COMPARISON OF THE EFFECTIVENESS OF FERTILIZER PRODUCED FROM TANNERY WASTE WITH SYNTHETIC FERTILIZER FOR PLANT GROWTH

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ABSTRACT

Tanning is a process by which hides are converted into leather. There are huge amount of waste generated during leather processing. Fleshing waste is a major problem which is produced in large quantities that are highest in protein (50.9%) and collagen (3.5%) content (Anim, 2013). Plants draw their nutrients from the soil, so fertile soil is important to their health.Nitrogen is the most important nutrient plant take from the fertilizers. Therefore, animal flesh will be a good source of nitrogen for the plant growth since the flesh contain high amount of Nitrogen. Therefore, this research was carried out to produce fertilizer from tannery waste and to compare the effectiveness of fertilizer produced from tannery waste with synthetic fertilizer for plant growth.Enzymatic and Alkaline hydrolysis were done separately to hydrolyze the flesh. 6% carbide lime, 200% water and 0.4% Erhavit DMC (proteolitic enzyme) were used according to the weight of the flesh for hydrolysis. Same amount of bactericide was added to each mixture. Three replicates were done from each treatment and liquid extracts were collected after 2 days, 4 days, 6 days, 8 days and 10 days. Soluble N % of each sample was analyzed by kjedhal method and best liquid extracts were selected from each treatment as liquid N fertilizer. 06^{th} day liquid extract from alkaline hydrolysis and 10^{th} day liquid extract from enzymatic hydrolysis were selected as best liquid fertilizers. Selected fertilizers were applied to the lettuce plant (*Lactuca sativa*) to check the effectiveness of fertilizer. Four treatments were applied to three replicates including three plants per one replicate. Treatment 1 was urea (Control), treatment 2 was fertilizer from alkaline hydrolysis, treatment 3 was fertilizer from enzymatic hydrolysis and treatment 4 was done without adding N source while adding phosphorous and potassium equally for all plants.At the harvesting of the lettuce number of leaves, height of the plant, leaf area and weight of the plant were measured. Complete Randomized Design (CRD) was conducted and data was analyzed using analysis of variance ANOVA and mean comparison was done by Tukey test. According to the results of the study after applying fertilizer from alkaline hydrolysis overall growth of the lettuce plants was good as control with compare to other treatments. Therefore, fertilizer from alkaline hydrolysis can be considered as a good liquid N fertilizer as urea.

Key words: *Lactuca sativa*, Alkaline hydrolysis, Enzymatic hydrolysis