Growth and Productivity of Corn (*Zea mays* L.) and Peanut (*Arachis hypogaea* L.) Intercrop Under Varying Plant Spacings and Water Management Regimes

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Abstract

This study was conducted to assess the productivity of corn (*Zea mays* L.) and peanut (*Arachis hypogaea* L.) in monocropping and intercropping systems. The experiment was conducted in an open upland field at the Central Experiment Station, University of the Philippines Los Baños, College, Laguna, Philippines from January to May 2015. The study had two variables: 1) watering schedule (once a week, twice a week, once a week for one (1) month and twice a week thereafter until grain fill period); and (2) corn spacing at 75 cm monocrop (53.333 plant ha^{-1}), 75 cm intercrop (corn 53,333, peanut 53,333 plant ha^{-1}), 100 cm intercrop (corn 40,000, peanut 66,666 plant ha^{-1}), 125 cm intercrop (corn 33,333, peanut 80,000 plants ha^{-1}), and 50 cm monocrop peanut (80,000 plant ha^{-1}). Peanut was planted in one, two, and three rows between two corn rows. Highest grain yields were obtained in both crops when planted alone due to higher number of plant population per unit area. The corn's grain yield when intercropped with peanut was reduced by 6.0-27.4%, while 36.5-73.6% yield reduction in peanut. Land equivalent ratios (LER) in all intercropping systems were greater than one. Corn spacing at 100 cm intercropped with peanut had greater LER (1.40), having advantage productivity of land utilization efficiency than the rest of spacing. On the other hand, the 125 cm corn spacing with peanut gave better net return (62.725 PhP ha^{-1}), and benefit cost ratio of 1.96 relative to the rest of the intercrop and monocrop. The optimum water use efficiency in intercropping system was obtained in once a week (W1) in spaced 75 cm monocrop corn and spaced 50 cm monocrop peanut (2.51 and 0.86 of yield, respectively). Corn-peanut intercrop is more profitable than its monocrop counterparts. Corn spacing of 125 cm with three (3) rows of peanut intercropped and with once a week irrigation is therefore recommended.