

MINI SEMI-AUTOMATIC SHELLING MACHINE: A POSSIBILITY FOR CASHEW SHELLING

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ABSTRACT

This work aims to help cashew nut producers in the act of de-nutting the nut. This process is done completely manually by the workers. Faced with this problem, we decided to create a prototype capable of speeding up this method that takes place in a slow and difficult way, bringing to the worker little production and physical wear, caused by poor posture and continuous movements.

Keywords: Cashew, Processing, Production

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MINI DESCASTANHADEIRA SEMI – AUTOMÁTICA : UMA POSSIBILIDADE PARA O DESCASTANHAMENTO DO CAJU

RESUMO

Este trabalho tem como objetivo ajudar os produtores de castanha de caju no ato de descastanhar a castanha. Processo esse que é feito de forma totalmente manual pelos trabalhadores. Diante desta problemática decidimos criar um protótipo capaz agilizar esse método que acontece de forma lenta e dificultosa trazendo para o trabalhador pouca produção e desgaste físico, causado pela má postura e a realização de movimentos contínuos.

Palavras-chaves: Caju, Beneficiamento, Produção.

INTRODUCTION

Chestnut production in Northeast Brazil, especially in the state of Ceará, which stands out among the main producers, represents an important social and economic activity (PAIVA et al., 2000). The harvest period takes place from September to December, bringing a source of work and income for the farmers involved in the process. The entire harvesting system is done manually by several peasant families, who are involved in the work of “picking the cashew”, work done under a scorching sun and in a long working day.

After harvesting, the cashew is stored under trees, close to the producers' residence, where the nut processing process begins, by separating the nut from the peduncle, which generally may require more time as it is a manual separation, which causes the reduction in income and, consequently, in profit. For example: an average worker manages to remove 90 kg of chestnuts per day, earning an average of R\$ 18 reais, or 0.20 cents per kg of chestnuts removed (local data from the municipality of Ocara-Ceará).

According to Paiva et al. (2000), in recent years there has been a growing concern with the development of new technologies that incorporate the optimization of nut processing, since its cost represents 60% of the production cost, it also helps to keep the man in the field, mainly with alternative employment employed in small-scale processing, which provides an increase in cashew producer's income and job offer for rural workers. Faced with this problem, the project of the mini semi-automatic de-shelling machine represents an important tool to leverage one of the main stages of its processing.

MAIN GOAL:

The present work aims to use the knowledge obtained in the classroom, lectures and debates aimed at improving coexistence in the semi-arid region, in the construction of a low-cost prototype capable of de-browning the chestnut, aiming to increase the production of small rural workers.

Specific objectives

- Decrease the time spent by farmers in processing cashew nuts.
- Increase the production and income of the subjects involved in the work.
- Improve the quality of the processed product (Chestnut).
- Decrease the effects caused by bad posture.

METHODOLOGY

The research project is being developed at E.E.M. Francisca Pinto dos Santos, which is located in the city of Ocara-Ce. For the construction of the first prototype, recyclable materials were used, such as umbrella springs, wood from an old window, pieces of iron from an old car and an old motorcycle handle, which would give greater support to anyone using the machine.

After some time, the project underwent an update where the prototype was moved by an old washing machine motor, one of the biggest difficulties was to adapt the motor to reduce the speed and increase the force of the cutting blade, in this new prototype we had an allowance for a scientific initiation scholarship paid by cnpq, referring to the 3rd place in

the III science fair and scientific exhibitions held by UVA (Vale do Acaraú State University).



PRIMEIRO E SEGUNDO PROTÓTIPO

FONTE: PRÓPRIO AUTOR



ADAPTAÇÃO FEITA NO MOTOR, PARA REDUZIR A VELOCIDADE E AUMENTAR A FORÇA DA LAMINA DE CORTE

FONTE: PRÓPRIO AUTOR

RESULTS

The results collected in this project are quite relative. Starting from greater hygiene for the worker, who will have less contact with the processed product (chestnuts) to greater safety regarding the work performed, because when this procedure happens completely manually, it is observed that some injuries can occur in the hand. of the worker because of some fruits that, after being harvested, spend a longer time stored, making the cashew drier and increasingly stuck in the nut, making it difficult to remove it, which can often cause bruises on the worker's hand.

We also highlight a better posture of the subject who, in the practice of the common process, suffers from bad posture that brings serious damage from pain in the spine to muscle pain that is caused by the performance of continuous movements. With the implementation of this project, we can observe several benefits starting from the correction in posture, reducing the symptoms mentioned above and consequently a greater income for the worker and a greater quality of the product (chestnut). Income due to the agility that the tool allows and quality due to the separation of the fruit (nut) and pseudofruit (cashew)

that in the traditional stage this separation often impairs the quality of the nut because cashew fragments come together that can cause damage its decay.

SOCIAL RELEVANCE OF THE PROPOSAL

Separating cashew nuts is one of several services performed by peasants, work that requires practice, technique and patience. This method has been done completely manually, causing the subjects involved in this work to spend hours "sitting on the floor" performing a sequence of continuous acts, performed in a slow and repetitive way, causing a low production, and consequently, little income. for field workers. Ahead of this reality, E.E.M. FRANCISCA PINTO DOS SANTOS guided and encouraged by their teachers, they decided to think of a prototype that would help the farmers involved in this process. The semi-automatic mini descasting machine has as main objective to speed up this procedure, bringing, among other benefits, a significant increase in productivity.

IMPACT ON THE DISSEMINATION OF KNOWLEDGE AT SCHOOL:

The creation of the project aroused in the participants (STUDENTS, EDUCATORS AND SCHOOL COMMUNITY) an interest in researching the life of peasants, their forms of organization for work and problems faced on a day-to-day basis to carry out their tasks. With this, there was an awakening to new ideas and creations that aim to promote improvements and development in the field of rural work.

FINAL CONSIDERATIONS:

The implementation of the semi-automatic mini descastanhadeira project in cashew processing can represent a tool for social transformation, ensuring greater income for family farming, among other benefits mentioned above. Allowing the man of the field a greater practicality in his agricultural practices.

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