The Effect of Natural Bioactivators on Growth and Nutrient Content of Taiwan Grass *(Pennisetum purpureum schumach)* in Marginal Soil

Rahmawati Semaun[*], Juliawati[*], Budiman Nohong[**], Sema[**], Purnama Isti Khaerani[**], Syamsuddin Hasan[**],

[*] Muhammadiyah University of Pare-Pare, South Sulawesi, Indonesia
[**] Animal Science Faculty, Hasanuddin University, South Sulawesi, Indonesia

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Abstract- The aim of this study is to know the effect of natural bioactivator of noni fruit in liquid organic fertilizer in different level. Parameters of this research are fresh content, tiller number, plant height, dry weight, organic matter, water content, crude protein, crude fat, extract material without nitrogen, nitrogen, and ash of Taiwan grass (*Pennisetum purpureum schumach*) with 4 treatments i.e T-1, T-2, T-3 and T-4 and three groups of liquid organic fertilizer level i.e 5 ml; 10 ml; 15 ml and 20 ml. The results showed that the treatment had not significantly affected (P> 0,05) on the production and nutrient content of *Pennisetum purpureum schumach* in range of 5 ml to 20 ml. However, organic liquid fertilizer with the addition of natural bioactivator of noni fruit has better nutrient content than other fruit that is N = 1,84% P_2O_5 = 2,29%, K_2O = 2,5% and pH = 5,04.

Keywords: Bioactivator, Growth, Marginal Soil, Nutrition Content

I. INTRODUCTION

The role of fertilizer in productivity of agricultural land is alternative because fertilizer is important substance (nutrient elements) that must be given to the plant in order to grow and produce as well as other living things. Hasan et al (2016) revealed that plants need to provide maximum biomass production and reduce susceptibility to plant diseases.

On the other hand, development of ruminant livestock industry should be supported by the availability of forage in terms of quality, quantity and continuity throughout all year. Basically, the availability of forage feed comes from the 3rd to 8th land levels soil with poor nutrients and marginal soil (Hasan, 2015). Therefore we need to solve those problems by providing high production with high quality and palatability. One of the appropriate solutions is chemical fertilizer (inorganic) or organic fertilizer. Fertilizers, especially chemical fertilizers, are undoubtedly useful to increase the production/biomass of forage If used continually Goenadi, 2006; Hasan and Natsir, 2012). It was further reported that The use of N-fertilizer leads to soil hardening and glueing effect of urea compounds, As a result recently chemical fertilizer has been changed into organic fertilizer.

There are several ways to utilize liquid organic fertilizer, one of which is using natural bioactivator derived from abundant waste noni fruit, tomato, pineapple and banana, However**,** there is not enough study that provides how far the effects of these waste in forage production. Amlording to Noor (2003), bioactivators are Mixture of compounds that can stimulate bacteria to decompose hydrocarbons. Several studies report that bioactivator from cow urine that is fermented anerobally for 7 days has significantly affected growth and production of elephant grass biomass rather than other fertilizers (Singh and Amberger, 1997).

II. RESEARCH METHODS

A. Material Research

The bioactivator matter in this study were collected by pinapple, noni fruit, tomato and banana waste which is obtained from the waste of Lakessi Market of Pare-Pare the amount of 200 kg/day waste fruit. Each type of the waste is collected separately.