



Calf Starter Research Molasses and calf starters

Why is molasses included in calf starters? Most, if asked, would likely answer “because it improves palatability and intake”. There are research trials that have shown that it does increase intake in some cattle diets; and there are other research trials that have shown that it does not increase and even has reduced intake of cattle. Others might suggest that liquid molasses will reduce the dust and may help stick together a textured feed. Depending upon the ingredients, adding 5% molasses to a textured feed will reduce the dust but not create a ‘sticky’ feed. Many textured feeds contain 7 to 10% molasses, and some real ‘sticky’ ones contain 12% or more molasses. Here we will review the three calf research trials comparing the effect of molasses concentration in calf starter to see what the calf has to say.

A trial at Penn State University compared textured calf starters with 6 and 12% liquid molasses. Calves consumed less of the starter with 12% vs. 6% molasses. There was a trend for less body weight gain and more scouring in calves fed the starter with 12% vs. the starter with 6% molasses. There was a trend for more rumen papillae length and width when calves consumed the starter with 12% vs. 6% molasses. Rumen papillae are the absorptive area of the rumen and this increase in papillae development with more molasses in the starter is a positive observation, however this did not improve calf performance in the trial.

The University of Minnesota and Hubbard Feeds compared textured calf starters containing 6%, 9%, and 12% molasses. Gain to feed efficiency for calves fed the starters with 9% and 12% molasses were less than calves fed the starter with 6% molasses. They reported a trend for starter intake to decline as molasses concentration in the starter increased. Body weight gains for the calves fed the starter with 12% molasses tended to be slower than the calves fed the starters with 6 and 9% molasses.

We (Akey) fed calves starters containing 5% molasses, 10% molasses, or 5% molasses with an additional amount of dry sugar to equal the total sugar content provided by 10% molasses. Calves fed the starter containing 5% molasses gained faster and consumed more starter than calves fed the starters with 10% molasses or 5% molasses plus dry sugar. Additionally, calves fed the starter containing 5% molasses tended to have firmer feces than calves fed the starters with 10% molasses or 5% molasses plus dry sugar.

Before we draw conclusions, let’s discuss the importance of a couple of measurements. In the Penn State and Akey trials, calves fed the starters with more molasses had looser feces. Molasses has a high concentration of sugar. The ability of a calf to digest sugar is initially low but increases with age. Sugar in the large intestine will attract water (osmotic pressure). If molasses is poorly digested, it could result in more watery manure. Additionally, there is no evidence from these trials that adding more molasses increased starter intake. In fact, the opposite was observed.

These three trials show that as molasses was increased from 5 or 6% of the starter, body weight gain and starter intake decreased. The loose feces observed with feeding the greater amounts of molasses suggest that molasses may not be digested well in the young calf. Although not discussed above, molasses does attract flies to the feeders in the summer months, it creates feed manufacturing problems, especially at rates over 5 or 6%, and it adds cost to the starter.

So, why is molasses included in calf feeds? A small amount molasses (3 to 5%) would reduce dust in the starter and coat the pellets to add some aroma and flavor. More than 5% molasses on a starter will not improve (and likely reduces) calf performance.

Literature cited:

- Lesmeister, K. E., and A. J. Heinrichs. 2005. Effects of adding extra molasses to a textured calf starter on rumen development, growth characteristics, and blood parameters of neonatal calves. *J. Dairy Sci.* 88: 411-418.
- Ziegler, D., H. Chester-Jones, B. Ziegler, R. Larson, and J. Linn. 2005. Performance of Holstein heifer calves fed textured calf starters varying in molasses content. *J. Dairy Sci.* 88 (Suppl. 1): 175.

Table 1. Effect of molasses concentration in the textured starter on calf performance from three different trials.

Trial / molasses concentration in starter	Body weight gain, lb/day	Starter intake, lb/day	Gain to feed efficiency
Penn State Univ. trial, 0-42 days			
6% molasses	0.99	1.12	0.50
12% molasses	0.86	0.87	0.46
Univ. MN / Hubbard Feeds trial, 0-56 days			
6% molasses	1.54	1.94	0.56
9% molasses	1.50	2.00	0.53
12% molasses	1.41	1.84	0.53
Akey trial, 0-56 days			
5% molasses	1.26	1.78	0.50
10% molasses	1.16	1.59	0.50
5% molasses + dry sugar	1.14	1.55	0.50