

## The Case for Preprocessing of Forages for the Mixer Wagon

The use of silage for cattle rations is increasing and is justified by the increased dry matter yields and higher quality of the resultant ensiled product. Considering the most common silages like corn or barley, the dietary energy is often too high to feed unmixed. Gestating cows don't need the level of daily energy that a total silage ration brings during the first 7 months of gestation. This means by mixing it with a lower energy forage it more closely matches the needs of the animal at its particular stage of development. Proper choice of ingredients to match animal needs brings lower costs and more feeding days from the forage supplies.

It is a common practice for some producers to use the mixer to chop forages. The purpose of this note is to make the case that preprocessing with a Bale Pro<sup>®</sup> equipped with a Feed Chopper<sup>™</sup> leads to a lower cost and delivers more consistent mixes than using a vertical mixer to chop bales. According to the Manitoba/Saskatchewan Agriculture Custom rental rates for 2022 the estimate of the hourly cost of operating a tractor and Bale Pro<sup>®</sup> is \$129.53/hr. Processing a bale of straw through a Bale Pro<sup>®</sup> equipped with a Feed Chopper<sup>™</sup> can be accomplished in under a minute and a bale of hay in under 2 minutes. The cost for operating an 850 cu. ft. vertical mixer is \$154.65/hour. A vertical mixer takes approximately 9 to 15 minutes to chop a bale to an acceptable length before mixing takes place. Sharp mixer knives and kicker plate condition and adjustment make a big difference in time required. In a simple comparison of these two approaches the processing cost per bale for straw when using a Bale Pro<sup>®</sup> is about (\$129.53/60 minutes) \$2.16/bale where 1 minute is required for straw, and \$4.32 per bale of hay where 2 minutes is needed. Assume the straw bales are 900 lb./bale and the hay is 1800lb/bale. For the vertical mixer, at the low end of time needed for a hay bale, the tractor is running and the mixer is chopping for 11 minutes resulting in a cost of (\$154.65/60) \$2.57\*11= \$28.27/bale although this time would vary for different forages.

<u>Device</u>	<u>Time/bale:</u>	<u>straw</u>	<u>hay</u>	<u>\$/min<sup>1</sup></u>	<u>\$/straw bale<sup>2</sup></u>	<u>\$/hay bale</u>
<b>Bale Pro 660 w/chopper</b>	1 minute	2 minutes		\$2.16	\$2.16	\$4.32
<b>Vertical mixer 850 ft<sup>3</sup></b>	9 minutes	11 minutes		\$2.57	\$14.13 <sup>4</sup>	\$28.27

1. Operating cost of \$129.53/hour/60 minutes for Bale processor and \$154.65/hr/60 for mixer. From Manitoba/Saskatchewan Custom Rental rates for Farm Machinery

2. Straw bale assumed to weigh 900 lb.

3. Hay bale assumed to weigh 1800 lb.

4. Straw weight is half of a hay bale so half the cost is applied and all times are estimated over several mixer brands and forage types.

Addition of multiple forages at the time of loading is common on farms so extended processing times can be expected to achieve acceptable cut lengths which minimize sorting by cows. Regardless of the amount of forage added, a certain number of knife passes are required to produce an acceptable cut length. For the Bale Pro<sup>®</sup> equipped with a Feed Chopper<sup>™</sup> the cut length of processed forages is consistently; 30% between 1mm and 10 mm (.04" -.4"); 50% between 10mm and 70mm (.4" -2.75"); and 20% between 70mm and 100mm (2.75" -3.93").

Many assumptions have been made to calculate this theoretical 'cost per bale to process' using these two methods. It should be noted that these are custom rates not calculations based on cost of ownership. Each farm has unique equipment and forages and the only valid evaluation is done with specific on farm data. However this example illustrates the principle that it is much less expensive to preprocess with a Bale Pro<sup>®</sup> equipped with a Feed Chopper<sup>™</sup> than to use a vertical mixer based on their comparative hourly cost of operating. If you are not preprocessing your forages before mixing, savings might be available to you on a most important activity for cattle, mixing feed.

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