WISCONSIN-Research on Performance of High-Density Balers, Twine Strength Underway

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arge-square balers (LSB), available for over 30 years, are now mainstays on many farms. Manufacturers continue to evolve and improve designs. One recent trend, driven by crop residue harvesting, is the "high-density" LSB. One company suggested a new "Square Baler Classification System" which classifies balers based on plunger force, bale size, and bale weight – "High-Density" LSBs would be considered Class 6-8. Farmers may not wish to achieve greater alfalfa bale density, but may be interested in greater density in crops like wheat straw or corn stover. Baler modifications typically made to produce greater density include longer bale chambers, greater chamber convergence, and larger flywheels and drivelines. Additional knotters are also used to constrain high-density bales. Our research has been investigating performance of these balers, specifically with regard to achievable bale densities and added power and fuel needed to make high-density bales. Results will show high-density balers can achieve impressive densities, although greater power and fuel are required.

Twine failure is an important issue. Failure of a single bale twine can cause adjacent twines to fail, leading to disintegration. Most farmers know the frustration, loss of productivity, and added cost of rebaling. Although twine can fail due to excess tension, failures often occur because of knotter issues. Twine is rated by "knot strength." As knot strength increases, cost increases considerably. Farmers may use greater knot strength than necessary simply as "insurance." Our research has developed a system to measure twine tension of different density bales, which may help make more economical twine recommendations. We will discuss study results in a coming issue of Forage Focus.