

Up-size your baler tractor?

By JOHN VOGEL

YOU wouldn't think of stacking large square bales with a pint-sized tractor. Yet, too many will hook an undersized "baler tractor" to a 10-ton square baler, then load another ton of hay to it. It's a recipe for disaster, warns Dennis Engel, technician for large square balers at Hooper Inc., Intercourse, Pa.

Baler manufacturers set minimum tractor horsepower and weight require-

Key Points

- Midsized tractors are no match for 10-ton large square balers.
- On hills and soft ground, even a 150-hp tractor can be pushed around.
- Make sure tractors carry plenty of ballast, and turn on 4wd.

ments. For Hesston's 2190 4x4 square baler, for instance, the minimum is 150 hp, according to its manufacturer.

Minimum tractor weight is 21,140 pounds. Recommended horsepower is 180 hp plus. The bigger the baler and bale, the bigger the tractor necessary.

It also depends on field conditions and terrain, Engel emphasizes. "A 150-hp tractor on hills is likely be pushed around by a 4x4 baler. Some big tractors with balers have been jackknifed due to muddy ground conditions and steep terrain. And that can cause significant hitch damage."



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Dennis Murphy, ag safety engineer at Penn State University, strongly agrees. He says hitch damage can happen on wet grass or any muddy spots. "The same is true if you're transporting a baler down the road. With 20,000 to 24,000 pounds of momentum behind you, you can get pushing, sliding and jackknifing, or get pushed into an intersection."

"When approaching any hill," adds Engel, "always have a plan of escape in mind."

Exceed tractor specs

Double-check your baler's owner manual. Exceeding manufacturer's recommendations for tractor size and weight is a smart safety measure. Engel notes another reason: "Adequate power and speed is for proper material flow and bale compression."

Some farmers use four-wheel-drive tractors, but don't have front-wheel drive turned on, "or have the switch in the 'auto' mode," he adds. "You need it running with a 4x4 baler," he stresses.

Don't push limits

LARGE square bales weigh 800 to 1,800 pounds, depending on size, density and material harvested. Think of it another way: One large bale contains 20 to 40 small square bales. And, at times, a large baler may be carrying one and a half to two bales.

Most machines rely on the tractor's brakes since few balers in this country have optional brakes. The American Society of Agricultural and Biological Engineers specify that without brakes on the baler, towed units should not weigh more than 1.5 times the towing unit, according to Dennis Buckmaster, Purdue University ag engineer. Most tractors are ballasted to about 120 pounds per PTO horsepower, he adds.

Here's a quick lesson in baler momentum and tractor braking from Buckmaster. He hooked theoretical 180-hp and 150-hp tractors to a 22,740-pound baler with a 1,600-pound bale aboard, and put them to a test via a computer spreadsheet.

The 180-hp tractor, ballasted to 120 pounds per horsepower, weighed 21,600 pounds. The 150-hp tractor, ballasted to 130 pounds, weighed in at 19,500 pounds. To gauge the impact of weight, speed and momentum on stopping time and distance, he put them on the "road" running at 20 mph with 24,300 pounds of baler and bale in tow.

"Even with the extra weight, the 150-hp tractor pushed the limits of braking capacity to get stopped in 87 feet," says Buckmaster. "Recognizing brake and weight limits, the stopping distance was 20% longer."

"Just where would you be if you went 17 feet past a stop sign?" he asks. "And this analysis is about braking only. It says nothing about steering and control!"



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