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Theoretical Study on the Storage of Coconut Seeds with Fungi at Different Relative Humidities

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ABSTRACT: The present work attempts to study the storage of coconut seeds from fungi at different relative humidities during its storage. In our work both husked and dehusked coconut seeds were stored at 10^0C and 30^0C for three months. The husked seeds stored at 10^0C and 30^0C and dehusked seed at 10^0C showed no evidence of spoilage at the end of three months storage period. However the seeds stored at 30^0C showed deterioration . Aspergillus flavus and Aspergillus niger were the principal fungal agents associated with the spoilage. An investigation of the proximate composition component under consideration stored at 30^0C indicated some remarkable and significant results. The results and tests confirmed the ability of the isolated spoilage fungal 10 utilizes the different carbohydrate and nitrogen sources as sources of carbon andenergy. Aspergillus flavus showed the ability to grow and utilize more of the various carbohydrate sources than Aspergilus niger. Both fungi showed evidence of growth and complete utilization of nearly all the nitrogen sources except cystenine, and L. Glutamine which could not support the growth Aspergillus higer. Likewise Cistine niger in additional to D-B phenylalanine could not.These results tests confirmed the ability of the isolated spoilage fungal 10 utilizes the different carbohydrate and nitrogen sources as sources of carbon andenergy. Aspergillus flavus showed the ability to grow and utilize more of various carbohydrate sources than Aspergilus niger. Both fungi showed evidence of growth.

Key Points: Seeds, Aspergillus , Cistine niger ,Nitrogen sources, Isolation ,Relative humidity.

I. INTRODUCTION:

The coconut is a crop with a large potential for varied use. It is considered to be the most important and useful among the tropical palm. Almost all the parts of coconut are useful both for domestic and Industrial purposes. Though India produces more than 15 billion nuts perannum. The post harvest processing is presently confined to the production edible and milling quality of copra, coconut oil,coir and coir based products. The grouth of product development and by product utilization is considerably lower in comparison with other countries like Indonesia, Thialand and Phllippines.Coconut cultivation continues to be the main livelihood option as well as food and nutritionalsecurity to a large numbers of farmer families. The technology mission on coconut was launched in 2001 with the objective of making coconut cultivation and industry globally competitive. It addresses various issues in production, processing and marketing of coconut in a strategic manner coconut is essentially a crop of small and marginal farmers.It sustains the livelihood security of the dependent families in states where the cultivation is concentrated. The four southern states of Kerala, Karnataka, Tamil Nadu and Andra pradesh together account for more than 90% of the total area and production in the country. Coconut is one of the major and richest sources of vegetable oil which find application both for edible and inedible uses.This crop also supplies raw material for a number of important industries such as coir manufacture,copra processing, oil milling etc.

The implementation of this mission by the Board has helped solve production constructs to a great extent and has led to development of many technologies for product diversification and by product utilization and their commercial adaptation. Coconut can tolerate and grow in saline soil. A humid atmosphere and moderate temperature are conducive for coconut cultivation. Economic life of the coconut trees usually ranges between 50-60 years.

II. METHODOLOGY & OBSERVATION:

The sample under study were procured from local market. All samples were divided into three groups of equal number of samples for their case studies prior to storage. All samples were studied At

different temperatures. For the microbial assessment of the samples, Czapek dox agar containing 50 mg/ml streptomycin was used for the isolation of fungi from spoilt fruits. A section of spoilt fruit was picked aseptically with sterile inoculating needle and transferred onto the surface of Czapek dox agar plates and incubated at (28+_ 2)^{0}C for seven days the defined fungal colonies emerged.

The storage of coconut at varying RH hardly imparts change in the colour, texture is not altered.

There was gradual loss in dry wt, protein and starch content on storage at varying relative humidities, total free sugar and total free amino acid increased in similar condition.

The activity of amylase and protease increased with increased relative humidity level of storage.

When storage of coconut is accompanied by storage fungi coupled with relatively high RH,the Physico-chemical changes are many fold magnified.

All these changes are exaggerated with increase in the RH level of storage and prolongation of storage period.

III. RESULTS AND CONCLUSION:

High relative humidity level of storage raises the equivalent moisture of seeds.The growth of the storage fungi has been found to be proportional to the moisture level of the seed .After analysis moulds isolates were identified as Aspergillus niger and Aspergillus flavus using morphological and colonial characteristics described by Barrett and Check.The storage decreases the ascorbic acid content of the samples and concentrated the quantity of other nutrients that are not affected by moisture loss, which may include the fat content(Fox and Cameron). An investigation of the proximate composition of the sample stored at 30^{0}C indicated a marked significant difference in the percentage composition of moisture, protein, ascorbic acid and carbohydrate content of 3.97±0.28, 3.98±0.07, 0.01±.002 and 9.27±1.02 respectively as against 46.82±0.43, 37±0.5, 2.48±0.15 and 11.89±0.22 obtained at 10^{0}C prior storage.The current study establishes that storage of coconut at 10^{0}C guarantees longer shell-life as well as enhances its nutritional values.

REFERENCS:

[1]. Kuku Fo, and M.O. Adenjii (1976) : The effect of moulds on quality of Nigerian palm Karnal– Biodeterioration 37-41

[2]. KuKu F.O. and J.A. Broad sent (1979) : Studies on mould deterioration of palm fruits andpre-storage palm karnels- Tech res. 49-53

[3]. Baensch W. Yalegama C and Jaya sundera (2004) : New technology of coconut processing part-III

[4]. Balawan DD and chapman KR (2006) : Virgin coconut oil production manual for micro and village scale FAO regional office Thailand.

[5]. Fife B. (2004) : The coconut oil miracle Piccadilly books Ltd. U.S.A.

[6]. Bain.D.C.(1950),Fungi recovered from seeds of sorghum vulgare Pes, Phyto pathology,40:521-522

[7]. Christensen,C.M.(1965),Deterioration of stored grains by fungi, Ann.Rev, Phytopath,3:69-74.

[8]. 08.Hagenmair,R.,1977-Coconut Aqueous Processing ,University of San Carios Press,Cebu City,The Phillipines.