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## **When you stick, you're stuck**

**By Curtis Seltzer**

**BLUE GRASS, Va.**—Big snowfalls of 12 inches or more are too deep to have much fun in. A two-foot dump is a hassle. A three-footer is a burden, and four feet is a major misery.

Deep snows, high winds and low temperatures make everything harder on a farm. Livestock can get cut off from water, shelter and feed. Newborns may not get the warmth and care they need. Everything gets more complicated and less doable when electric power shuts down.

Even light snows raise the specter of the polar opposite dangers: getting stuck and sliding out of control.

Of the two, I think most of us prefer being immobilized to being unanchored.

I've had the experience of heading up an ice-slick hill with my foot on the gas as I slid backward out of control. My tractor has given me such rides on ice, mud and the impossible combination of the two.

In deep snow, stuck is more common than frictionless joy riding.

Every wheeled thing I own I've gotten snow-stuck at least once. Things that have engines connected to wheels, I've stuck up more than that.

Since I could no longer contribute to either hair-raising skids or hair-pulling stucks, I got rid of our two-wheel-drive (2WD) vehicles soon after moving to the farm more than 30 years ago.

Snow stops vehicles from moving in two situations: 1) when the ground/pavement is so slick that drive wheels can't get traction; and 2) when deep snow packs in under the chassis, denying the drive wheels a chance to get a weighted grip on frozen ground.

2WDs are less capable in bad conditions than vehicles with either all-wheel drive (AWD) or four-wheel drive (4WD/4x4). Both provide

better acceleration and traction than 2WD, but are no better on braking (stopping) and handling (cornering).

For snow and ice, AWD is more nimble and sure-footed than 4WD.

AWD vehicles are small SUVs, crossovers and some sedans. Their weight is distributed more evenly for traction than either rear-end-light 4WD pickup trucks or cars built on a truck platform like the big SUVs.

AWD always distributes drive power (torque) to front wheels and when needed to rear wheels. Typically, front wheels get 90 percent of the torque, but in harsh conditions, the car's differential -- gears that direct and redistribute power -- changes the distribution to 50-50. Some AWD models now distribute power to each wheel independently, which is called "torque vectoring."

4WD vehicles require the driver to shift from 2WD into 4WD, either high range (4H) or low range (4L). AWD is always engaged, and it does not have a high-and-low-range option.

Low-range 4WD (4L) does not create more traction; it creates more torque. On slippery surfaces, more torque only creates spinning wheels.

4L is useful when plowing *slowly* through heavy mud, sand, snow, or over rocks.

4L should never be used on dry, high-traction surfaces unless you want to acquire "driveline wind up," which you don't want unless you're interested in underwriting a long paid vacation for your mechanic. Wind up is a polite way of describing the breaking and freezing of the gears and moving parts that feed power from engine to wheels.

High-range 4WD (4H) is useful for driving on light snow and dirt roads, because it provides better traction than 2WD and maintains forward movement with less wheel spinning and slipping.

4H also provides more lateral stability than 2WD so that sideways slipping is less likely. It can be used up to about 50 mph. However, driving on hard, dry, curvy pavement in 4H should be avoided.

Only "manual differential locks" will eliminate wheel spin in a 4WD vehicle, but this technology is used almost exclusively by 4x4

professionals. “Automatic traction control” or a “limited slip differential” reduce wheel spin in 4WDs, but don’t prevent it.

Unfortunately, given hostile conditions and a doofus driver, any vehicle will get stuck—take it from me.

One lesson I’ve learned on the farm is that once I am stuck, more energy fed into the stuck system simply causes wheels to spin and makes the stuck stuckier.

Occasionally, I can get out of a stuck by waiting for wet conditions to dry or soupy conditions to freeze. A solution based on patiently doing nothing means that I was not in a true stuck.

Less occasionally, I chain up and conscript a blameless party to operate the vehicle of her choice. This necessarily involves a lot of shouted “STOPs!” and “No, not that way.”

Few non-farmers realize the destructive power of a chain connecting one stuck spouse to the other.

And then, every once in a while, something works. You get unstuck on your own. You think you’ve made progress when, in fact, you’re only back at the point where you first got stuck.

Upon failing to finagle a vehicle out of a stuck, you escape by being pulled free. To accomplish this, you need a vehicle bigger than what you’re stuck in—a wrecker, for example.

(Wreckers need a name change, since those of that profession in whose debt I am disentangle wrecks rather than cause them. You wouldn’t call a doctor a “diseaser,” would you?)

Stuck seems to be a common human condition. It’s not limited to farm mud and snow storms.

Faced with the certainty of being stuck in one thing or another, farmers have shown how to face this fate with acceptance and optimism. We get stuck; we get out. Repeat after me.

It’s also not a bad idea to have a good unwrecker nearby.