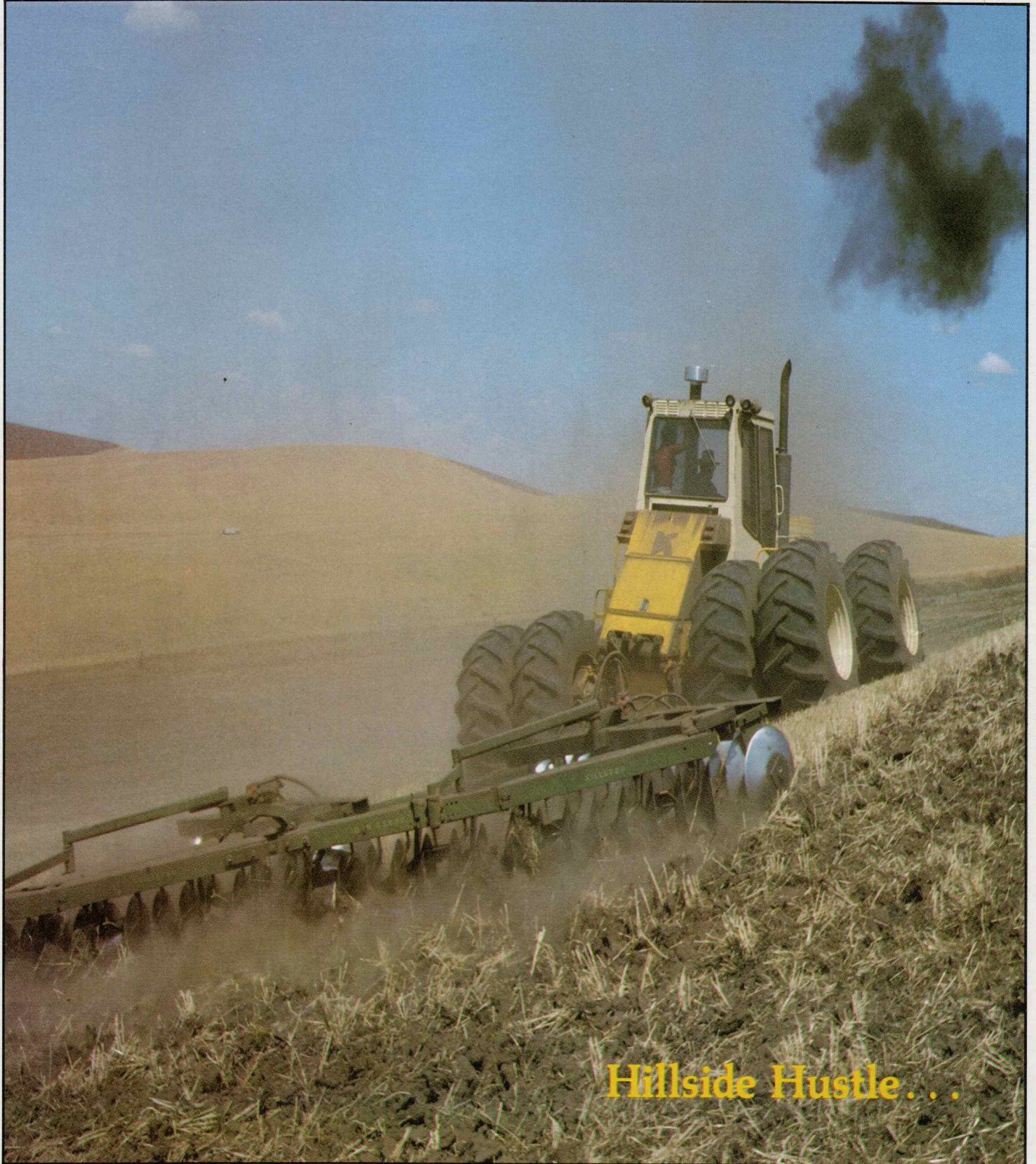


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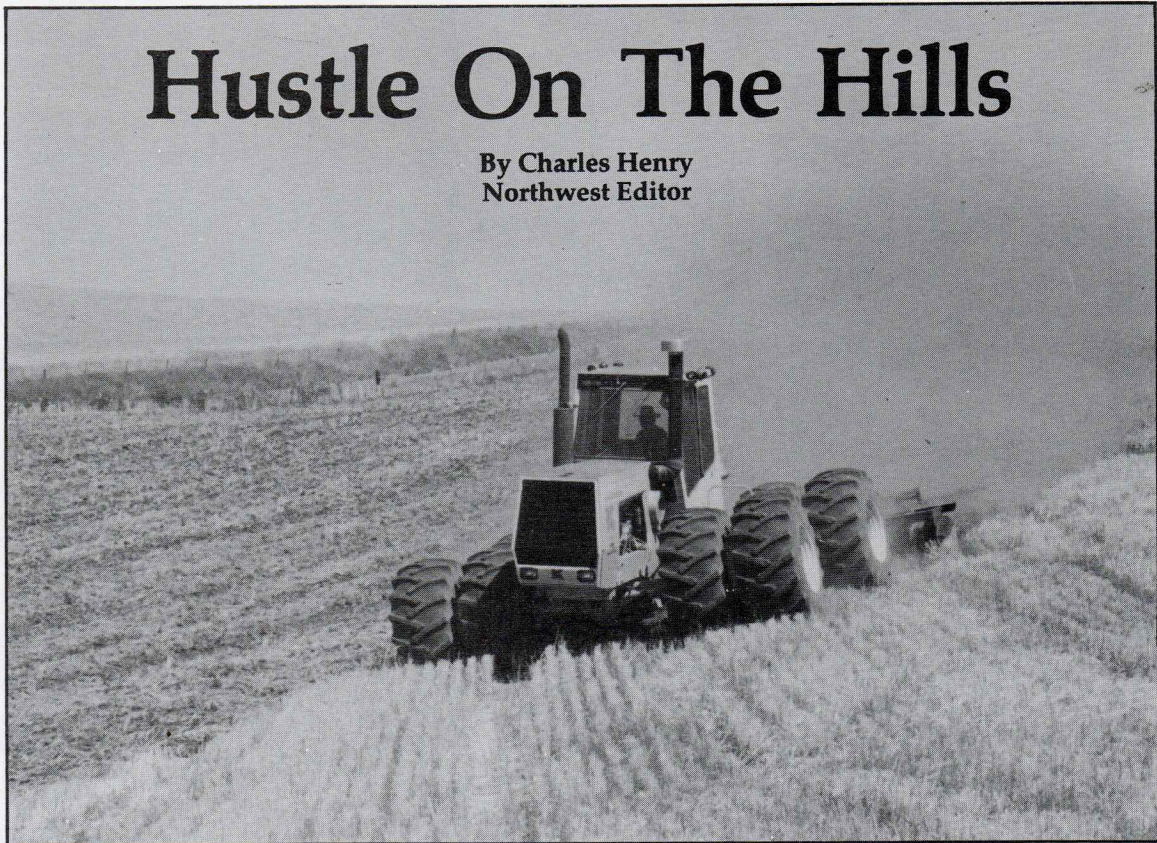
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Hillside Hustle...

Hustle On The Hills

By Charles Henry
Northwest Editor



Smith's self-leveling Knudson 4360 Hillside tractor diskings barley stubble near LaCrosse, Wash.

The way Ray and Harmon Smith have it figured, the only place they can cut costs is in the labor department. Like most grain growers, these LaCrosse, Wash., ranchers can't raise their prices at will even though fuel, chemical, seed and other farm inputs get more expensive each year.

"The only place left to cut is labor," Ray Smith states. "We have to cover the same amount of ground faster and with fewer people while maintaining our yields."

Along with most hill country grain producers, the Smiths have relied on crawler tractors to farm their steep land. But crawlers have an operating speed of 3.8 mph and they are hard to transport between farms, something that is necessary for the Smith's since they farm 5,200 acres. And four-wheel drive tractors have not been a complete answer for them either since their hills are some of the steepest in the region.

So in 1974, they purchased their first leveling, four-wheel drive wheel tractor—Knudson 360. In 1979 they added a Knudson 310 and last year purchased the first

new generation Knudson—a 4360. The 4360 is not only new, but it is also being built by another manufacturer—Allmand Brothers, Inc., in Holdrege, Neb. Jerome Knudson, designer and original manufacturer of the Knudson hillside tractor has sold all his interest to the Allmands.

Hillside Hustle

Covering the ground quickly and efficiently are the keys to the Smith's operation, especially this past season when they switched entirely to spring barley.

"We were watching our yields drop each year in our wheat due to rust and foot rot, and the various chemicals we were using to control these diseases were getting expensive," Ray Smith explained. "We thought the only way out was to switch to spring barley and oats for a few years to get our soil cleaned up. So we contracted 4,000 tons of barley and planted 4,800 acres this spring along with 400 acres of oats. It was a risk because we knew we had to cover a lot of ground in the spring when weather conditions are not always favorable. Some of

our neighbors thought we were crazy to rely strictly on a spring seeded crop."

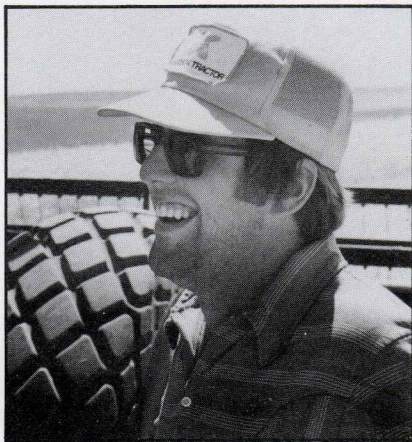
The Smiths have been gearing up in recent years—replacing older, smaller equipment with wider, faster implements whenever possible. And they now have three hillside tractors.

"In recent years, we have tried to simplify our equipment management so that different tractors can pull the same implement and every piece is compatible. It doesn't make sense to have a wide drill if the only tractor capable of pulling it breaks down," Ray explained. "We want our power to be interchangeable with every implement."

Benefits

Switching to the hillside tractors has eliminated one full-time man in the operation, Harmon explains. Plus, he lists these advantages to the wheel tractors:

- Comfort is improved. This has resulted in operators covering up to 20 percent more ground during each shift.
- Better cheatgrass control since the sidehill tractors travel almost



Harmon Smith, LaCrosse, Wash., grain grower has used a Knudson Sidehill tractor for seven years.

twice as fast as crawlers and this speed enables implements to pop cheatgrass out of the soil.

• And, the wheel tractors make it easier for the Smiths to find help—workers like running the tractors.

"Crawler tractor comfort and speeds have improved with newer models, and we are basing our comparisons against the one crawler we still use, a D-7," Harmon says. "But we still feel the hillside tractors out-perform even the new crawlers or conventional wheel tractors."

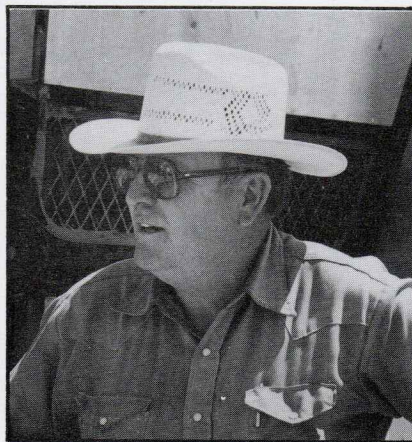
The Smiths do use the D-7 for summer fallow work since their soil has a tendency to powder when dry and the crawler helps with this problem. Also, the crawler is used to pull a deep furrow drill that cannot be operated very fast anyway. But the bulk of their land preparation and seeding is done with the hillside Knudsons.

Last spring the Smiths covered 25,000 acres in less than 60 days, including 10 to 15 days off due to rain. All except 680 acres were seeded with the wheel tractors.

Harmon Smith lists the implements they used to accomplish this feat: A 52-foot Hesston one-way disk; 36-foot Caulkins cultiweeder; 63-foot Noble cultivator; 63-foot fertilizer applicator; 60-foot five bar harrow; 36-foot IH 620 double disk drills.

The Smiths used a conventional four-wheel drive tractor for 100 hours while their newest hillside was being demonstrated at a farm show last spring, so they were able to compare the two types of machines directly.

"The Knudson stays on hills bet-



Ray Smith farms with his son Harmon near LaCrosse, Wash., growing 5,000 acres of barley on some of the steepest hills in the Northwest.

ter; we can operate them faster; operator comfort is improved; and engine life is longer since all fluids remain level in the unit," Harmon explains. "Tests done by the manufacturer show that 25 percent of the tractor's weight is transferred to the upper wheels when the unit is leveling. About 50 percent of its ability to stay on steep hills is due to the leveling and 50 percent to its crab steering," Smith said. The 4360 can be ordered with triples or duals, but the Smiths prefer the duals which are Firestone 30.5LX32, 10-ply on 32 x 27 rims.

"Our new hillside tractor helps us cover the same amount of ground faster and with fewer people while maintaining our yields."

"The differences between our new Knudson and the older models are like night and day—they have really improved," Harmon Smith stated. "The new engine is a Cummins NTA 855 Constant Power with Big Cams. There are now wet brakes on all four corners that feature Cat 980-C wheel ends. Also the axle housing has been redesigned with truck castings that are lighter and help dissipate heat better than the older, heavier castings. The new castings have helped improve ring gear and pinion life."

The transmission on the 4360 is also new, according to Harmon. Clutch problems have almost been

completely eliminated with the new Twin Disc Model 1402-122 power shift that allows full power shifting among 12 forward gears through hydraulically actuated multiple disk wet clutches. Once the operator puts the tractor in gear, he never has to touch the clutch again while pulling hills or downgrades, Smith states.

The Knudson carries about 400 gallons of fuel and consumes between 16 and 18 gallons per hour (gph) for most operations. This compares with 20 gph for the old 360, and 9-10 gph for the D-7 crawler, Smith explains.

"A lot of growers are concerned when they see that fuel consumption is higher than a crawler, but remember we can travel twice as fast so our per acre use is about the same," the grower explained.

The Knudson is self-leveling through cradle mounted front and rear axles that allow the tractor to level on a 26.8 percent slope. The rear wheels can be steered independently of the front with a T-handle mounted next to the other hydraulic controls in the cab. The Knudson comes equipped with four Seymour couplers that can operate four remote cylinders. Turning radius is 25.5 feet with duals and 25.7 feet with triples.

Smith says the drawbar is attached to just under the engine. This is possible because the tractor has a rigid frame and employs crab steering. The 4360 comes with a two-year warranty on everything but the tires. "We have had some gasket failure in the transmission and some clutch problems in the older models, but that has been about it," Smith says. "They are well-built tractors."

Smith feels they will have their \$165,000 investment in the 4360 back in 10 years. "Our older Knudsons are worth more now than when we bought them, so I think we will get our money's worth with the new one, too," he concluded.

Roger Allmand, president of Almond Brothers, Inc., says they do not have any current plans to build more than two models of the 4360—a 310 hp model and the 360 hp unit the Smiths operate. They are currently establishing a dealer network, but can deliver a new tractor in 90 days from their plant in Nebraska, he states.



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