

MARK W. BLOOMQUIST\*, GARY J. LINDAHL. Southern Minnesota Beet Sugar Cooperative, P.O. Box 500, Renville, MN 56284. **Date of harvest influence on yield, sugar content, and recoverable sugar per acre at Southern Minnesota Beet Sugar Cooperative.**

## ABSTRACT

Southern Minnesota Beet Sugar Cooperative has an early harvest period prior to stockpiling of the sugar beets for long-term storage in October. During this controlled early harvest period, sugar beets are only stored for a few days prior to processing. This early harvest period allows SMBSC to operate the factory for up to an additional five weeks versus waiting until the temperatures are favorable for long-term sugar beet storage. This early harvest period comes at the expense of shortening the growing season for the portion of the crop that is harvested early. To incentivize growers to harvest a portion of their crop during the early harvest period, a premium is paid on the tons delivered during this period. The premium is designed to make the grower whole when harvesting a portion of his crop early versus the increased yield that would be realized if the entire crop was allowed to grow until long-term storage conditions were acceptable in early October. In 2011, SMBSC began trials to measure the yield, sugar content, and recoverable sugar per acre on a weekly basis throughout the potential early harvest period.

These trials were conducted each growing season between 2011 and 2014. There were two to four trial locations in each year of the study. Each of these locations was planted on a SMBSC research trial sites. Between 36 – 48 days were in the early harvest period each year. This period spanned from mid-late August of each year, until the first day of the Cooperative's Full Harvest Period. Every week, approximately 180' of row was harvested as a strip across the trial area. Each strip was harvested with a one row tractor mounted defoliator and harvester. Weights and quality analysis was conducted at the Southern Minnesota Beet Sugar Cooperative Tare Lab. From this yield information, an estimate of revenue per acre was calculated for each harvest date. For the harvest dates prior to the start of the Cooperative's Full Harvest Period, an early harvest premium payment was included in the revenue per acre and compared to the revenue per acre on the first day of Full Harvest.

Over the four year period, sugar beet yields increased 1.6 tons per acre per week. Sugar content increased .57% per week. Extractable sugar per acre increased 692 lbs. per acre per week. Revenue per acre as a percent of the first day of Full Harvest increased by an average of 10.9 % for each harvest date during the early harvest period. When the early harvest premium was added into the revenue per acre for each weekly harvest period, in 83% of the harvest dates, revenue per acre was equal to or above the revenue per acre for the first day of the Full Harvest Period.