



THE IMPORTANCE OF EFFECTIVE FIBRE IN DAIRY COW DIETS

The combination of better genetics, facilities and animal husbandry is leading to increasing levels of milk production and, consequently, diets which require higher levels of energy. Additionally, most modern diets are corn silage and hay silage based, while long dry hay is not common anymore. This creates challenges for nutritionists because cows, in addition to the regular nutrients, have a requirement for fibre to provide proper rumen function and health. It is not only the level of fibre that matters, but also the physical presentation of that fibre which is fundamental for proper rumen function. This means that cows can eat a diet correctly formulated for levels of fibre, but if that fibre comes from forages finely chopped, they may experience the same metabolic disorders as cows fed a diet deficient in fibre.

In 1996, Penn State University released the first version of the Penn State Particle Separator (PSPS). Since then, there have been two additional versions, with the most recent one being released in 2013. The original PSPS had two sieves and a pan. In 2002 a third sieve was added and in 2013, a modification of the size of that new sieve was made. The PSPS has become widely accepted as a quick and practical method for routine use on farm to evaluate particle size of forages and TMR. The current guidelines used by the industry are:

Recommended distribution of particle size (percent remaining on each screen) for corn silage, haylage, and TMR samples.

Screen (pore size)	Particle Size (inches)	 PennState			 TMR
		Corn silage	Haylage		
Upper Sieve (19 mm/0.75 inches)	> 0.75	3 to 8%	10 to 20%	< 5%	
Middle Sieve (8 mm/0.31 inches)	0.31 to 0.75	45 to 65%	45 to 75%	> 50%	
Bottom Pan	< 0.31	30 to 40%	40 to 50%	30 to 50%	



Source: Penn State Extension extension.psu.edu/penn-state-particle-separator; Miner Institute www.whminer.org

Current dairy cow diets, for the most part, are prepared in the form of a Total Mixed Ration (TMR). One objective of a TMR is to minimize the reduction in effective fibre during handling, mixing or feeding, while assuring uniform mixing and that the ration is consistent throughout the feed bunk. Several aspects can affect the uniformity of the TMR and the effectiveness of the fibre. If, after shaking the TMR with the PSPS, the particle distribution is consistently outside of the recommended guidelines, some of the key areas to look to improve the outcome are:

- Wear levels of mixer augers, kicker plates and knives
- Mixing time after the last added ingredient
- Forage restrictor settings on vertical mixers
- Forage processing (including hay and straw)

If you would like more information regarding Trouw Nutrition Canada, our products and feeding programs, please contact your Dairy Nutrition Advisor or nearest Shur-Gain dealer. We would be happy to discuss options with you.