

Summer Thoughts

Summer should be the time for relaxation and preparation for the forthcoming milling season. However, the work done in preparation for the next crop is critical for its success. What I see, but fortunately am not too much involved in, is the extensive repair and upgrading of the operation. Repair is essential to make it through the next crop but if it is only repair then we do not improve operations and can at best expect performance similar to past years. There is always the year to year variation of cane quantity and quality and a good yield of high quality cane in the field can mask deficiencies or lack of improvement in the factory. In some operations such lack of technical development may be acceptable but, given the ever increasing costs and competition in our business, the only hope, not guarantee, of survival is process improvement.

Radical improvements with major investments in new and larger factory equipment and systems are rare and it will be very interesting to watch the expansion and consolidation taking place in Florida. Most of the time improvements are more incremental, dealing with only one or two of the factory processes, rather than the whole operation. Even so, such improvements can be quite expensive and the following comments are more in line with the optimization of current operations that require only modest investments and not major structural changes.

How many operations have adequate information on the quality of cane that they process? This depends to some extent on what is meant by adequate but at minimum this should be sucrose and non-sucrose levels, fiber, extraneous material and freshness (defined as required by each mill). These parameters can all be measured with sufficient confidence to be useful for the mill management and without this information the mill is flying blind in any attempts to optimize performance. The first and most essential task is to get the laboratory and reporting system up to the desired standard. Assuming one million tons of cane, an increase in yield of only 0.1% (say from 11.0 to 11.1%) means additional sugar production of one thousand tons. This has very significant value and justifies the effort involved in the maintenance of steady operations at high throughput and with good recovery.

Good sucrose extraction at the mill is best achieved with high levels of cane preparation and sufficient imbibition. Improving the former can be very expensive but optimization of imbibition can be achieved by observation and simple analytical measurements. For instance, does most of the imbibition, especially at the later mills in the tandem, go onto the center of the carrier or is it evenly distributed across the bagasse mat? Are the bagasse sample taken to the

laboratory for analysis obtained from the middle of the carrier? A simple test is to grab samples of bagasse from the edges and compare with the usual data. Of course there are full-width hatch sampling systems, but in my experience they are little used. I have seen data where the pol % bagasse at the edges is two points higher than from the middle. Assuming 10% at each edge is poorly imbibed (?) this is equivalent to approximately 1% decrease in extraction compared with the routine measurements. The cost of achieving even distribution of imbibition should not be very high.

As technologists, when we think of process losses or inefficiencies our mindset usually drives us towards thinking of pH control, inversion losses, thermal degradation of sucrose, viscosity, difficulties in purging low grade massecuites at the desirable high brix and so on. We often pay less attention to housekeeping. I have been in raw sugar mills that were immaculate and where much attention was paid to cleanliness and where the very opposite was the case. However, cleanliness is not the whole story if spills and leaks are just being washed away. The undetermined losses will increase but without a good reason and ignored, especially if the factory balance is not based on good information.

Spills and leaks are inevitable but they must be safe, rare and fixed promptly. I have seen accumulated spills, especially from the boiling house, that almost seem to be fixtures in the factory, as if they were designed that way. One gallon per minute of juice may not seem to be much in the grand scheme of things, but it is equivalent to about a pound of recoverable sugar per minute or three quarters of a ton per day, much more than the cost of fixing most leaks, especially if the repairs are done prior to the beginning of operations. A North of England saying that I remember from my youth is "Where there's muck there's brass" or, where there is dirt there is money. There are two possible meanings for this. First, in true working class opinion, you are only really working and earning your wages if you get dirty, unlike those in management. Second and better, waste costs money both in terms of the loss of material and the effort involved in cleaning. Many of us remember Peter Skinner who told me about one of his early experiences in working in a cane mill. He was responsible for part of the boiling house and one of the syrup pumps was leaking slightly. The factory manager asked him what was happening and he replied that it was only a small leak. He gave the same reply after being asked the same question several times. Finally his boss told him that it was not a small leak but Peter's bonus going down the drain.

