist and the enzymes are still active. However, the proper technique to extend the shelf life matoa seed has not been found. Effira (2017) states that, matoa seed can only be stored in two days on medium ash, after three days the seeds will germinate during the storage. But at the media store sawdust and rice husk seed matoa death after being stored for six weeks.

Setbacks seed is a harmful process that occurs in seeds that can reduce the ability to store seed and can cause death in seeds (Byrd, 1983; Justice and Bass, 2002).

Setbacks seeds can be caused by internal and external factors. The size, composition of seed coating and seed composition are factors affecting seed damage (Justice and Bass, 2002). The process of harvesting, post-harvest and storage of seeds can lead to deterioration of the seed (Mahjabin et al., 2015).

The purpose of this study to determine the effect of the storage process matoa seed germination.

II. RESEARCH METHODS

The study was conducted in May 2018 at the Laboratory of Seed Science and Technology, Faculty of Agriculture, University of Andalas. Matoa seed used was taken from the Bridge tabaka, Kenagarian Pianggu, District 9 koto Sungai Lasi, Solok District. The seed used was taken from matoa ripe fruit on one tree physiological parent. Criteria taken fruit is a fruit that is round or oval with a length of 5-6 cm, and yellowish green fruit. The seeds extracted and stored in medium ash.

Testing the viability of seeds that have been saved conducted on soil mixed sand media. Testing seed moisture content using the oven method. Testing germination and moisture content of the seeds is done before the seeds are stored until the last day of storage. The experimental design used is RAL factorial. Data were analyzed by analysis of variance.

III. RESULTS AND DISCUSSION

Seed Water Content

Water content matoa seed during storage has decreased, decreased seed moisture content during storage could affect the viability of seeds. Factors affecting seed viability after storage is a decrease in seed moisture content (Sukesh and Chandrashekar, 2013). Recalcitrant seeds setback caused by factors decrease seed moisture content (Tresniawati et al., 2014).

Water content matoa seed before it is saved by 37.11% and after the seed is stored for four days the water content of the seed becomes 29.95%. Several enzymes active in the reform process of food reserves (protein, fat and carbohydrate) are affected by the high water content of the seeds. High seed moisture content can stimulate the

decomposition process of respiration through food reserves into simpler compounds (Sukarman and Rusmin, 2000).

Matoa seed germination decreases with decreasing water content of seeds. Matoa not saved seed has a high water content and have the seed germination of 100%, but at the end of germination of seed storage becomes 86.67% with a water content of 29.95% after

storage. Roberts, 1973 stating that recalcitrant seeds are easily damaged (decreased viability) if the water level is lowered and less able to survive at high temperatures and low humidity. Conditions were very redah water levels or close to critical, damage symptoms would appear that diikiuti seed with a decrease in germination after storage (Justice and Bass, 2002).

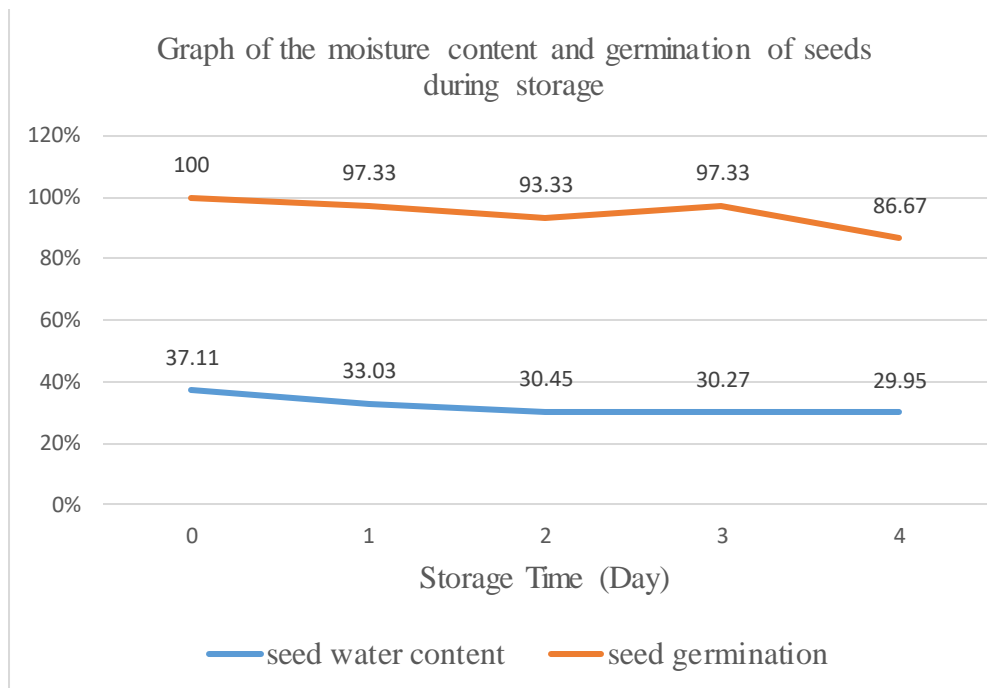


Fig.1: Graph Moisture and Seed germination during storage Matoa

Germination

Testing can determine germination seed quality after a storage process. Matoa seed germination before and after storage for one to four days can be seen in (Figure 1). Free germinated seed planted directly (without storage) is higher than the seeds that have been through the storage process. This indicates that the storage conditions of seed germination lasts without perfect as an indicator of seed vigor is still good. Seed vigor reflected by the two information about the viability of that is the growing strength and storability of seed. Both of these physiological value of placing the seeds in the possibility of its ability to grow into a normal crop production despite the biophysical field suboptimum or conditions beyond the seed after a long storage period (Maemunah and Adelina, 2009). Free germinate slowing with reduced germination and the length of storage time caused by food reserves in the seed of diminishing (Nurhasybi et al., 2007; Maemunah and Adelina, 2009; Solomon et al., 2010) including the water content of the material of the metabolic processes ,

Sadjad (1999) stated that the seed deterioration caused by moisture reduction physiologically indicated by the change in color of seeds, germination delays,

declining growth and rising germinated sprouts abnormal growth. Matoa seed that germinated after three days of storage germination delayed for a day and a decline in the growth of germination. Matoa seed cotyledons not kept lifted to the surface soil after 9 days of planting. Matoa seed germination who have gone through the process of storing not significantly different from matoa seeds that are not stored, but delayed germination and germination power does not reach 100%.

IV. CONCLUSION

Matoa seed germination decreased after the storage process. Matoa not saved seed has a germination of 100%, and seeds that have been stored for four days has amounted to 86.67% germination. Matoa seed germination decline in line with the decrease in seed moisture content during storage.

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