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Sprinkler Head Saves Water, Increases Yield

Ball-shaped, center-pivot sprinkler heads from Idem Irrigation have proven to be more effective at delivering insecticide and fertilizer. Now a design variation on the Idem-Ball has proven equally effective at reducing water loss and has moved rapidly to the market. The Omni-Directional Sprinkler Head has delivered a yield increase of up to 7.92 percent, reduced water stress days, and increased soil saturation and deeper root growth.

“Our company founder was working with the University of Nebraska on pest control,” says Jeremy Becker, Idem Irrigation. “They wanted a delivery device to spray compounds to the underside of the corn leaf.”

A ball design with very small holes on the top proved effective for pesticide delivery. That raised the question of using a ball design for a center pivot sprinkler head. Two years ago, Idem Irrigation was formed to deliver on the technology.

“Sprinkler applications required a different orifice plus different locations of holes in the ball,” says Becker. “Our sprinkler balls put out more of a stream of water versus a spray of fine droplets. We’re seeing yield increases as more water gets to the ground where the crop can use it.”

Becker reports less runoff with the sprinkler balls, depending on soil type. Drop extensions lower the balls closer to the ground. The biggest impact on water use results from less wind drift and evaporation

compared to standard center pivot sprinklers. This has been supported by some soil moisture probe data.

Idem Irrigation has introduced sprinkler ball technology to the market. The pesticide/fertilizer delivery application is still in development.

“The pesticide application ball design has proven more effective compared to crop dusters trying to fog a crop,” says Becker. “We’re still in the early stages of the next generation of designs for use in pest and fertilizer delivery.”

Another innovation that has been brought to market quickly is the Idem-Neck. Four times stronger than traditional drop necks, it can withstand up to 400 lbs. of force. A major benefit is alleviating thread break-off at the main center pivot pipe.

“In our part of the country, we see a lot of rust, whether from bad water, fertigation through the pivots, or mineral water from feedlots,” says Becker. “We’ve eliminated rust with a fitting that straps onto the pivot pipe to anchor it for attaching the drop.”

The Idem-Ball Sprinkler Head with 32-in. drop assembly is priced at \$34.98. The Idem-Necks are priced at \$29.99 each and are designed to work with any pivot and drop.

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Sickle Blade Planter Marker

Mark Hamlin’s planter marker leaves an easy-to-follow trail. Sickle blades bolted to the marker disc chop up the ground, even in no-till fields.

“We’ve been in no-till since the 1990’s, and there’s nothing worse than trying to plant and figure out where the marker went,” says Hamlin. “My dad and I scratched our heads over the problem, and then we came up with this.”

Hamlin drilled holes in the marker disc to match the spacing of the blades. Eight blades fit on the disc with about an inch spacing between them.

“The blades lined up well around the circle, working out right on the money,” says Hamlin. “It really wouldn’t have mattered what the spacing was. They’d leave their mark anyway.”

Hamlin notes that the sickle-bladed marker works almost too well, chopping up the ground as it rolls. “Now I sometimes worry about making too much of a mark,” he says.

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Laine PTO stand in use.

Folding Stand Secures PTO Shaft For Transit

Brian Laine fabricated a folding stand to support the pto shaft on his manure spreader. The stand replaced a block of wood and a light rope Laine had previously used to hold the pto. The block and rope kept the shaft out of the dirt when not in use and let Laine move the spreader without connecting the pto first, but it was a hassle.

“I was tired of tying down the pto shaft every time I moved it,” says Laine. “The manufacturer didn’t build a shaft support, so I did. I just used metal stock I had lying around.”

Laine designed the 2-piece support to rest on the spreader tongue when not needed. The uprights of the top section are 12-in. long, 1 1/2-in. by 1 1/2-in., 3/8-in. angle iron. A top cross plate is a length of 8 7/8-in. long, 3/8-in. steel. With an arc cut out of the top for a shaft rest.

“I had a small piece of Lexan sitting around and decided to use it for the top clamp,” says Laine. “I cut an arc out to match the remaining curve of the shaft.”

To attach the top clamp to the steel plate, he drilled holes through the width of the Lexan for two 10-24 by 1 1/2-in. long stainless-steel screws with plastic knobs pressed on for ease of removal. Where the screws met the steel plate, he drilled and threaded receiving holes.

The upper section hinges on a bottom plate made from two short lengths of 2 by 3-in. angle iron welded together in a U-shape. Laine used self-locking nuts to bolt the two sections together, leaving adequate play for the upper section to be raised into place and lowered, but stay in place in either position.

“If I were doing it again, I’d probably figure a way to accommodate different-sized shafts, perhaps with a V-shaped resting spot and hold-down clamp instead of a circle,” says Laine. “It’s a simple design, and if anyone wants a CAD drawing with dimensions, just send me an email.”

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Fire Fighting System Stops Losses

“It’s a fire station on location,” says James Capers of the Fyrehawk suppression system he manufactures in Oklahoma. Though initially developed for cotton bale fires, it’s been proven beneficial for fertilizer plants and warehouses.

Fires have always been a big problem for the cotton industry. Between the ginning process and baling, sparks can be compressed in 500 lb. bales to smolder and start on fire weeks or months later. After a cotton warehouse fire with \$18 million in losses, Capers worked with cotton companies and a fire department to develop Fyrehawk.

“Insurance companies wouldn’t cover fire unless the businesses could fight the fire on their own before the fire department arrives. They needed a machine that can be picked up with a forklift,” Capers says.

The self-contained system holds 400 gal. of water and 10 gal. of fire-retardant foam. When deployed, 5-gal. of foam mixes with the water and shoots from a cannon as far as 150 ft. away from the fire. The operator can use a remote control or be in the cab to stay far enough from danger and the nasty smell of burning cotton bales.

Soon after its development in 2020, one Texas company used a Fyrehawk to put out a cotton bale fire. They had the fire under control before the local fire department arrived.

At just under \$40,000, the suppression system also works with fertilizer plant fires as the foam cools the fertilizer so it won’t



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explode. Warehouses also see it as a good investment. Their only other option is a sprinkler system that destroys everything in the warehouse.

“Fyrehawk pinpoints the problem. It’s sharp shooting instead of shotgun shooting,” Capers says. His company customizes the systems for different hookups to work with all types of equipment used in warehouses.

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