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Device Boosts Oxygen Levels In Water

High levels of dissolved oxygen (DO) in water keep ponds, plants and people healthier, and Mike White has a device to boost it. His patented Dissolved Oxygen Chamber can boost the levels of DO by 182 percent. The private contractor developed the device when he could find no other way to remediate oxygen-deprived ponds at a client's power plant.

"I tried everything I could think of to increase the oxygen," says White. "We spent a lot of money on bubbling machines, fountains and air injectors. They ran constantly for months and months before showing any increase in the DO."

In ponds, low levels of DO result in stratification, high levels of CO₂ and other noxious gases released by pond debris and muck. Saturating the water with oxygen can remove dissolved gases and oxidize dissolved metals, including iron, hydrogen sulfide and volatile organic chemicals. High DO levels in water have also been shown to improve plant health and root mass, reduce disease, and increase beneficial bacteria in hydroponic and greenhouse systems.

State regulations required the power plant water to be drinkable status as it's released into a nearby river. The river runs into the environmentally sensitive and highly regulated Chesapeake Bay. Higher levels of DO would do the job.

"In the dead of winter, there is enough oxygen naturally, but from late spring through fall, we have to treat it," says White. "The best device I could find would treat 3 gals. per min."

White got busy in his shop working on a better way to do the job. His idea was to let running water from a pipe or valve do the mixing through a turbine effect. At the same time, an air pump would boost the level of oxygen to be mixed.

"I built the chamber with 4-in. and 6-in. exhaust pipes and reducers," says White. "The water moving through the chamber creates high and low-pressure areas in the

small space. These pressures force oxygen into the water molecule."

His first prototype treated 150 gals. per min. and raised the DO from 2 ppm to 7. Recognizing he had a simple and low-cost solution to a big problem, he patented the device.

"I had a neighbor who was a draftsman, and he drew up plans for the prototype," says White. "Another neighbor is a writer, and she helped with the application."

White has since done several variations on his first prototype. They vary in size from 1 to 4-in. inlets with plans to go to 10 in. in size. The larger ones are for use with water pumps, while the smaller one is designed for use with water lines.

"I realized a device to increase DO that could treat industrial water and bring farm ponds back to life had potential for aquafarming, as well as other uses," says White. "That was why I developed the smaller prototype."

At first, White used a small vacuum to pump air into the chamber. Later he went with a pump designed to fill swimming pool liners. He has since acquired small, constant-run turbines for use as he refines the device.

White has had the device tested by an independent lab. It tested the unit on tap water and raised DO by 137.5 percent. He also tested it on his neighborhood well system.

"Water comes out of the ground at 7 ppm," says White. "I run it through the small prototype and into a plastic drum at 40 gals. per min. It raises the oxygen level to 10 to 11 ppm, depending on ambient temperature."

White is continuing work on his prototypes. His goal is to bring the Dissolved Oxygen Chamber to market. Depending on the response he gets, he may build and market them himself or license them to an established company.

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Spiral Splitter Mounts On Garden Tractor

"I had a Deere mower that didn't have a mower deck. So, I decided to turn it into a firewood splitting, wood-hauling rig that makes it easier to bring home a lot of firewood," says Gilbert Blais, Alexander, Ark.

"The cone-type spiral splitter mounted on the front of the tractor is driven by a double-gear reduction chain drive. You simply jam a chunk of wood onto the screw and then it screws into the log and slams it against a large mower blade that's mounted vertically next to the cone. When the wood breaks up, I just throw it into the trailer that I tow behind."

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Front-mounted splitter runs off a chain drive mounted to a lawn tractor.



Crop protectors mount in front of lead axles and under sprayer frame and are easily raised or removed.

Simple Crop Dividers For Sprayers

To minimize crop trampling from sprayer applications, Silvertec's crop protectors divert plants away from high-clearance sprayer tires as they travel through fields.

The all-metal divider cones and frames are built from stainless steel and aluminum to be lightweight and durable.

Protector mounting differs from model to model but uses U-bolts and custom mounts that fasten in front of the lead axles and under the main frame.

"We have custom mounts for all the late model sprayers like Case, John Deere and Rogator," says Micah Friesen, Silvertec Crop Divider sales representative. "If we don't have it, we'll get it. We make them to fit around the 320 to 420 series tires which are normal in these sprayers."

An optional rapid airlift system for steep ditch access or field entrances without approach is also available. Adjustment brack-

ets with quick pins for manual lifting come standard without the airlift option.

"Farmers really like them," Friesen says. "They're lightweight, easy to handle, and durable with very few breakdowns because of their simplicity. One person can easily take them on and off."

The protectors are produced and manufactured in Rosenort, Manitoba, with sales to anywhere in North America direct from their shop.

A set of four protectors complete with custom mounts sells for \$10,630 (CAD). Winter or off-season discounts offer a 3 percent savings. Shipping is free throughout North America.

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Sunn Hemp As A Cover Crop

From Texas to Canada, Sunn hemp can be a great way to build nitrogen reserves. In southern states, it can be a fast way to produce forage. And tough conditions don't bother it. According to South Dakota's Millborn Seed, the tropical legume thrives in high heat, low fertility and sandy soil. As to the name, it is no relation to cannabis.

"We are too far north for it to be a viable forage crop on its own, but it has real potential when it comes to fixing N," says Alex Guttormsson, Millborn Seeds. "The biggest challenge is the soil should be warmed to 65 degrees before planting. Then, it has to be in the ground and frost free for 60 days to really contribute N."

Guttormsson notes that it was a popular choice in a cover crop seed mix for Prevent Plant acres this year in his part of South Dakota.

"It's the only warm-season legume we have in our cover crop mixes," he says. "Once it gets growing, it's relatively drought resistant. We were wet early, and then the rain turned off, but the Sunn hemp just kept growing."

While Sunn hemp can be cut for forage, he suggests doing so before it gets too mature, as the stem is tough to dry down.

"The stem-to-leaf ratio is not the best; however, if chopped with another high-leaf ratio crop like sorghum-sudangrass, it can make a nice feed," adds Guttormsson.

Millborn Seeds' recommendation is to cut at first flower to avoid developing fibrous stalks. Marshall Crouch, East Texas Seed Company, agrees. "I'm hearing good reports about growers making good hay out of it, but you have to cut it early before it gets too



Sunn hemp is fast growing, adds to N levels and can be used as forage.

rank," he says. "For people who need forage, it grows really fast."

Harley Naumann, assistant professor, University of Missouri, endorses Sunn hemp as a good complement to cool season forage. He notes that in addition to other benefits, it can produce 60 in. of growth in 60 days. It also has rapid regrowth in rotational systems, producing more biomass after grazing or cutting.

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