

## ABSTRAC

**HARUM SITEPU. H4A 002 008.** The Effect of Phosphorous Fertilizer on the Production Levels and Digestibility of Alumunium-Stressed Polyploidated Grasses.

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This study was intended to get some insight about the production responses and digestibility of green feeds, produce from alumunium-stress polyploid and diploid grasses, due to phosphorous fertilizer. The study was conducted in Greenhouse labarotary of Forage Crops Science of Faculty Animal Agriculture, Diponegoro University in the period of February-July 2004.

The materials used in this study were *Brachiaria brizantha*, *Brachiara decumbens* and *Panicum muticum* grasses of polyploid and diploid nature and SP36 fertilizer (36% P<sub>2</sub>O<sub>5</sub>) given at 0, 50, 75, and 100 kg P/ha. Completely Randomized Design with 'split plots' and used in on experiments. The obtained data were analyzed using Analysis of Variance. In order to get some insights about the responses of the grasses to the phosphorous fertilizer, Duncan Multiple Range Test polynomial orthogonal tests were used together with regression equations.

Analysis of variance showed that there were interactions between the types of the grasses and the fertilizer dosages given ( $p < 0,05$ ), affecting the DMD (dry matter digestibility) and the OMD (organic matter digestibility). Duncan's spaced lines tests showed that phosphorous fertilizer given at 100 kg P/ha increased the KCBK, the KCBO and the percentages and the production levels of the dry products. In general the polyploid and diploid grasses showed different responses to the whole parameters.

The conclusions that can be taken from this study were:

1. In term or the dry products, the polyploidy *Panicum muticum* tended to respond high to the phosphorous fertilizer than the diploid type, but the diploid *Brachiaria brizantha* and *Brachiaria decumbens* tended to respond high than the polyploidy types.
2. In term of the DMD , the polyploid *Brachiaria decumbens* and *Panicum muticum* tended to respond high to the phosphorous fertilizer than diploid types, but the reponses of the polyploid *Brachiaria brizantha* was lower than that of the diploid type. In term of the OMD, there was no different in responses between the diploid and the polyploid types of the grasses
3. Phosphorous fertilizer given at 100 kg P/ha produced the highest yield on all of the parameters studied.
4. The polyploidy *Brachiaria brizantha* had better genetic potentials than that of both the *Brachiaria decumbens* and the *Penicum muticum*.

Keyword: product, digestibility, the most excellent grasses, polyploidation, phosphorous, aluminium stressed