

Entry No. IRRC-0258

Category	: International Rice Research Conference
Select Theme	: Sustainable and equitable farming systems
Endorsement email	:
Keyword 1	: Mechanization
Keyword 2	: Energy efficiency
Keyword 3	: Sustainable management practices
Title of Entry	: Developing densified products to reduce transportation costs and improve the quality of rice straw feedstocks for cattle feeding
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Select only one type of presentation	: 15 minute oral presentation
Abstract	: Densification of rice straw by compacting and pelletizing is important to reduce the volume of rice straw and to minimize transportation costs. For this investigation, a techno-economic analysis of rice straw densification was conducted by producing highly compressed bales and pellets to be used for animal feed. To analyze the optimal performance of the rice straw compacting and pelletizing processes, the quality of the product was also assessed in terms of uptake and digestibility of the cattle feed, which could be further improved by adding amendments like urea during the compacting process. The compacting technology resulted

in a 400% increase in bale density (from 94 to 390 kg.m⁻³). This could reduce transportation costs by about 60% for a 60-km driving distance using trucks. The net profit that resulted from compacting bales was USD 0.0062 kg⁻¹. Although the pelletizing technology increased the cost of the densified product by 40-50% compared to compacting into bales, it also increased the density to 700%, from 94 to 666 kg.m⁻³. The enriched rice straw pellets contained 12.1% protein, 2.8% lipid, 32.7% raw fiber, and 11.2% ash. In addition, a test of these products for cattle feeding illustrated an increase in its eating desirability for cows. Findings from this study will contribute to reducing feedstock cost and developing densified rice straw products to provide more alternative options for increasing the benefits from rice production and, in the process, reduce the unsustainable burning of rice straw in the field.

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