

POWERSOURCE

A publication of John Deere Power Systems

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Texas sand silos receive power from an AG90 generator set manufactured by AirGen Equipment.

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A SHORTER SWEEPER

The Weiss McNair 2850 nut sweeper maneuvers under low tree canopies

California will produce an estimated 1.36 million metric tons (3 billion pounds) of almonds in 2020, breaking a record for the third year in a row.

Higher-density plantings of almonds and changes in pruning practices have led to better almond yields in recent years. In almond groves, the more canopy generally means greater yields.

According to Rob Guettler, director of engineering for Weiss McNair, growers want as many branches as they can get to optimize yields, and they don't want to cut off the tree limbs. "Considering the current density of the orchard plantings and pruning practices, we worked extremely hard to develop a nut sweeper that would efficiently sweep today's existing orchards."



The 2850 sweeper measures 1.37 meters (54 inches) high, making it the shortest Final Tier 4 sweeper in its class.



Nuts are harvested by shaking the crop to the ground, where they dry naturally before being swept and windrowed by the low-profile 2850 sweeper.

To maneuver beneath low-lying limbs, Weiss McNair of Chico, California, offers the 2850, a low-profile self-propelled sweeper with a cab height measuring a mere 1.37 meters (54 inches) high — the shortest Final Tier 4 sweeper in its class.

Designing a compact, low-profile sweeper that is Final Tier 4 compliant required an engine that delivered the required horsepower in a compact package. Weiss McNair has been a John Deere engine customer since 1989 and has relied on its John Deere engine distributor, Western Power Products Inc., to guide them through the changes and challenges that come with each advancing tier of emissions.

“John Deere engines have been a reliable and robust engine platform for us for years,” says Guettler. “We have a long history with Western Power Products. Our salesman, Rich Carroll, is a good person to have on your team; he’s definitely a problem-solver.”

To meet Final Tier 4 emissions for the 2850, Carroll suggested the 55-kW (74-hp) John Deere PowerTech™ EWX 4.5L, which meets regulations without the need for diesel exhaust fluid (DEF). This engine powers the 2850, as well as the 2930 — a similar sweeper that features a full-sized cab, making it a suitable option for higher clearance canopies typical of pecan and walnut orchards.

Of the two sweepers, the ultra-low-profile 2850 posed some design challenges that required extra engineering ingenuity. Weiss McNair and Western Power Products engineers worked together to lower the height and length of the Final Tier 4 engine by relocating components.

“We had to get creative in a lot of different ways,” admits Guettler. “Western Power Products worked with us to position the DPF (diesel particulate filter) over the bell housing between the engine and the cab and also rerouted the exhaust between the DPF and the turbocharger.”

“

OUR GOAL IS TO MAKE THE SWEEPER EASY TO OPERATE AND COMFORTABLE.

— Rob Guettler, Weiss McNair

”



Weiss McNair mounts the John Deere engine backwards and positions the diesel particulate filter over the bell housing between the engine and cab.

Aux drive advantage

The team also looked at other ways to make the power unit more compact. For Weiss McNair, the John Deere engine’s auxiliary drive is a key feature. For years, the company has relied on it to power the hydraulic ground drive system, power steering, hydrostatic transmission, and hydraulic lift.

“The offset auxiliary drive is an essential component because it contributes to a compact machine design,” says Guettler. “A fair percentage of engine power can be supplied by the aux drive. It allows us to run the stack of hydraulic pumps parallel to the engine block rather than the crankshaft, shortening the package. That’s what makes the John Deere the only workable engine for us. The offset auxiliary drive has been used on our sweepers for 30 years, and it’s important that we preserve it. If we had lost that feature with the Final Tier 4 engine, we would have faced a big design challenge, and I’m not sure how we would have resolved it.”

Sweeper comforts

While the 2850’s low-profile design meets the needs of today’s modern orchards, Weiss McNair also understands the importance of keeping operators comfortable. Inside the dust-free, climate-controlled pressurized cab are standard features like a rear-view camera, fully illuminated dash panel switches, and a swank seat that looks like it should belong in a sports car.

“We spent time to find a seat that was ergonomically acceptable for operating long 10- to 12-hour days,” Guettler says.

Weiss McNair also takes advantage of the Final Tier 4 engine’s electronic engine controls. “Early on, we made the decision to design an all-electronic cab. Everything is CAN bus to the engine controller, which talks to the sweeper’s controller. These electronics offer us added design flexibility; there are no more cable drives, just an electronic interface that enhances machine diagnostics and troubleshooting. Our goal is to make the sweeper easy to operate and comfortable.”

Weiss McNair understands the importance of machine uptime, and the company takes pride in providing exceptional customer service to ensure a smooth-running harvest. Weiss McNair employs just over 100 employees yet sells machines to nearly every nut-producing region in the world. For this reason, Weiss McNair leans on the global network of certified John Deere dealers.

“Part of our reputation is based on the level of customer support we give,” says Guettler. “It’s important to us that we develop a relationship with our customers and ensure they have access to service and support if there are any issues. It’s good to know the global network of John Deere dealers has our back.”

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