INTRODUCTION

About 60% of the human and ruminant populations of Indonesia are in Java and the human population is increasing annually at the rate of 2.34%. The population explosion tends to decrease agricultural land available for crop and grass production while the demand for meat and milk keeps on increasing. Therefore, ruminant production in Java has to rely heavily for feed on agro-industrial by-products and crop residues.

Rice straw is the largest crop residue found in Java being 17 million tons annually (Anonymous, 1982a). However, it has low nutritional value due to the following factors:

1. Being a mature plant residue, it contains a high proportion of cell walls (Jackson, 1977a; Theander and Aman, 1984)

2. Interlinking among cell wall constituents through chemical bonds reduces their availability to rumen microbes. (Keegstra et al., 1973; Hartley, 1973).

3. It has a low nitrogen content (Roxas et al., 1985a; Kshanika Sannasgala and Jayasuriya, 1984; Hart and Wanapat, 1986).

4. It has a low mineral and vitamin content (Theander and Aman, 1984)
Consequently, rice straw alone hardly provides maintenance requirements for ruminants and requires to be treated and supplemented in order to increase its nutritional value. Currently, the treatments that can be used to increase the availability of straw cell walls are either physical, chemical, or biological, used either separately or in combination. These have been thoroughly reviewed by Ibrahim (1983), Walker (1984) and Preston and Leng (1984). However some basic information is still lacking in the literature. Three major deficient areas are recognized. Firstly, there is no information about the nutritive value of different rice straw portions measured in vivo. The main advantage of further study would be to provide an opportunity for selecting those portions with greatest nutritional value as feed. Secondly, knowledge of rice straw chemistry is still slight. Alkali treatments, is thought to increase the availability of straw organic matter through disruption of chemical bonds between cell wall constituents. However, more information will certainly be needed if acids or other chemicals are to be used for treatment. Thirdly, treatment usually does not produce a nutritionally balanced feed and therefore, chemically treated straw should be supplemented with other ingredients in order to support animal production.
The aims of the research described below was (1) to evaluate the nutritive value for cattle of different rice straw portions, (2) to maximize the digestibility coefficient of rice straw through treatments with various combinations of alkalis, acids and white rot fungi under in vitro condition and then to test selected treatment under in vivo conditions, (3) to compare the nutritive value of lime treated rice straw with elephant grass in diets enriched with locally available concentrates such as cassava leaves and onggok.