Nitrogen Source, Rate, and Application Methods in Watermelon, 2009

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Situation

Watermelons trail only onions as the second highest contributor to Georgia's total vegetable farm gate value. The University of Georgia recommends maximum N rates of 150 lbs/A and to split that rate into two applications for watermelon production. Regardless, growers have individualized their watermelon fertilization strategies by individualizing application methods and rates. To determine watermelon fertilization strategies, many watermelon growers rely on past production practices that have produced acceptable watermelon yields and quality. The objective of this study was to evaluate different forms of nitrogen at varying rates applied banded and broadcast at planting to determine differences yield and quality as they relate to watermelon production.

Response

A .75 acre study area was established in Crisp County, Georgia to evaluate three nitrogen sources at rates of 200, 150, 100 and 50 lbs/acre in banded vs. broadcast application methods applied at planting. Soil present was Tifton loamy sand. Soil test levels (lbs/A) taken 1 May revealed P – 83,K – 156, Ca – 804, Mg – 127, Zn – 4, Mn – 47, and pH – 6.1. Research included 24 total treatments with two check plots in three replications; (plot size = 20' X 11'). Broadcast treatments were paired, side by side with banded treatments of the same source/rate. All plots were treated with 100 lbs/acre of P and 100 lbs/acre of K. N was applied as urea (46% N), urea Ammonium nitrate (32% N) and potassium nitrate (15% N). Ammonium nitrate (34% N) was added to potassium nitrate to reach N rate of 200 lbs/acre. All fertilizer was applied at planting. Fertilizers were tilled and mulched to a depth of 4". Pre-emergence herbicides were applied according to University of Georgia recommendations. "Mini Margarita" seedlings were transplanted on 25 April. Seedlings were spaced 2' in row. Rows were on 15' centers. Fungicide treatments were applied according to UGA recommendations. Plots were harvest on 23 July. Melons fewer than 12 lbs were considered culls and not included in total weights. Four melons per plot were rated for hollow heart severity

Results and Discussion

Comparing all data there was no statistical yield difference between banded vs. broadcast nitrogen applications. Nor was there a statistical difference when comparing Potassium Nitrate (KNO3), Urea, and Urea Ammonium Nitrate. However significant yield differences were observed in rate of nitrogen application. The N rate data backs up UGA recommendations for 150 lbs total nitrogen for application in watermelon production. Yield rate increase corresponds to application rate increase up to 150 lbs nitrogen acre while nitrogen applied at 200 lbs per acre produced yields that were not significantly different than that applied at the 150 pound nitrogen rate. Hollow heart incidence was insignificant regardless of N source, rate or application method.