Borregaard

Increase production without sacrificing pellet quality

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Tapioca/cassava is one of many opportunity ingredients that can represent significant pelleting challenges for feed producers.

Introduction

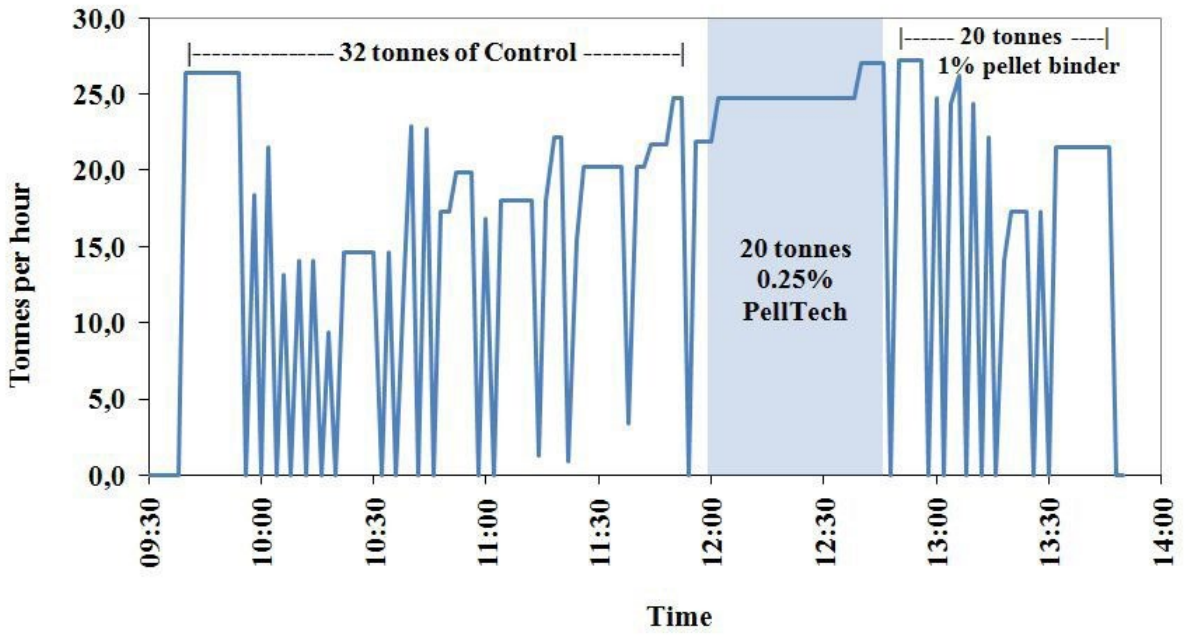
DDGS, Tapioca and other opportunity ingredients present unique pelleting challenges.

Thailand was prospering in the mid-'90s. More people could afford to eat chicken, and the pellet mills could not keep up with demand. Attempts to increase production rate by reducing die thickness or adding fat to the mixer caused an unwelcome loss of pellet durability. This challenge led to the development of PellTech, a pelleting aid that helps to increase production rate without loss of pellet quality.

One of the best examples of PellTech's effectiveness occurred in a broiler pellet containing tapioca (cassava). In this case the tapioca starch formed a sticky plaque on the surface of the hot die hole, making it impossible to maintain a steady production rate (Figure 1). Sixteen interruptions occurred in the course of a 32 ton run. In contrast, 20 tons of the same formulation ran smoothly when 0.25% PellTech was added to the mix.

Production rate increased from 15.5 to 26.6 tons per hour. A second 20 tons were mixed to include 1% of a lignin-based pelleting aid. Once again the run was immediately plagued with interruptions. PellTech offered a unique solution for this problem. Pellet durability was greatly improved when PellTech allowed the mill to maintain continuous production with adequate conditioning temperature.

Figure 1. Throughput record of broiler grower pellets containing tapioca



Today, high ingredient prices are forcing us to formulate opportunity ingredients such as dried distillers grains with solubles (DDGS) into rations for pelleting. Adding 10 to 20% DDGS will certainly have an impact on processing and the physical quality of the pellet. Unfortunately, it is difficult to predict what that impact will be. Sometimes amperage drops and pellet quality suffers, as though the DDGS were contributing extra fat to the system. Addition of a lignin-based binder might be helpful in that situation. Other times amperage may increase and even force a reduction in production rate. When that occurs, PellTech may be useful.

PellTech was recently evaluated in a corn/soya ration that contained 15% DDGS. In this case the use of DDGS had caused production rate to drop by 30 – 40%,. The pellet mill operator selected set points for the Control run at 70% maximum load (164 amps) with a conditioning temperature of 1750 F. Under these conditions production rate leveled out at 19.5 tons per hour. When the formulation was then changed by adding 0.5% PellTech with a set-point of 19.5 tons per hour maximum load dropped to 62% (146 amps). Finally, the set-point was switched back to 70% load and production rate was allowed to reestablish at 26.6 tons per hour, a 33% improvement.

Figure 2. Data logger record of temperature and amperage in a finisher pellet

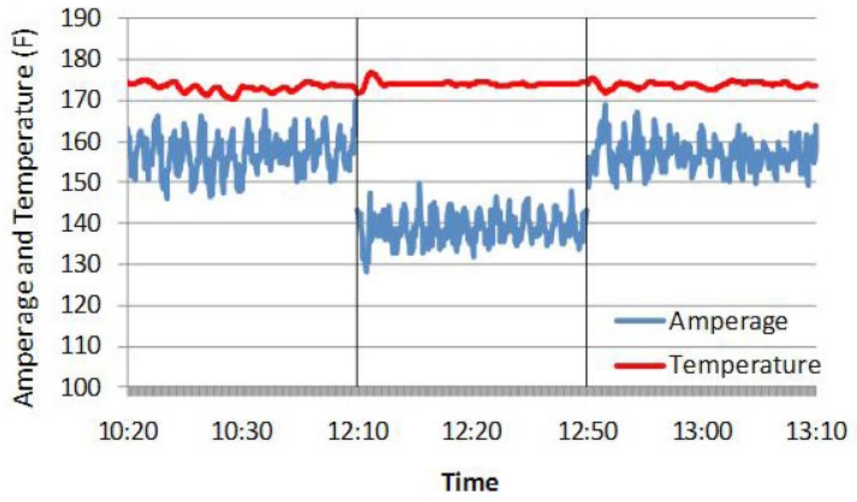


Table 1. Average values over 20 minute segments of finisher pellets

Segment	*Temp °F*	*TPH*	*Amps*	*kWh/T*	*PDI*
Control - Slow	174.0	19.5	164	12.6	81.0
PellTech - Slow	174.6	19.6	146	11.1	85.2
PellTech - Fast	174.4	26.0	164	9.4	81.6

Samples of pellets were collected every 5 minutes, cooled, and tested for durability. Since PellTech's formula includes binding components, pellet durability (PDI) increased from 81.0 to 85.2 when 0.5% PellTech was added at the same production rate. When production rate was allowed to increase to 26.6 tons per hour, pellet durability declined to 81.6 but still exceeded the control PDI.

This same approach of first maintaining production rate and then letting it readjust at 70% load was used with different levels of PellTech (Figure 3). Inclusion of 0.25, 0.5, and 0.75% PellTech allowed the production rate to increase from 19.5 tons per hour to 24.6, 26.6, and 28.0 tons per hour. As production rates increased, PellTech helped maintain pellet durability at about 80 PDI.

PellTech is a unique pelleting aid that can allow significant increases in production rate in formulations that contain sticky, starchy, slow running ingredients. In feeds where these hard-running ingredients are not present, a production increase from PellTech is less likely.

Conclusion

When an opportunity ingredient forces a production slowdown, that is when PellTech is likely to be most useful. Opportunity ingredients allow us to formulate for less money, but they often create new challenges. PellTech can help to deliver more tons per hour without sacrificing pellet quality.

Figure 3 – Production increase with varied levels of PellTech at 70% load