NITROGEN AND POTASSIUM EFFECTS ON SUGAR BEET YIELD AND QUALITY

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Growers in the Southern Minnesota Beet Sugar Cooperative area are concerned about potassium nutrition. There have been an increasing number of potassium soil test values from production fields that are decreasing into the 100 to 120 mg per kg range. The loss of root yield from the lower soil test values and the loss of root quality if potassium is applied is also a concern. The objective of this study is to determine the effect of nitrogen and potassium application on sugar beet root yield and quality. A study at six sites from 2010 to 2012 in the Southern Minnesota Beet Sugar Cooperative growing was established to meet the objectives. The treatments included a factorial arrangement of four N rates (0, 44, 88, and 134 kg per ha) and six potassium rates (0, 33, 66, 99, 336, and 560 kg K_2O per ha. The study was replicated five times. Root yield and quality were measured. Results indicate that potassium application increased root yield and quality at 50% of the sites. Nitrogen application increased root yield at 50 % of the sites and decreased quality at 75 % of the sites.