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LIGNOBOND DD IN RUMINANT FEED

PURPOSE

To use LignoBond DD for improving quality, measured as % Pellet Durability Index (PDI), in a ruminant feed recipe.

RESULT

- The PDI of the control feed (no LignoBond DD added) had a value of ~ 92-93%.
- Three different runs with 1% LignoBond DD were performed with different process parameters.
- The PDI with 1% LignoBond DD was measured to be ~ 96.
- The production rate was increased by 22.2% (7.2 to 8.8 tons/hour) when using LignoBond DD.
- The energy level was measured to 18.1 kWh/ton in the second run (ideal for ruminant feed).

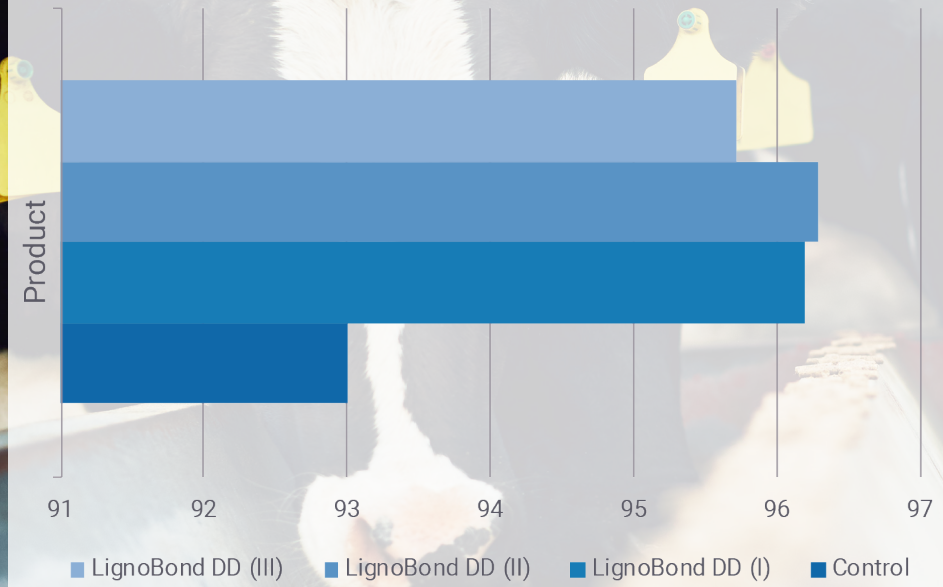

Figure 1 - Pellet durability (PDI) values

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PROCEDURE

For this ruminant recipe, the PDI normally is around PDI~ 92-93% (no addition of LignoBond DD). The formulation of this ruminant recipe has a dominating amount of ~ 40% rapeseed meal.

Testing was done over a 2.5 hour period. Three runs were done – all with 1% LignoBond DD, but with different production parameters.

Pellets were made on a Sprout Matador Press fitted with a 4.8 x 70 mm die.

Power consumption was calculated based on process parameters (ref. The Pelleting Handbook).

Process parameters were recorded directly from the control room panel during production. In addition, a AR310 data logger was used to record amperage levels during the trial period.

Samples of finished pellets were collected at the silo. Quality, measured as pellet durability, was determined on a Holmen tester (30 seconds, Holmen table model).

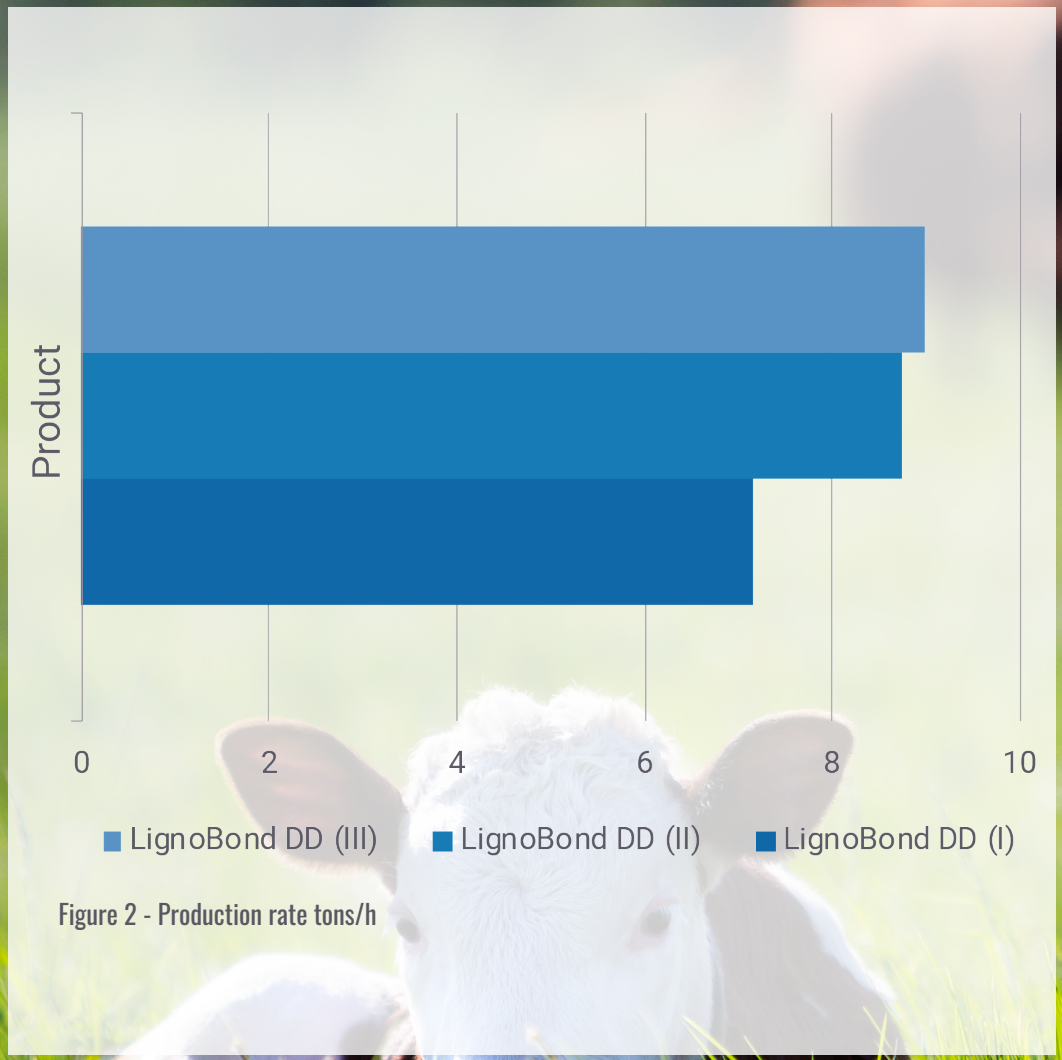

Figure 2 - Production rate tons/h

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DATA

Table 1 - Summary of results for three different runs

	Tonnes produced	Times of run (Min)	Amps	Temp (°C)	kWh/ton*	PDI (30 sec)
LignoBond DD (I)	6	50	175	72	15.3	96.19
LignoBond DD (II)	6	45	240	68	18.1	96.29
LignoBond DD (III)	6	45	240	65	17.4	95.72

*calculated numbers (ref. The Pelleting Handbook)

Note: Process parameters/levels in table 1 shows values at stable production.

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DISCUSSION

Process parameters as for a regular production were applied for the first run with 1% LignoBond DD.

Samples were taken out for pellet durability measurements.

After evaluating the first run, a second trial with 1% LignoBond DD was performed. This time we altered the process parameters. The level of energy is an important factor affecting quality. For ruminant feed, 18-24 kWh/ton is recommended (ref. The Pelleting Handbook). The energy level for the first run was calculated to be 15.1 kWh/ton. By lowering the temperature 5 degrees, the amperage was lifted. At the same time, the production rate was increased from 7.2 to 8.8 tons/hour – corresponding to a 22% increase. The PDI was maintained at ~ 96 in this second run.

It was interesting to test the limits for potentially even higher PDI, energy levels as well as production rate. This was done in the third run, where the temperature was lowered even more. The desired effect seemed to be found in the second run; The third run confirmed the limiting conditions.

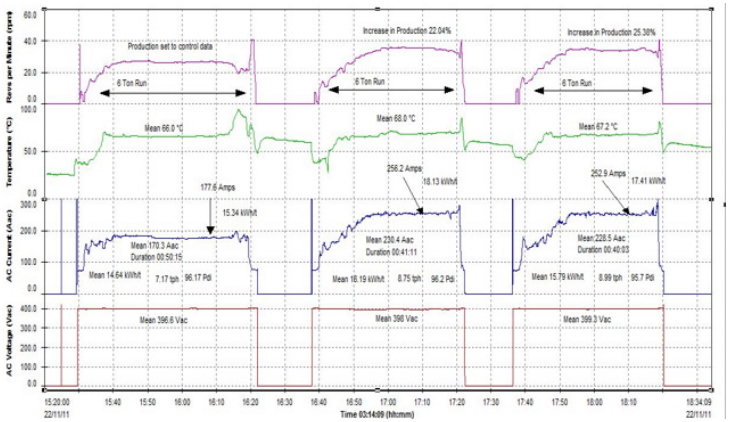

Figure 3 - Data from Borregaard's data logger.

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CONCLUSION

The trial showed that the quality, measured as PDI, can be improved by adding LignoBond DD.

In addition to enhanced quality, optimal energy levels and increased production rate could be accomplished.

THIS WORK WAS PERFORMED AND REPORTED BY BORREGAARD

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