

Seed quality and longevity during storage of four *Jatropha curcas* L. accessions found in
Sarawak

Geffry Ujie Anak Joshua

ABSTRACT

Seeds of *Jatropha curcas* L. collected from four accessions from Bintulu, Miri, Samarahan and Sri Aman were studied to determine moisture content, germination, viability and other related properties (seedling morphogenesis and seed oil content). Outcomes of this research were crucial for developing and innovating the suitability of seed storage methodology in retaining quality for future precedent. This study emphasized the effects of desiccation and storage of seed from three different level of fruit maturity. In addition, an environmental influence on the mother tree was also studied to determine the relatedness yield of seed oil content by ecological features and soil property. This study revealed that the maturity indexes was significant ($p = 0.009$) to determine the quality of the fresh seed. However, at post-storage the outcome was vice-versa ($p = 0.055$) due to seed aging. The best criterion to determine seed quality at post-storage was by accession where it showed a significant outcome of $p < 0.001$ compared to fresh seed ($p = 0.051$). Desiccation period of 96 hours reduced seed moisture content up to 70% for 60 days of storage was optimal in minimizing the risk of deterioration caused by fungi and seed biochemical reaction, as well as retained seed viability. Dry microclimate and ample content of phosphorus, magnesium, sulfur, copper and zinc elements available in soil were believed as a factor for which contributed to high oil yield in *J. curcas* seed.

Key words: *Jatropha curcas*, accession, desiccation, storage, maturity indexes.

Kualiti dan jangka hayat semasa penyimpan biji benih *Jatropha curcas* L. dari empat aksesori yang ditemui di Sarawak

Geffry Ujie Anak Joshua

ABSTRAK

Biji benih *Jatropha curcas* L. dari empat aksesori iaitu Bintulu, Miri, Samarahan dan Sri Aman telah dikaji untuk mengenalpasti kandungan kelembapan, percambahan, kebolehidupan dan lain-lain sifat berkaitan (morfogenesis anak benih dan kandungan minyak biji). Hasil kajian ini sangat penting untuk rujukan masa depan demi pembangunan dan inovasi kesesuaian kaedah penyimpanan biji benih dalam mengekalkan kualiti. Kajian ini memfokuskan kesan pengeringan dan penyimpanan ke atas biji benih dari tiga tahap kematangan buah. Pengaruh persekitaran ke atas pokok ibu turut dikaji untuk mengenalpasti perkaitan kandungan minyak biji yang terhasil dengan ciri-ciri ekologi dan sifat tanah. Hasil kajian menunjukkan bahawa indeks kematangan adalah signifikan ($p = 0.009$) dalam penentuan kualiti biji benih segar. Namun, di peringkat selepas penyimpanan hasil kajian adalah sebaliknya ($p = 0.055$) disebabkan proses penuaan biji. Aksesori merupakan kriteria yang paling sesuai digunakan untuk menentukan kualiti biji benih selepas penyimpanan kerana hasil yang signifikan iaitu $p < 0.001$ berbanding biji benih segar ($p = 0.051$). Pengeringan selama 96 jam mengurangkan kandungan kelembapan biji benih sehingga 70% untuk 60 hari penyimpanan adalah optimum dalam meminimalkan risiko kerosakan disebabkan oleh kulat dan tindakbalas biokimia, serta memelihara kebolehidupan biji benih. Iklim mikro yang kering dan kandungan elemen fosforus, magnesium, sulphur, kuprum dan zink yang mencukupi tersedia di dalam tanah merupakan faktor penyumbang penghasilan minyak tinggi di dalam biji *J. curcas*.

Kata kunci: *Jatropha curcas*, aksesori, pengeringan, penyimpanan, indeks kematangan.