



*Timely checks: carrying out maintenance work on your mixer wagon now will pay dividends once winter feeding regimes resume*

Time spent now on mixer maintenance will pay dividends in the winter

# Watch out for dead spots

The mixer wagon is the second most utilised piece of kit on the farm, after the parlour, so it pays to make sure it is working at optimum efficiency. We asked two experts for some timely advice on machinery maintenance.

text **Phil Eades**

**F**ailure to properly maintain mixer wagons and monitor the effectiveness of mixing are two easily solved issues that could increase milk production on many dairy units. So says Jeff Weyers, Zinpro's US-based dairy nutritionist, who adds that machine performance can often be

improved to produce a better mixed diet. "We have seen milk yield increases of 2kg per cow per day from the same diet, just by making sure the wagon was doing its job. That's a lot of potential extra income during the winter-feeding period. "And I am amazed at how few producers

take the time to look inside their wagon when it is working to check how well it is mixing the diet. The mixer wagon works hard every day and there are benefits to be had from making sure it is working correctly."

## **Good maintenance**

Although his experience is primarily with tub mixers, Dr Weyers says that the same principles apply to all feeder wagon types. And the starting point is good maintenance, particularly making sure the knives and kicker plates are correctly fitted and in good condition. In his experience, he says that it is not unusual for operators to not know how many knives should be fitted and what the signs of excessive wear are.

“Once you know the machine is well maintained, the next step is to spend some time actually watching a diet being mixed. Look for dead spots, where ingredients are not being moved and mixed. Their existence is a definite indication that the diet is not being thoroughly mixed.”

These dead spots are commonly caused by worn or incorrectly fitted kicker plates and knives, but they can also form around the discharge doors. “If the door area is worn, it can lead to feed getting caught and it is then prevented from moving around correctly,” he says.

“Another common cause of dead spots is incorrectly set baffles. If the baffles are too far in, they will slow the mixing process enough to stop feed being mixed. “Watching the entire loading process can also tell you when dead spots develop. It is typical for problems to occur as more weight or ingredients are added, which can be another indicator that the components inside the tub are becoming worn or are missing.”

### Effective mixing

Trouw Nutrition GB’s Rosie Miller says that in addition to mixer operation, several feed characteristics will have an impact of effectiveness of mixing and eventual diet quality.



Jeff Weyers: “Watch a ration being mixed. And look out for any tell-tale dead spots, which can be a sign of wear and tear”



Rosie Miller: “Ingredient loading order will help to ensure an effective mix. And always consult the mixer manufacturer”

“Research carried out in 2007 by Trouw Nutrition and a Harper Adams University survey in 2017 both showed that more than 50% of diets are poorly mixed, while a greater percentage showed signs of diet sorting at feed out,” she says. “So it really does pay to focus on mixer wagon operation, particularly if forage is going to be in short supply. This could certainly be the case in winter 2018/2019.”

Ms Miller adds that forage quality not only affects the nutrient supply to the cow, but it can also impact how the diet is mixed. “While moist mixtures bind ingredients better, wetter forages are prone to ‘balling’, particularly where diets are over mixed.”

Training staff and following a strict mixing protocol are both essential for properly mixed and consistent diets. And the loading order will need to be refined based on the ingredients in the diet. “This winter will see more long-fibre ingredients, like straw, and more liquid feeds, like molasses, potentially being added to diets. And this means that mixing protocols may need to be modified,” she says.

### Filling order

“It is really important that someone with such a responsible job as mixing diets is properly trained and understands the importance of accuracy and consistency,” Ms Miller adds.

“It is not unusual to see ingredients missed from the wagon at loading, feeders being overloaded, and people rushing. All will prejudice diet quality. So take your time, fill in the correct order, weigh ingredients carefully, and then mix for the correct length of time.” She says that while the precise filling order will depend on the actual

feeder, and to some extent on the actual ingredients, a good rule of thumb is to load long-fibre material (straw, hay, and long big-bale silage) first, followed by any wholecrop and maize silage.

“Concentrates and straights should be loaded after forages and then followed by micro-ingredients, including minerals and yeasts and fats, before moist ingredients and liquids, like molasses. Finally add grass silage to complete the ration.

“This loading order will help to ensure an effective mix in most circumstances, but always consult with the mixer manufacturer.”

How feeds are added to the mixer wagon can also make a difference and Dr Weyers recommends adding small inclusion ingredients, such as minerals, down the side wall instead of dumping directly over the augers.

This is because these ingredients can stick to the augers and will then never mix properly until the wagon is filled to the height of the auger. “When making up small loads, the feed stuck to the auger may never actually get mixed with the rest of the diet.”

Load size also affects mixing, with overfilling a common problem resulting in poor mixing. “Mixer wagons have a stated capacity for a reason, so don’t exceed it.”

He adds that sufficient PTO power is also important. “Running a wagon with a smaller tractor, or with reduced RPM to save costs, is a false economy. And it is important to keep the PTO running throughout the mixing period at the recommended RPM to keep feeds moving.

“And, finally, always ensure that ingredients are loaded and mixed on a level surface. That’s a simple piece of advice but, again, it’s something that’s often over looked and can impact on mixing and ration quality.” |

*Observe mixing: spend time watching your wagon in action and look for ‘dead spots’*

