

25 Years of Ultra Low Volume with the THINVERT® Application System

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THINVERT® is a unique, patented Ultra Low Volume (ULV) application system manufactured by Waldrum Specialties, Inc. The development of the THINVERT® formulation and specially-designed ULV nozzles, 25 years ago, made it possible to effectively control vegetation with an application rate of 5 gallons of mix per acre or less. Approximately 50,000 square acres of right-of-way (ROW) are treated each year using the THINVERT® application system and it has proven to be an extremely effective and productive IVM tool (Photos 1 and 2).

In case you were wondering, THINVERT® RTU (Ready to Use) is a combination of phyto-bland paraffinic oil blended with emulsifier, surfactant and water to form a thin invert emulsion that is applied with ULV nozzles. It replaces water as the carrier of herbicide products.

So, what exactly is a thin invert emulsion? Roy Johnson of Waldrum Specialties offers this explanation: a conventional emulsion disperses fine droplets of oil in a volume of water, while an *invert* emulsion disperses fine droplets of water in a volume of oil. With an invert emulsion, as more water is added to the mixture, the emulsion becomes thicker until eventually it “breaks” or becomes a conventional emulsion. Therefore, a thin invert emulsion has a minimal amount of water.

THINVERT® keeps the herbicide solution wet on the plant for a long period of time, ensuring penetration and a high percentage of control (Photo 3). The application system can be used in several different ways. A Birchmeier backpack equipped with a ULV Brush Gun is



Photo 1 - About a year after mowing a ROW, a THINVERT® application with Widecast™ nozzles mounted on an Argo vehicle can be performed very efficiently to help extend the maintenance cycle.



Photo 2 - Selective ULV backpack operations began using THINVERT® and specially-designed ULV nozzles 25 years ago.



Photo 3 - THINVERT® (shown here at the 5 gallons per acre rate) stays wet longer and helps the herbicide penetrate the leaf's waxy cuticle. The droplets are also less prone to drift.



Photo 4 - Efficient and effective ULV side trimming can be accomplished with the THINVERT® application system mounted on the bucket of a 4-wheel drive lift truck or skidder.

used for selective treatments on foot. A low profile broadcast treatment can be performed with a hydraulic sprayer mounted on an all terrain vehicle (ATV) equipped with two THINVERT® Widecast™ nozzles, which create a 25 to 30 ft. swath. An off-road ULV side-trimming application can also be performed with a hydraulic sprayer mounted on the bucket of a 4WD aerial lift (Photo 4).

Origins of the THINVERT® Application System

Tex Waldrum, Dody Pfizenmaier, and Roy Johnson formed Waldrum Specialties Inc. in the 1980s to invent, develop and improve aerial and ground vegetation management systems for utilities, highways, railroads and industrial areas. Roy was working on more effective formulations while Tex was working to improve nozzles for aerial applications. The goal was to reduce spray volumes by making smaller, but more uniform spray droplets.

Roy's early work with *thick* inverts in the 1960s showed inverts to be effective in ensuring penetration of the herbicide and reducing drift, but the large droplets kept spray volumes high. By combining small nozzle orifice technology with a *thin* invert emulsion, the THINVERT® application system was created. Aerial nozzles came first and then that design became the ULV Brush Gun nozzle for backpack applications (Photo 5). In 1989, the first THINVERT® backpack applications were performed commercially. To make a wider pattern for broadcast applications, in 1997 and 1998, Tex and Roy developed and patented the Widecast™ nozzle for applying THINVERT® emulsion. Each nozzle can apply a 15-foot swath of uniform droplets without forming spray drift and can be mounted on many types of ATVs.

How Low is ULV?

A backpack rate is applied at 1 to 5 gallons per acre (GPA), depending on vegetation density and height. A broadcast rate is applied at 5 GPA, depending on terrain. Mowed vegetation with one year of growth on a distribution



Photo 5 - THINVERT® applications require the use of specially-designed nozzles, such as this ULV Brush Gun with double nozzles. The nozzle on the left has 5 orifices and the right one has 31.

ROW (30 to 60 ft. wide) can be treated with a broadcast application at 5 GPA. A transmission ROW (100+ ft. wide) can be treated with a cut stubble application after mowing and before re-sprouting occurs (Photo 6). A 50-gallon tank can treat 10 acres without refilling.

Herbicide products and rates will vary depending on the application method best suited to the site. For advice or more information on the THINVERT® application system, visit www.arborchem.com or call 215-760-9420.



Photo 6 - Two THINVERT® Widecast™ nozzles mounted on a tracked Kubota can make quick work of a cut stubble application on a transmission ROW by spraying a 25 to 30 foot swath.