

Look, no hands!

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Murray Palin, a small-grain farmer in Calgary, Alberta, knows firsthand how a wheat out can get the best of any driver. Fatigue sets in, the mind wanders, and with it goes the combine. Close your eyes and you still see wheat. Operator fatigue is the combine driver's biggest challenge, Palin notes. I'm definitely interested in any technology that can relieve some of the burden.

Palin got some relief last summer when Caterpillar asked him to test its new Laser Pilot small-grain header guidance system on his Lexion combine. The Laser Pilot is Cat's most recent step in driver-assist technology after it introduced its Autopilot corn header system a few years ago. Unlike the finger-type sensors that the Autopilot uses for sensing corn stalk rows, Laser Pilot sweeps a laser back and forth to sense height, color and heat differences along the edge of harvested small grains. The data are interpreted and fed back to the combine's existing on-board Autopilot feature.

I've always been a bit skeptical about the reliability of electronic devices, Palin says. And giving up control to the machine took some getting used to. But the Laser Pilot worked great if we stayed within the speed range it was calibrated for. There's less need to overlap on passes, so that saved a foot or two on each round. And it worked especially well at night. I only had to take control at the end of the field, so there was a lot less fatigue.

According to Caterpillar, the Laser Pilot can be installed on any Lexion combine that already has existing Autopilot technology. Cat is still working on a version of Laser Pilot that will work for soybean harvest. The cost for adding Laser Pilot to a Lexion combine is \$1,525. For more information, contact Caterpillar Agricultural Products Inc., Dept. FIN, 12101 Barber-Greene Rd., DeKalb, IL 60115, 402/861-1070, www.caterpillar.com or circle 208.

Tractor conversion kits

If you want autopilot on your tractor, a few companies sell add-on navigation systems that will drive tractors straight down the row. With these systems, all the human driver has to do is keep an eye on the settings and turn around at the ends. Tractor autopilot kits have already debuted with great success on some of the high-value fruit and vegetable crops of California and Australia. And they could soon be coming to a cornfield near you.

John Inman, a professional engineer and consultant based in Salinas, CA, has worked with several companies to test and help develop farm tractor autopilot systems. Whether you're planting short rows of vegetables on raised beds with drip irrigation on a small plot farm in California, or planting and cultivating mile-long corn fields in Nebraska, Inman says the ability to drive an almost perfectly straight line and keep the coordinates of those wheel tracks in a database is a huge productivity advantage.

Today's autopilot systems are accurate to within the inch, which means your tractor and its implements can follow precisely the same path several times a year or once a year every five years, depending on your needs. The machine can steer far more accurately than even the most skilled driver, Inman says. Another benefit of precise GPS guidance is reduced overlap when pulling very wide tillage equipment. Cutting overlap down from a few feet to two inches easily provides at least a 4 to 5% increase in productivity.

Inman points to other efficiencies. Since these systems are easy to learn and use, an unskilled driver can now handle jobs that have traditionally required only very skilled drivers. Plus, autopilot tractors can run at night, in fog and in other low-visibility conditions, making more effective use of equipment and making it easier to maintain tight production schedules. In some situations, one tractor with autopilot could do the job of two tractors.

As you might expect, automatic steering systems for tractors don't come cheap. Farmers likely to benefit most will be those who grow high-value crops or those who farm very large acreages. If you plan on shopping for an autopilot system, Inman says you should try different models, paying special attention to how well the software works, ease of use and the service capabilities of the manufacturer.

Also bear in mind that new products from different companies are likely to enter the market soon, and that could drive prices down. Agsystems of Brisbane, Australia, recently began marketing its Beeline autopilot technology to California farmers and says it will make its Broadacre system available to Midwestern farmers sometime in 2001. Prices will start at \$20,000. For more information, contact Agsystems Pty. Ltd., Dept. FIN, Box 3865, South Brisbane, Queensland, Australia 4101, 559/256-2333, www.agsystems.com.au or circle 209.

Autosteer

Meanwhile, tractor giants such as Case, Caterpillar and John Deere have been researching their own systems for years. And although add-on autopilot systems are compatible with many types of hydraulically steered tractors, the current drive-by-wire steering system of Deere T-series tractors lends itself particularly well to autosteer conversion.

Here are two autosteer conversion kits available on the market now.

Trimble AgGPS. Trimble Navigation introduced its AgGPS Autopilot at the Tulare, CA, farm show a year ago and tested it on farm fields from the West Coast to Iowa last season. The system uses a computer and specialized software to coordinate GPS with a 900-MHz line-of-sight base station. The main components of Trimble's autopilot are a base station and a tractor conversion kit that includes a remote display, memory log and steering valve. The system also comes with a lightbar to reassure the driver that the tractor is on course. (Yes, you still need a human driver to turn at the end rows.) The company recently reduced the list price for base station and conversion kit for one tractor to \$50,000. For more information, contact Trimble Navigation Ltd., Dept. FIN, 9290 Bond, Suite 102, Overland Park, KS 66214, 800/865-7438, www.trimble.com or circle 210.

Integrinautics AF5000. Integrinautics also had its autopilot coming out party at the Tulare farm show last year. Since then, several dozen West Coast farmers have already adopted the AF5000 Farm Vehicle Steering Control System to work high-value fruit and vegetable fields. And the company says its product will work equally well for the needs of large-acreage row-crop farmers in the Midwest. Like the Trimble system, the AF5000 is easy to use and drives uncannily accurate straight lines that can be saved in a database. The all-inclusive package includes a portable base station, user display, steering valve and GPS antenna array for \$44,500. For more information, contact Integrinautics Corp., Dept. FIN, 1505 Adams Dr., Menlo Park, CA 94025, 650/833-5600, www.gpsfarm.com or circle 211.

Start small with Robomower

Maybe you're not willing to be the first in your county to risk 20 to 50 grand on newfangled tractor guidance technology. So you'll just have to accept that, at least for the next few years, there will still be times when you're too busy in the field to mow your lawn.

That's where the Robomower RL500 from Friendly Robotics comes to the rescue. Simply set up a wire boundary around the edges of your yard, charge the battery and let the little yard droid go to work as it quietly mows your yard and mulches the clippings all by itself. The mower navigates around obstacles and mows any shape of yard as long as slope does not exceed 15. It mows up to 3,200 sq. ft. on one charge, unfortunately nowhere near the large acreages some farm estate owners mow. At least it smells better than a goat and is more useful than Aibo the robot dog. Maybe you can use it to keep the area immediately in front of your house mowed. Base price: \$795. For more information, contact Friendly Robotics, Dept. FIN, 1414 W. Walnut Hill Lane, Irving, TX 75038, 888/404-7626, www.robomower.com or circle 212.