

CARLSON, JEFFREY L\* AND JAMES SCHUELLER, Southern Minnesota Beets Sugar Cooperative, 83550 County Road 21, P.O. Box 500, Renville, MN 56201. **Ammonia nitrogen sources, treatment and discharge at Southern Minnesota Beet Sugar Cooperative.**

Increased scrutiny on nitrogen in the Mississippi watershed and proposed new nitrogen limits discharges to water requires a thorough understanding of nitrogen sources and treatment options in beet sugar production. A survey of nitrogen sources at Southern Minnesota Beet Sugar Cooperative revealed the nitrogen was initially coming from the beets, from the biocide ammonium bisulfite and the pH modifier, ammonium hydroxide. The ammonia, nitrate and glutamine-glutamic acid concentrations were measured in the process and waste streams including discharges from the wastewater treatment. Ammonia created from glutamine amide nitrogen hydrolysis was 95% complete through evaporation. The ammonia-N concentration on RDS increased throughout purification. Over 95% of the ammonia in the juice was lost during evaporation with over 75% of it being transferred to the condensates. The ammonia transferred to the condensate was treated through land application or nitrification in the SMBSC activated sludge system.