

BORREGAARD

LIGNOBOND DD IN DAIRY FEED PELLETS

PURPOSE

To measure pellet durability improvement with the addition of 0.5% LignoBond DD in Vaca Extra lactation pellet.

RESULTS

LignoBond DD (0.5%) made a substantial improvement in pellet quality with visibly fewer fines. Pellet durability improved from 79.9 to 84.4 (Figure 1 and Table 1).

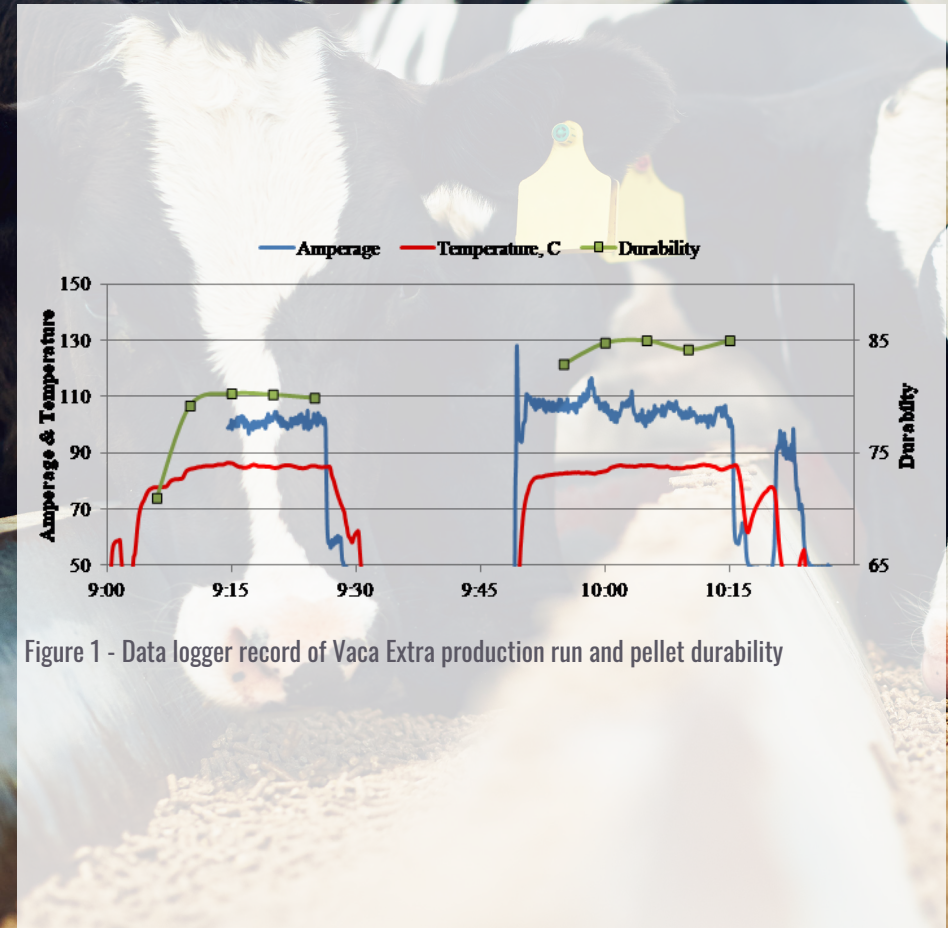


Figure 1 - Data logger record of Vaca Extra production run and pellet durability

BORREGAARD PROCEDURE

This trial was run on a 150 HP pellet mill fitted with a 4.5 mm x 51 mm (W x L) die. The trial began with Control containing no LignoBond DD. This was followed by four tons formulated with 0.5% LignoBond DD.

Samples of hot pellets (~200 g) were collected directly off the die at 5-minute intervals. These were cooled and dried for 5 minutes under a stream of forced air. Samples were sieved over a 3.5 mm screen and stored in plastic bags. Samples were tested for durability on the New Holmen Portable Tester (NHPT) with settings of 30 and 60 seconds at 60 mbar.

HOBO data loggers were used to record conditioning temperature and motor amperage at 5-second intervals. Data were averaged for 20 seconds around the sample time.



Table 1 - Data for individual Control samples

Time	Amps	Temp. °C	30 s	60 s
9:06		77.8	88.9	71.0
9:10		84.3	90.9	79.2
9:15	99	86.4	92.0	80.3
9:20	102	84.8	91.9	80.2
9:25	101	85.4	91.6	79.9
Average	101	85.2	91.6	79.9

*9:06 not included in calculation of averages.

Table 2 - Data for individual Control samples with 0.5% LignoBond DD

Time	Amps	Temp. °C	30 s	60 s
9:55	106	82.7	93.2	82.9
10:00	106	83.6	92.4	84.8
10:05	101	85.6	92.8	85.0
10:10	103	85.0	92.2	84.2
10:15	101	85.1	94.7	85.0
Average	103	84.4	93.1	84.4

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DISCUSSION

The test feed is a pelleted dairy concentrate containing 22% protein and 4% fat. Rice meal is included in the formulation and is believed to improve pellet durability. Still, pellets are often mechanically damaged during transport to the end-user. LignoBond DD has recently been included in the formulation to improve pellet durability further.

This producer did not have a pellet durability tester. The purpose of this trial was to document and put a number to quality that is obvious to the eye. Results from the NHPT (60 mbar, 60 seconds) showed an improvement in durability from 79.9 to 84.4. This was a good response. Testing for 30 seconds resulted in durabilities of 91.6 and 93.1, respectively. When the stress on the pellets is not severe, the benefit of LignoBond DD is less obvious. When the pellets are stressed more, LignoBond DD works harder to maintain quality. This is exactly the type of response that was hoped for.

One sample, collected at 9:06, had a much lower durability. Conditioning temperature for this sample was 78°C versus an average of 85°C for the other samples. Pellet durability improved from 71.0 to 79.9 with the increase in temperature. Note that this was the Control feed. Had this feed contained LignoBond DD, pellet durability would have been much higher as the binding properties of LignoBond DD are not temperature-dependent.



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CONCLUSION

- Continue to include 0.5% LignoBond DD to produce pellets with higher durability and resistance to breakdown.
- Maintain temperatures above 80oC for this formulation.

THIS WORK WAS PERFORMED AND REPORTED BY BORREGAARD

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