



What makes Martin's 30-ft. trailer unique is that he can hitch and unhitch quickly without getting off the tractor.

## Hitch Makes Trailer Hook-Up Easy

"I never have to get off the tractor to hook up or unhook. Also, it solves the problem of trying to line up hitch pins. I don't know how I ever got along without it," says Ronald Martin, Cookeville, Tenn., about his round bale trailer that has an unusual hitch.

The trailer has an 8-in. dia. steel ring that's picked up by a home-built pintle hitch on his tractor. The hitch ring is held up off the ground for easy hookup by a pivoting hitch stand. By raising or lowering the 3-pt., Martin can hook or unhook the trailer without ever getting off the tractor.

The hitch stand is made from a couple pieces of channel iron welded into a box shape. It slides up and down on a horizontal bar under the tongue that allows it to pivot back freely if it hits an object. There are two V-notches cut into the top that lock onto a crossbar when the trailer is parked.

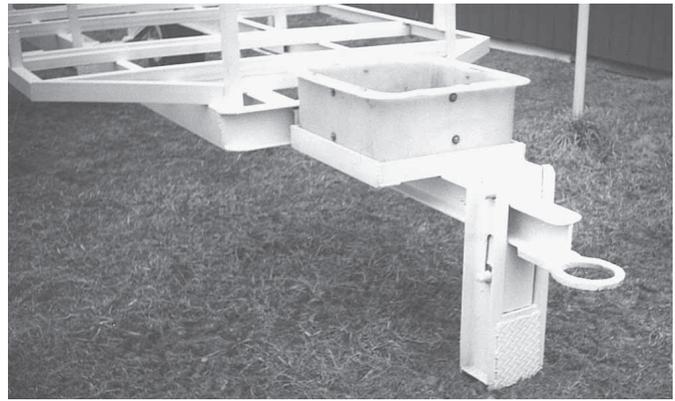
The 30-ft. long trailer can handle four 5 or 6-ft. bales and rides on the wheels and axle

off a Ford 3/4-ton pickup.

"It's the handiest piece of equipment I own," says Martin. "I use my New Holland 4630 4-WD tractor to pull it. Even when the pintle hitch is open, I've never had the ring jump off it. The reason lies in how the trailer is balanced. One third of the trailer frame has to be behind the axle and two thirds in front, in order to keep enough weight on the trailer's tongue at all times. To keep the right balance, I load the front part of the trailer first and unload the back part first.

"The trailer will stay on the hitch whether it's empty or loaded with one, two, three, or four bales, as long as it's loaded correctly. Even if I go across a rough field empty the trailer will stay on because of the weight balance. The only time I have to close the hitch is when I travel on a public road.

"I built it three years ago, using 6-in. channel iron to build the frame. I spent about \$700 to build it, but if I couldn't get another one I



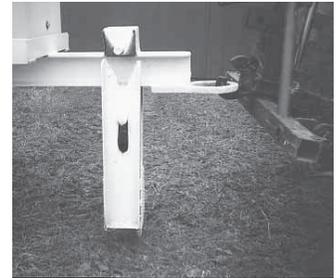
An 8-in. dia. steel hitch on trailer is picked up by a home-built pintle hitch. In transport, hitch stand is free to pivot out of the way if it hits an object.

wouldn't sell mine for \$3,000."

He used 1-in. thick steel to build the ring hitch. "The big 8-in. diameter ring makes it easy to back up the tractor and hook up to the pintle hitch, even in muddy conditions and from any angle," says Martin.

He built a bale spear on the same 3-pt. frame that supports the pintle hitch, using the rod out of an old backhoe's hydraulic cylinder to make the spear. "I can use the bale spear to load and unload bales from the trailer, or to place bales in my feed bunks or on the ground."

Contact: FARM SHOW Followup, Ronald Martin, 7770 Anson Rd., Cookeville, Tenn. 38501 (ph 931 526-1836 or 931 260-5196).



When parked, two V-notches on top of hitch stand hook it into place.



This new bean harvester should be on the market within 5 years. It's much smaller than a conventional combine because it processes only the beans, not the whole plant.

## A New Way To Harvest Soybeans

By Janis Schole, Contributing Editor

A totally new way to harvest soybeans is on its way to American farms. A prototype has been built and its inventors say it'll be less expensive and gentler on beans, resulting in a higher quality harvest.

The patented unit should be on the market within five years.

The dramatically different harvester, which is much smaller because it only harvests the beans, not the whole plant, has been developed over several decades by two ag engineers — one Brazilian and one American.

Milford Hanna of the University of Nebraska-Lincoln has been working with Cezar Mesquita of Brazil on the radical new design. With the help of a Brazilian investor and other researchers, they developed and built a prototype that has outperformed conventional combines in Brazilian field trials. It has been used for the past four years.

"In Cezar's research, he found that threshing the entire plant requires 10 times more energy than collecting just the pods," Hanna explains. "The prototype is a four-row self-propelled unit, run by a 75-hp motor that was salvaged from an old car. It would likely only require about 40 to 50 horsepower, however."



Cezar Mesquita and Milford Hanna developed the radical new combine.

There's no cutting bar or concave cylinders. Instead, it has two horizontal, counter-rotating shafts lined with many plastic three-fingered discs.

The fingers rotate at up to 2,000 rpm and, when they hit the pods, they pop open, emptying the beans into the combine where cen-



Add-on windshield is held in place by a steel frame that bolts to the front rack.

## ATV Windshield

Roger Moore, Oconee, Ill., likes the windshield he built for his Honda ATV. "It really cuts down on the wind and prevents me from getting hit by bushes or branches in wooded areas while checking cattle," he says.

The 27 1/2 by 39-in. wide plexiglass windshield is held in place by a square tubing frame that's bolted to the front rack.

Although the windshield doesn't bend, he says it vibrates and sometimes cracks. "I have to replace the plexiglass about every two years," he says, noting that he's thinking of changing to Lexan plastic, which is tougher.

Contact: FARM SHOW Followup, Roger Moore, 19207 E 29<sup>th</sup> Rd., Oconee, Ill. 62553 (ph/fax 217 539-4366).

trifugal force throws them up and into an impact-resistant plastic pvc pipe. From there, they are carried to a separator where any chaff is removed by a fan-produced air stream. Most of the chaff has already been dispersed out the top of the head, however.

Because the unit takes advantage of the soybean pod's natural tendency to open up or shatter, the plant stalks are left standing, stripped of most leaves and pods.

"There is almost no damage to the beans with this combine," Hanna says. "There was less than one percent broken beans in our field trials, whereas conventional combines typically have broken rates closer to eight or nine percent."

Hanna believes the machine will be an ideal size for small and medium-size soybean growers, and university and company test plots. It could also be easily modified to work with other crops, such as edible beans or rice, he says.

Hanna and Mesquita are currently seeking a manufacturer and believe the unit lends itself to either self-propelled, pull-type or tractor-mounted designs.

Contact: FARM SHOW Followup, Milford Hanna, Biological Systems Engineer, University of Nebraska - Lincoln, Industrial Agricultural Products Center, 211 L.W. Chase Hall, Lincoln, Neb. 68583 (ph 402 472-1634; fax 402 472-6338; mhanna1@unl.edu).