

ABSTRACT

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The objectives of this research were 1) to find out appropriate nutrient formulations and systems in soilless culture; 2) to increase yield and quality of lettuce cv. green oak leaf; and 3) to encourage efficient use of factors of production of such crop. The experiments were conducted at three sites i.e. Maejo University, Nong Hoi Royal Project Development Center, and the Inthanon Royal Project Research Station.

At Maejo University, the Randomized Complete Block Design (RCBD) was used, with 10 treatments, each of which had 3 replications (nutrient formulation No. 21 - 30), of 3 hydroponic systems (NFT, DRF and Substrate culture). NFT was found to be the best hydroponic system for high yields and growth rate but it did not work well during the periods of high temperatures and electrical faults as it reduced the yields and growth rate. Therefore, the appropriate hydroponic system in tropical areas should be DRF as both systems gave similar yields and the best nutrient formulations were No. 26 and 27.

At Nong Hoi Royal Project Development Center, Randomized Complete Block Design (RCBD) was used, with 20 treatments, each of which had 3 replications. The nutrient formulations No 21 - 30 were tested with NFT, No. 31 - 36 with Substrate culture and No. 37 - 40 with DRF. The results showed that the nutrient formulation No. 28 gave the highest yield and growth rate in NFT, the nutrient formulation No. 36 in Substrate culture, and the nutrient formulation No. 40 in DRF.

At the Inthanon Royal Project Research Station, Randomized Complete Block Design (RCBD) was used, with 3 treatments, each of which had 3 replications. The nutrient formulations No. 1, 26 and 27 were tested with DRF and DFT hydroponic systems. The results showed that both systems gave similar yields due to the cool throughout the year and appropriateness of other factors of production. The nutrient formulation No. 1 was found to be the best for high yields and growth rate.