Propane is the heating source for a weed-control product that applies four different types of heat in vegetation management.

For Greg Prull, the choice was obvious when he was deciding on a heating source for his company’s new thermal weed control product. Prull was looking to develop a product to help wean the public off its reliance on chemical pesticides and herbicides to control weeds.

Prull is president of Sunburst Inc. (Eugene, Ore.), which has developed a variety of thermal weed control devices. He worked with engineers and fabricators to design the equipment, which uses propane as the source to apply four different types of heat for vegetation management. For more than 10 years, Sunburst has been developing and testing thermal vegetation management technology, equipment, and methods of application.

Propane, Prull says, was the only viable heating option for the vegetation management equipment.

“It’s a readily available fuel, it’s got readily utilizable containers—tanks—of different scales. You can get a 5-gal. tank or a 500-gal. tank,” he stated.

Prull is a good person to ask about propane’s use as an environmentally friendly heating source for weed control. While studying forestry in college, his expanding interest in non-chemical vegetation management led to a consultant business for helping the public decrease its reliance on pesticides and herbicides, which release harmful chemicals into the environment. In addition to the agriculture industry, other entities such as school districts, road departments, and parks are looking to reduce their reliance on these chemicals.

Prull is targeting those entities as users of his product. Sunburst’s small weed-control equipment comes in two models. The first is a cart that the user pushes for smaller applications. “The cart is really a small ‘area’ tool,” Prull explained. “It spins on a dime, so it is more mobile and flexible in close quarters.” The cart works for applications at sites such as schools, parks, utilities, and small farms. The other model is a wagon, which is larger and pulled by hand. The wagon is meant for more “linear” job sites, such as trails, pathways, and driveways. It is longer than the cart and requires a much larger area to turn around, so it is not as mobile or flexible as the cart.

For users with larger areas than the cart or wagon can handle, a trailer unit is in the works that would be towed behind a vehicle such as an ATV, tractor, or pickup truck. Sunburst can also create custom configurations based on the user’s specific needs.

Both of Sunburst’s small models come with a thermal deck and mounting chassis, hand-pressurized water tank, ball-valve-activated water spray, throttle-controlled flame with pilot light, propane pressure regulator, and hosing. Users supply their own standard propane tanks.

Prull says that the product attacks vegetation with four different types of heat.

How It Works...

The agricultural industry’s use of heat to manage vegetation is not new, and the use of water in controlling weeds has also been around for several years. But most of
the weed control devices have historically used one source of heat. In contrast, Sunburst’s patented equipment applies a thin film of water to unwanted vegetation and then subjects these plants to four forms of intense heat in an enclosed space.

The flame itself is the first type of heat. The propane burners produce flames that are angled downward toward the ground. Depending on the height of the weeds, the flames might contact the plants.

The second type of heat is radiant heat, which is generated by the hot metal of the thermal metal deck covering the flames. The third is turbulent hot air that the flames produce, somewhere between 800°F and 1500°F. The fourth is steam that is created when the water on the plants is heated and vaporizes.

The cart and wagon configurations feature a water pipe on the thermal metal deck. A nozzle connected to the pipe sprays water on the weeds. The equipment then heats the water on the weeds. “Water transfers heat very efficiently,” Prull stated. Subjecting vegetation to high temperatures of about 132°F for at least 3 seconds coagulates proteins and ruptures cell walls, disabling normal plant functions, effectively killing all types of weed seedlings. Repeated applications can be used to kill established weeds.

The covered burners make the product safer than other weed-burning equipment, Prull says. Users will see no open flame outside of the contained space.

The Sunburst equipment is also claimed to use much less water and fuel than other weed-control equipment.

Prospective Customers

Sunburst is targeting agriculture clients, as well as railroad companies, public road departments, schools, parks, and entities responsible for irrigation channels.

Prospective agriculture users include producers of bed crops such as baby lettuce, onions, and celery, and producers of row crops such as soybeans and corn. Prull adds that orchards and vineyards also need weed-control devices. An additional benefit claimed is that the system uses very low volumes of water. Other technologies, Prull says, use large volumes of water, making the equipment difficult to haul because of the weight. “But that little bit of water does two things. It prevents fires and it’s much more proficient in heat transference from the propane heat to the weeds.”

—Daryl Lubinsky