

# Densification of Rice Straw and Processing Rice Straw Pellets for Cattle Feed

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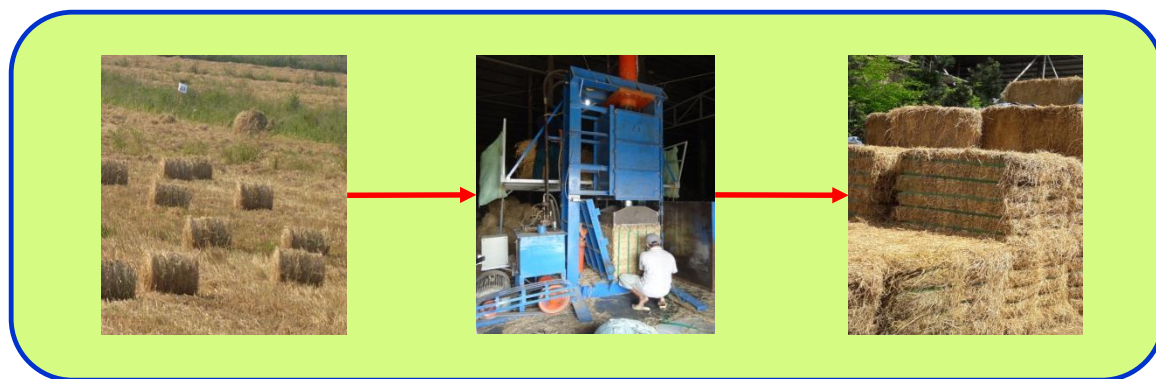
Review and planning meeting Workshop  
28-29 March 2017

*Project: Scalable straw management options for improved livelihoods, sustainability, and low environmental footprint in rice-based production systems*

# Objectives

1. Further densification of straw bales  
=> reduce cost of transportation;
2. Making straw pellets for cattle feed.

## Methodology



# Results

## Densification of straw bales

- ❖ The density of square bale is **398.7 kg/m<sup>3</sup>**. It is much higher compared to that of straw bale of **94 kg/m<sup>3</sup>**.
- ❖ The **saving cost of transportation** is 140 VND/kg (6.2 USD/ton), corresponding to 60%.

## Design and fabrication of straw chopper

- The actual capacity of the chopper is **143.0 kg/h**.
- The length of the chopped straw was from 3 to 8 cm.



# Results

## Processing pellets for cattle feed

- ❖ The density of the straw pellets was 666 kg/m<sup>3</sup>. In addition, average specific weight of a straw pellet was identified at 1 243.7 kg/m<sup>3</sup>.
- ❖ With the cost of rice straw as input material of 2300 VND/kg and production cost of 510 VND/kg, the total cost of straw pellets was 2810 VND/kg consisting of 70% feedstock cost.



# Results

## Nutrient analysis result of straw pellets

Parameters	Treatment		
	No.1	No.2	No.3
Moisture content, %	7.9	6.7	5.9
Protein, %	14.3	11.3	12.1
Lipid, %	3.5	3.1	2.8
Raw fibre, %	27.2	26.6	32.7
Total ash, %	12.1	11.8	11.2

- No.1 = 50% straw + 50% cattle feed
- No.2 = 60% straw + 40% cattle feed
- No.3 = 70% straw + 30% cattle feed



# Implications for 2017-2018

- ❖ Modification of the straw densification system and the straw chopper.
- ❖ Building a business model with a complete equipment processing line:
  - 1) Straw bale => fermentation => packaging with plastic
  - 2) Straw bale => chopping => fermentation  
=> densification => packaging with plastic



# ***THANK YOU!***

## **Acknowledgements**

- ❖ The authors would thank to International Rice Research Institute (IRRI) for generous funding support under IRRI-BMZ rice straw management project.
- ❖ The authors also wish to thank all those who involved in supporting technical assessment and field test of this study.

