



## AGRONOMIC AND PHYSIOLOGICAL RESPONSES OF MAIZE CULTIVARS TO LOW NUTRIENT SUPPLY IN THE FIELD

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**Abstract** - Low soil fertility can constrain the maize (*Zea mays* L.) yield. The objectives of the experiment were (i) to evaluate the agronomic and physiological responses of maize cultivars to low nutrient supply to be able to determine the most sensitive character and (ii) to identify the tolerant and nutrient efficient cultivar under low nutrient supply. The experiment was conducted at Agro Techno Park, South Sumatra. Experimental design was Split Plot with three replications. Nutrient supply was the main plot and cultivar (Lamuru, Sukmaraga, Bisma, Bayu, Srikandi Kuning dan Srikandi Putih) the subplot. The nutrient supply treatments were (i) H1: standard rate of fertilizer and (ii) H2 :low nutrient supply, which is 30% of standard rate. The results showed that each cultivar responded differently to low nutrient supply. Based on all characters of the cultivars evaluated in this study, the most sensitive character was LAI for agronomic character with a tolerance index of 39-89 % and Nitrate Reductase (NR) activity for physiological character with a tolerant index of 39-86 %. This suggests that LAI and NR can be used as selection criteria in maize for nutrient efficient character. Furthermore, Sukmaraga and Lamuru were the most tolerant cultivars to low nutrient supply while Srikandi Putih was the most susceptible one. Sukmaraga had a highest yield (6.23 ton/ha) under low nutrient supply. Therefore Sukmaraga can be considered as nutrient efficient cultivar.

*Keywords: maize, nitrate reductase, nutrient efficiency, nutrient supply*



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