



by Steve Martin

## Achieving the right TMR moisture (part 1)

I READ a research summary recently by investigators who are interested in milk production responses to various moisture levels in total a mixed ration (TMR). This type research is of real value for us in the field.

The article caught my attention because we have frequent discussions about what moisture level, or conversely, what dry matter (DM) percent, is right for a ration.

This is a great example of where the scientific process of building diets to supply nutrients like lysine and selenium intersects with things like water wells and PVC pipe. This topic reminds us it takes a wide swath of skills to correctly feed dairy cows.

### Why does moisture matter?

Here is a great question to ponder: Why should the amount of water in a TMR matter when we know it is only the dry portion that cows use for growth and production? Starting with feeds and feeding in college, the effort to teach the concept of DM, as opposed to as-fed (AF), has been paramount. But here we go again, back to talking about the water portion.

Why is ration moisture level such

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a frequent topic of conversation with our clients? Think about the difference between eating dry cereal with a spoon, versus pouring milk into the bowl and then digging in. The latter is obviously the preference. Cows also seem to like to eat things that are moist. The question, though, becomes what is the sweet spot – and can a ration be too wet?

There is another distinction to be made here as well. If we look at a ration on paper or in the bunk and note

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that it is 51 percent DM (and thus 49 percent water) how do we know if that is in the sweet spot?

We must consider where the moisture is coming from. Moisture that is added as water into the mixer results in a different situation than water which is part of a wet forage such as silage or green chop.

Let's look at why managing mois-

ture in TMRs is a worthy effort.

First, we might think about palatability. Looking back at the cereal and milk example, cows tend to increase intake when a dry TMR is made more appealing by the addition of water. In most cases, we want cows to maximize feed intake to support milk production, body condition and reproduction. Making dry TMRs wetter helps us achieve that goal.

### Moisture reduces sorting

Secondly, a big reason we feed TMRs is supported by the addition of moisture to them. The reason is based upon the principle of every bite being balanced. For this to be true, from the time a ration is fed until it is fully consumed its components should not be sorted out.

Cows have an amazing ability to use their tongues to move feed particles around in the bunk in order to separate and eat their favorite parts first. Although sorting will never be 100 percent eliminated by any feeding technique, a TMR with the correct moisture level will help keep it to a minimum.

If you had to pick a general goal for the best DM for a TMR, you would likely say 50:50. That percentage is often achieved with a routine level of silage feeding, a wet by-product, and/

or a little added water. But remember, not all moisture in a ration is created equal.

Water that is added to the ration by means of “wet” forage (like silage) does add moisture to the diet, but it is not “shared” with other dry components in the diet. Liquid ingredients like water and whey are on the other end of the spectrum and can be very helpful in partially hydrating dry forages and grains.

Ingredients like wet brewers or wet distillers grains would be in the middle. They may not “share” much water with dry ingredients, but they are for sure fully hydrated themselves and can not absorb any water that may be added.

Next month I will look at some specifics of how to use various wet ingredients in cow and heifer rations to improve results. There are some economic principles at work there too. I will discuss how to be sure the moisture included in lower-cost by-products is maximized to not exceed TMR moisture maximums, while still minimizing overall feed cost.

Since cows like wet rations and many of our lowest-cost feed ingredients contain high amounts of moisture, working hard to find the sweet spot for TMR moisture is part of feeding for the bottom line.