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Effects of Increased Phosphorus Rates and Plant Densities on Yield and Yield-Related Traits of Narbon Vetch Lines

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Abstract: We evaluated seed yield, forage yield, and yield-related traits of 4 different narbon vetch (Vicia narbonensis L.) lines using 3 phosphorus rates and 4 plant densities. The experiment was conducted during the 1999-2000 and 2000-2001 cultivation seasons in Hatay, located in the Eastern Mediterranean region of Turkey. The experimental design was a split-split plot design with 3 replications. Phosphorus levels of 25, 50, and 75 kg P_2O_5 ha^{-1} were the main plots, narbon vetch lines (2382, 2385, 2387, and 2561) were the split plots, and seeding rates (50, 75, and 100 plants m^{-2}) were the split-split plots. Analysis of variance showed that yield and most of the yield-related traits were significantly affected by phosphorus rate, line, and seeding rate. The application of 75 kg ha^{-1} of phosphorus resulted in higher yield than that of 25 kg ha^{-1} and 50 kg ha^{-1} applications. Significant genotypic variation was observed for most of the traits. The different plant densities significantly affected all the traits. Seed yield, green forage yield, and dry matter yield increased as the number of plants increased per unit area. The highest seed yield, above ground biomass, green forage yield, and dry matter yield were obtained with the highest plant density of 100 plants m^{-2}. There were significant relationships between yield and yield-related traits. Seed yield positively correlated with plant height ($r = 0.65$), above ground biomass ($r = 0.63$), green forage yield ($r = 0.54$), and dry matter yield ($r = 0.27$, $P < 0.01$).

Key Words: Above ground biomass, dry matter, narbon vetch, phosphorus rate, plant density

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