

**NUTRITIONAL VALUE OF RICE HUSKS AS AN
ANIMAL FEED**

By

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TABLE OF CONTENTS

Title	Page
ACKNOWLEDGEMENT	iii
TABLE OF CONTENTS	v
LIST OF TABLES	iii
LIST OF ABBREVIATIONS	ix
ABSTRACT	x
ABSTRAK	xi
CHAPTER	
1 INTRODUCTION	1
1.0 World production	1
1.1.1 Production of Rice in Malaysia	2
1.1.2 Husks Utilisation for Animal and Poultry Feeding	3

1.1.3	Current Status of Animal and Poultry Feeding	4
1.1.4	Objective	5
2	LITERATURE REVIEW	7
2.0	Physical and Chemical Characteristic of Rice Husks	8
2.1.1	Physical Properties	9
2.1.2	Chemical Properties	9
2.1.3	Methods of Upgrading Nutritional Value of Vibrous Crop Residues – Chemical, Physical and Biological Treatment	10
2.1.3.1	Physical Treatment	11
2.1.3.2	Soaking and wetting	11
2.1.3.3	Grinding and Palletting	11
2.1.3.4	Steaming under Pressure	11
2.1.4	Chemical Treatment	12
2.1.4.1	Treatment Using Alkali Compound	12
2.1.4.2	Use of NaOH as an alkali treatment	12
2.1.4.3	Wet Treatment	12
2.1.4.4	Dry Treatment	12
2.1.4.5	Ammonia Treatment	13
2.1.5	Biological Treatment	14
2.1.5.1	Mechanism of Lignin Biodegradation	15
2.1.5.2	Lignin Biodegradation to improve straw quality	15
2.1.5.3	Roles of enzymes in lignin biodegradation	16
2.1.5.4	Feed for Ruminants	16
3	MATERIALS AND METHOD	18
3.0	Rice Husks	18
3.1.1	Urea and NaOH	18

ABSTRACT

NUTRITIONAL VALUE OF RICE HUSKS AS AN ANIMAL FEED

Methods for improving the feeding value of crop residues including rice husks by physical, chemical and biological treatment were reviewed. The objectives of this research were to determine the chemical composition and digestibility of rice husks and to identify a method of upgrading its nutritional value. Rice husks were treated with 4% urea or 4% sodium hydroxide solution or fermented by the white-rot fungus, *Pleurotus sajor -caju* for 0, 10 and 25 days. Three nitrogenous supplements, PKC, rice bran, and urea were compared as supplements to the rice-husk substrate. Untreated and chemically treated rice husks as well as the spent waste after fermentation were analysed for total ash, neutral detergent fibre, ash insoluble in neutral detergent solution, in vitro digestibility and cellulase degradability. Data were statistically analysed on a SAS (Statistical Analysis System) package. NaOH-treated husks were significantly lower in NDF and significantly higher in IVD compared to the control. Fermentation by *Pleurotus* increased in vitro digestibility, the highest value obtained with the rice bran supplement after 25 days. Rice husks may have potential as an animal feedstuff but only after chemical or biological pre-treatment.

CHAPTER 1

INTRODUCTION

1.0 World rice production

Global rice production hovered between a high of 484.9 million tons of rough rice in 1988 and 377.3 million tons in 1979. However, rapid growths in human population and increased per capita rice consumption have cancelled most of the real gains. As population increases at a faster rate in the developing countries than in the developed world, the share of rice for meeting future food needs in the developing world will continue to increase.

By the year 2000 rice will be the chief source of energy for about 40% of the world's people, thereby surpassing wheat. With a projected world population of more than 6 billion by the year 2000, 100 million metric tons of grain will be needed to meet the demand.

According to the statistics supplied by the IRRI (1988), the world's paddy rice (*Oryza sativa*) production in 1987 was 470 million MT. Most of this tonnage is produced in Southeast Asia. A major derivative of the rice crop is the husks, a fibrous, non-digestible commodity representing some 20% of the dried paddy on-stalk (Yoshida 1981). Dried paddy on-stalk yield 52% of white rice, 20% hull, 15% stalk, and 10% bran. The remaining 3% are lost in the conversion process. If all the paddy rice available were commercially milled 98 million MT of husks would have been produced in 1987.