

**Synergy of NPK Fertilization and Leaf
Defoliation in Dense Population
of Maize (*Zea Mays L.*)
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ABSTRACT

Maize (*Zea mays L.*) is one of food that has an important role for human life. In the maize cultivation, the availability of nutrients in the soil greatly affects to growth and development. Other than that, other cultivation technologies that can be carried out to increase the yield of maize production are by regulating the interception and absorption of solar energy and creating optimal conditions for plants. This can be done by defoliation the leaves. The aimed of research to increase maize production. The research was conducted from october 2019 until january 2020 in the village of Sempolan, Jember Regency. Experiment was arranged in randomized block design (RBD) with two factor. The first factor W (NPK fertilization time) with the second factor P (leaf defoliation time), 9 treatment combinations, and 3 replications. The W factor consists of 3 levels, namely W1 (20 day after planting), W2 (30 day after planting), and W3 (40 day after planting). while the P factor consists of 3 levels namely P1 (25 day after planting), P2 (35 day after planting) and P3 (45 day after planting). Data were analysis using ANOVA and then further tested using 5% DMRT. From the research results, the interaction between NPK fertilization time and leaf defoliation time showed significantly different on the length of the cob with the highest average of 22.13 cm. NPK fertilization time at the age of 20 days after planting showed a very significant difference in plant height with the highest average of 315.26 cm. The NPK fertilization time treatment at the age of 20 days after planting, also showed a significantly different effect on the weight of dry plots, with the highest average dry seeds, which was 3577.22 g/plot. Giving of NPK nutrients at the beginning of the vegetative phase of maize plants can increase the dry weight of maize seeds. This is because the nitrogen (N) nutrients acts as a component of nucleic acids, proteins, bioenzymes, and chlorophyll. The phosphate (P) nutrients as a component of the ATP process in transferring energy and potassium (K) nutrients as as a regulator of the balance of plant cell ions. While the time of defoliation maize leaves showed no significant effect on all observational variables.

Keywords: *Nutrients, Photosynthesis, Leaf defoliation*