MODIFICATION OF AN EXISTING MUNG BEAN SHELLER

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ACCEPTANCE SHEET

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BIOGRAPHICAL SKETCH

The author, Xaiarlle A. Ventura, was born on the 8th of September 2000 in Tayug, Pangasinan. He is the only son of Mr. Edgardo Ventura and Mrs. Delia Ventura. He was raised together with his three siblings, namely Quizza Ventura, Jejz Ventura, and Voe Ventura. His father's occupation is farming and his mother's occupation is a housewife.

The author finished his elementary education at Canarem Elementary School, Natividad, Pangasinan in the year 2012. He finished his junior high school education at the Tayug National High School, Tayug, Pangasinan and continued his senior high school at the same school and graduated in the year 2018. After graduating, he took up Bachelor of Science in Agricultural and Biosystems Engineering at Central Luzon State University and is still up to this moment. He was a resident of Men's Dorms 6 and 7 from 2018 to 2023.

The author is confident in his ability to complete the course due to the strong inspiration provided by his family. He expresses immense gratitude for his family's unwavering support, sacrifices, and dedication toward his success and future career. Additionally, the author expresses deep gratitude to God, their Creator, for blessing him with wonderful and supportive parents. He is attributing his achievements and the opportunities he has received to the guidance and blessings bestowed upon him by a higher power. The author recognizes the importance of faith and acknowledges the role it has played in shaping their life and educational journey.

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XAIARLLE AGADER VENTURA

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ABSTRACT

VENTURA, XAIARLLE A., Department of Agricultural and Biosystems Engineering, College of Engineering, Central Luzon State University, Science City of Muñoz, Nueva Ecija, Philippines, **FEBRUARY 2024, MODIFICATION OF AN EXISTING MUNG BEAN SHELLER**

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The main goal of the study was to modify and evaluate an existing mung bean sheller for adaptation in the local production and postharvest processing of mung bean in the Science City of Muñoz, Nueva Ecija. The mung bean sheller was considered with the primary goals of assisting the mung bean farmers in saving time and energy during the shelling process, decreasing the labor-intensive tasks during postharvest, minimizing the health hazard due to pods and dust that may bring allergy, and skin irritation, and minimizing postharvest losses. It has the potential to address the pressing labor shortage issue.

The shelling assembly, separation assembly, cleaning assembly, and the power transmission assembly comprised the machine's key components. The feeding hopper is where the mung bean pods are fed. After entering through the hopper, the mung bean pods enter the shelling assembly made of a shelling drum with pegs counter to crush the mung bean pods. Following the shelling process, using an oscillating tray, the mixture of pod, beans, and filth are separated. The cleaning assembly of the machine has a radial blower that effects the separation and removal of unwanted materials. The power transmission unit was composed of a 6.5hp gasoline engine as primemover and combination of belt and pulley.

The mung bean sheller was subjected to different shelling drum speed of 350 rpm, 400 rpm, and 450 rpm, respectively. This was achieved using pulley diameters of 5 inches, 6 inches and 8 inches, respectively. The analysis of the collected data shows that the highest shelling capacity of 127.78 kg/hr from the use of 450 rpm rotation of the shelling drum resulted to the highest shelling efficiency of 92.93%, and highest shelling recovery of 92.57%. The same speed resulted to the comparably lower unshelled loss of 7%, lowest percentage of mechanically damaged bean of 1.63% while maintaining a high purity of 95.44% Though the use of 350 rpm to almost comparable performance, the capacity was significantly lower at 110.03 kg/hr only.

Keywords: Mung Bean Sheller; Shelling Capacity; Shelling Efficiency

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