**Beet storage strategies relevant to an evolving sugar beet industry.**

**BBRO Project no. 12/15**

This three year project commenced in 2012 to compare temperature profiles and sugar loses of differing forms of storage. The winter of 2010-11 had seen severe frosts which impacted on the crop still in the ground, therefore investigations were required re the best forms of storage for both short and long term storage in the future.

Initially both Maus and Conventional clamps were monitored. Although the differences in sugar loss between the two clamps were not always statistically significant, the losses from the Maus clamp were consistently higher than those from conventional clamps (i.e. 0.122*cf.* 0.089%/day).

Previous work showed that faster rates of sugar loss are generally associated with high clamp temperatures. This was not so in the present trials. Temperatures within Maus clamps (which had faster rates of sugar loss) were consistently lower than those of conventional clamps (i.e. 5.79°C *cf.* 6.64°C). As a result of this, the conventional clamps were dropped from the project and the focus was turned on generating data for losses in Maus clamps. To this end four Maus clamps were established in 2014/15.

Data from the Maus clamps in 2014 demonstrated a larger range in rates of loss compared to 2013 (i.e. 0.039 to 0.161%/day *cf.* 0.099 to 0.146%/day). The highest rate of losses was shown in a clamp built in early October (in Snettisham) and is probably an indication of the weather temperature at time of lifting/construction (10.65oC *cf.* 3.85oC).

The losses when stored for 30 and 60 days were significantly lower than those seen over 90 days (0.104 *cf.* 0.270%/day). The greater losses of the 90 day period were possibly due to a faster rate of loss during the last 30 days of storage. But the reasons for this increase are not clear because although the ambient temperature during this period rose to around 16.5oC, the changes in mean clamp temperatures were not so great.

The lowest rates of loss were seen at Carrington and New York (0.072%/day & 0.039%/day respectively).

The losses seen in Conventional and Maus clamps in 2012/13 and from Maus clamps of 2014 were largely within the range of 0.08 to 0.14%/day, so although the losses from this year’s Maus clamps were on average lower than those in previous years (0.108 *cf.* 0.122%/day) they are still within the expected range showing little change from previous projects (97/28A, Sugar Beet Handling and Storage Losses). It is possible that the slight improvement relates to less vigorous handling rather than differences in clamp temperature.

This project has reinforced previous findings:

* + Higher temperatures result in higher losses, and so storing beet in autumn can exacerbate this
  + The longer the beet is stored for, the more sugar is lost
  + Losses largely range between 0.08% and 0.14%/day
  + There is no evidence to suggest there is a difference between the effects of Maus and Conventional Clamps on losses

There has been no significant scientific findings from this project to date and whilst the project was due to continue a further year, the planned shortened campaigns for 2015 and 2016 reduce the prospect of comparable data. The project is therefore closed as of 1st October 2015.