



Versatile Spraying Unit

Project Number 2013-05

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Problem Nicollet County's existing method of spraying noxious weeds and brush sites was slow, unsafe, and inefficient. Sites required multiple spraying applications and often required applying several different chemicals simultaneously. In addition, the county did not have a reliable method for precisely documenting spot application areas.



Solution The county designed and fabricated a versatile spraying unit. The unit consists of a mountable platform that contains tanks, hoses, and a pump, which can be easily installed on and removed from an existing flatbed one-ton county pickup truck. The unit can spray multiple chemicals at once while keeping the chemicals away from the applicator. It can also be tracked by GPS to assist in year-to-year documentation and in any crop damage claims.

Procedure The unit includes four tanks, a hose reel with a hand sprayer, and a 5 horsepower motor with a Hypro pump. The spraying head contains three nozzles: the first treats the area from zero to 10 feet from the unit, the second from zero to 20 feet, and the third can spot spray for brush as far out as 40 feet. If the second and third nozzles are used together, the unit can provide a continuous spray from zero to 40 feet. The arm and head both have independent electronic cylinders for spray application.

Results The unit is easy to operate and only requires a driver and operator. Visibility is excellent with the spray head on the front of the vehicle, and enough chemicals can be stored on the unit to last for a half day of spraying. The instructions are simple, the preparation work is fast, and everyone who has used the unit has been satisfied with the results. One of the biggest advantages is that the unit allowed the county to reduce its spraying crew from six people operating three units to just two crew members operating the versatile spraying unit.

The unit's GPS device initially failed at locating the actual chemical application location. Instead, it identified the vehicle's location. The county is continuing to refine this GPS device so it will better track the spraying location and time for the 2014 season.

Approximate Cost \$10,767

OPERA Funding \$10,000

Implementation The county plans on changing the 500-gallon main tank from a premix system to a direct injection system in the future. This will allow the county to have just water in the main tank when leaving the shop, with a separate smaller tank for the chemical. The direct injection system will then automatically mix the chemicals at the time of field application.

Status Complete

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