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AN INVESTIGATION ON THE USE OF DIFFERENT FERTILISERS AT EACH GROWTH STAGE OF THE CROP ON THE YIELD AND QUALITY OF LYCOPERSICON ESCULENTIUM (TOMATO)

BY

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ABSTRACT

Tomato production in Zimbabwe is one of the backbones of horticultural production. The tomato is a healthy vegetable consumed almost by everyone on daily basis and it also sustains the livelihood of most small scale farmers.

The objective of this research was to identify the method of fertilizer application that would result in high yield and good fruit quality. A hybrid determinate variety called Galina from Nitric Seeds was used. It has a life span of 120 days and takes 60 days to maturity with a potential yield of 3-3.5kg/plant which gives a total of 75-90tons/ ha. Two treatments, A and Beach with 40plants were fertilized differently. Treatment A was fertilized with different fertilizers at different growth stages of the crop; Compound S (7:21:8) at planting, Quick start Plus (0:46:10) at initiation, Quick-grow Plus (20:10:20) at flower formation, Best bloom Plus (15:5:35) and Calcium Nitrate (19%Ca) at fruiting stage. Treatment B was applied with Compound S (7:21:8) as basal application at planting as top dressing and Potassium Sulphate (0:0:43:18) when fruits were marble size. The second treatment is what is recommended for farmers by the Zimbabwe Fertilizer Company (ZFC). The other agronomical practices like spraying, weeding and irrigation were the same for both treatments. Parameters of interest were yield in terms of amount of tomato fruits harvested in kilograms and the quality of the fruits which was measured in terms of the shelf life. This was done by observing the number of days it took for the fruits to deteriorate (when the fruit skin became soft and shrunk) after harvesting at room temperature.

A Completely Randomized Design (CRD) was used and they yield data obtained was analyzed using the Genstart Software Version 11.

It was concluded after analysis that since the tomato crop has 3 distinct growth stages; initiation, flowering and fruiting as compared to other crops like brassicas which are vegetative throughout their lifespan, they require a fertilizing programme which would cater for all these stages. This is achieved by way of maximizing the critical element at a particular growth stage. Therefore fertilizing tomato plants with fertilizers with different Nitrogen: Phosphorous: Potassium (NPK) ratios at each growth stage of the crop increases yield by).6kg which converts to an increase of 20,3t/ha.

To investigate the aspect of shelf life, tomatoes from Treatment A and Treatment B after harvesting were stored at room temperature and those of Treatment A deteriorated after 12days and those of B after 11days, therefore there was no significant difference on the shelf life.

After making these conclusions it was recommended that farmers adapt to this method of nutrient application for tomato production. The Zimbabwe Fertilizer Company should also encourage farmers who grow these horticultural crops to use their new fertilizers by having demonstration plots and trial fields for farmers to compare the research findings against what they have been practicing. Also the research must be replicated on different soils can be accommodated. The deterioration of tomatoes should be analyzed during transportation of the tomatoes from the farm to the market.