Bundling Up For a Cold Economy

C & C Logging uses John Deere’s Energy Harvester to profitably bundle logging slash

By Jeff Mullins

Anyone who has ever seen large brush/slash piles burn has likely wished for some way to capture that energy rather than let it “go up in smoke.” Unfortunately, the time, effort, and expense associated with gathering, handling, transporting, and storing thousands of little sticks just isn’t worth it . . . unless you’re C & C Logging.

For C & C Logging, a progressive company in Kelso, Wash., profitably delivering logging slash to the energy marketplace has become a goal and a part of harvesting operations that potentially promises a competitive edge. It has also made them a leader in conscientious environmental stewardship.

Harvesting Energy

C & C is using a John Deere 1490D Energy Harvester to gather and bundle logging slash for use as bio-fuel in co-generation facilities. Previous to using the Energy Harvester, carbon from C & C’s slash during timber harvests was typically released into the atmosphere either by slash-burning or slowly as the piles decayed.

In both cases, because it was economically unfeasible to do otherwise, the slash was wasted, and no benefit was gained. Now, with the technology to economically bundle the slash, the energy it contains is being utilized, and the carbon that is released in the process is providing energy to off-set dependence on fossil fuels.

Frank Chandler Jr., co-owner of C & C with other family members, says his company has always been concerned about resource utilization and sees the bundler as a way to make a positive environmental contribution that is consistent with the company’s philosophy of offering customers the most options possible.

Trial Run

C & C first tried out the bundler during a two-week demo period, and the results seemed promising. Since this machine is the first of its kind in North America, and the learning curve for the operator, the company, and the local dealership was steep, certainty about production and profitability remained elusive. However, with cooperation from a large tree farm, C & C went out on a limb, purchased the bundler and, after several months of operation, production increased, bolstering hope the program will be profitable.

Ron Endres, who manages the slash recovery program and operates the JD 1490D for C & C says, “With this machine, we are approaching 100 percent forest product utilization in our timber harvest, something the Europeans have been doing for nearly a decade.” Because he appreciated C & C’s progressive vision and willingness to invest in environmentally friendly technology, Ron gave up a secure position with another company to head the slash bundling program. Although the program is young, and Ron is hesitant to share exact figures, he asserts, “Our production is improving, we are benefiting the environment, and we are able to offer a unique service to environmentally conscious customers. This program is a win-win.”
Innovative Harvesting Capabilities

At the heart of the slash recovery program is the “energy harvester,” a machine that converts scattered logging slash into bundles that can be easily collected, transported, and stored for use in existing facilities that utilize wood fiber for fuel. Similar in some ways to an agricultural hay baler, C & C’s agile JD 1490D traverses recently harvested units and collects tree limbs and tops to produce compressed bundles of bio-fuel.

Compression allows the transportation of sufficient volumes of fiber to make it cost-effective. Unlike chips, which retain moisture, decay, and are susceptible to spontaneous combustion, bundles can be easily stored and dried for future use. The ability of bundles to dry while stored makes them more useable as fuel and, by slowing the decaying process, more energy remains available for use as fuel.

Bundles are easily loaded in end dumps for transport to their final destination. Bundles formed and lying throughout the unit are first collected by a Valmet 890 forwarder and then brought to the roadside for loading.

In the Driver’s Seat

A single operator controls the eight wheel drive, 50,000-pound machine consisting of a 182 hp tractor, a grapple with a 33-foot reach, and a compacting unit capable of producing bundles approximately 30 inches in diameter and eight to ten feet long. The machine traverses the harvest site on Ecco-tracks exerting only five psi on the ground and is designed to produce a 1000-pound bundle every 2-3 minutes. As the bundler gathers swaths of slash from the previously harvested unit, bundles fall out in rows for retrieval by the forwarder. For increased productivity, slash piles are bundled at landings, and shovels are used to load the trucks.

A computerized Windows-based control-interface system allows the operator to move the machine and focus on feeding slash into the machine while the bundler automatically produces the bails. The grapple boom extends over 32 feet to reach slash on all sides of the unit. Slash gathered by the grapple is laid in a trough and fed into four spiked rollers that push the material into the bundler and provides the first of three computer controlled compression stages.

When the computer senses that sufficient material is present, side-to-side compression occurs, and the bundle in formation is advanced. Concurrent with the third and final stage of top-to-bottom compression, five wraps of overlapping bailing twine encircle the bundle. As the compressing force is released, the overlapped twine secures itself without any knots and holds the bundle intact. When the desired length of bundle has been formed, secured with twine, and advanced, a computer controlled clamp arm holds it in place while a chain saw cuts off the completed bundle. In essence, the bundler makes a continuous 30” diameter bundle of slash and cuts lengths of it as it exits the machine.

Still Learning

C & C admit they are still on the steep part of the learning curve and that in today’s market there are lots of variables that will influence their decisions and how they use the bundler. One of the big factors, Frank asserts, is the price that is being paid for hog fuel. He anticipates that as there is more and more pressure from the public and government to utilize renewable resources and implement carbon friendly practices, there will be more demand for hog fuel in general and slash
bundles in particular. More demand equates to higher prices, and higher prices will make it more cost-effective to bundle slash, even when it is scattered on the ground throughout a unit. In Europe, bundlers are being used with government subsidies. C & C’s goal is for its bundler to operate profitably without subsidies, and they think it is possible.

Frank Chandler Jr. is also excited about being on the leading edge of technology in the industry and is anticipating learning new things.

“When we began our cut-to-length program several years ago, we learned lessons that helped us be more efficient and competitive in other seemingly unrelated areas,” Frank says. “I expect that operating the bundler will give us a different perspective on the way we harvest and market logs, and we will become a better operation overall. This in turn will make us more competitive.”

Throughout the timber industry, energy-rich slash is a natural byproduct of harvest operations that, until recently, has been too costly to recover. However, with new technology like the John Deere 1490D Energy Harvester being available and companies like C & C being willing to take up the challenge, perhaps before long, burning slash piles will be a thing of the past. Yesterday’s dream about capturing, storing, and usefully releasing all that heat may very well be today’s reality.