Liquid Sampling Systems, Inc.

http://www.Pro-Rata.com

Notes #2

University Study Proves Accuracy of the Pro-Rata tm Line Sampler for sampling milk receipts

1 to 1 relationship shown between control samples and Pro-Ratatm Samples, even on severly stratified transports of milk.

Among the many studies that have been done showing how accurate and reliable the Pro-Rata Line Sampler is, we are especially proud of one done by Dr. Fred van dc Voort at the University of Guelph in Ontario, Canada. The study proved the ability of our line sampler to collect accurate samples from highly stratified transports of milk - without any agitation before pump off.

In one part of the project, Pro-Rata Line Samples were taken from 17 trucks that were held 16 hours or more before pump off. These samples were compared to control samples taken from agitated silos. As summarized in the table below, statistical analyses showed a correlation of 0.95 (1.00 is perfect) with a standard error of the estimate of 0.05!

Linear regression statistics for the Pro-Rata vs Silo fat content for tankers held 16 hours or more before pump off.

Silo Mean	3.341
Pro-Rata mean	3.476
Slope	0.953
Intercept	0.151
SEE	0.050
r2 correlation	0.95

The discussion stated that, "There is no evidence to indicate that the Pro-Rata Sampler is treating the stratified load any differntly than the general population of loads. "

Similarly, the overall assessment given in the conclusion states. "... the performance of the Pro-Rata Sampler in the field was shown to be excellent. It was clearly shown that there was a 1 to 1 relationship between the silo fat test and the Pro-Rata fat test. whether it was assessed using the Mojonnier method or the Milkoscan 104."

"The standard deviation of the difference ranged from 0.051 in the case of the Mojonnier to 0.084 for the MilkoScan, with a value of 0.07 for the combined data. The heavily stratified loads gave a value of 0.05, which was in line with the manufacturer's data of 0.047."

"The results show that the Pro-Rata Sampler is capable of accurately predicting the fat content of tanker loads within the limits which the Canadian Milk Testing Laboratory is capable of namely, a mean difference of 0.03 and a SDD of 0.07%

Simply put, this study supports many others in proving just how accurate the Pro-Rata Line Sampler is.

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About Liquid Sampling Systems Inc.

50 years ago, my father Ted Johnson was a production control accountant for a dairy in Cedar Rapids, Iowa. In charge of keeping track of his company's product, he set out on a quest to find where all the product went when it turned up as a loss (or shrinkage). After plugging every leak and counting the inventory, it was clear that much of his losses arose from the fact that he wasn't getting the product in the receiving room

Focusing on getting an accurate and relaliable sample of every transport he received, Dad began the process of designing and making sanitary sampling devices that could be relied on to precisely document the content of any load of milk – no matter how stratified.

After years of pioneering work, he came up with the Pro-Rata Line Sampler, still the most dependable method ever developed for sampling milk on the line

Out of this work Liquid Sampling Systems grew. True to our roots in the dairy industry, we're still a small family owned business. And while my Dad is gone now, we're still helping the dairy industry improve its samples and reduce losses.

We're proud to have helped so many large and small processing concerns over the years, and ask that you too will choose us when you are ready to upgrade your sampling.