

BIGGER AND BETTER SPRAYING UNITS

LOYDE E. YETTAW

The Des Plaines Valley Mosquito Abatement District, 8130 Ogden Avenue, Lyons, Illinois

Do you dare to break the shackles of tradition by pioneering or developing a new and radical idea in the method of doing your job? Back in 1935, we, the Des Plaines Valley Mosquito Abatement District, took that precarious step, and not once have we regretted it.

Truck building companies ridiculed the idea of mounting 13.50 x 24-inch tires on a standard truck. Their idea of "pay load" and "tire bursting pressure" had almost become an obsession with them. Through the cooperation of the Goodyear Tire Company and a very progressive group of men that compose our board, we converted a Chevrolet truck into a marsh buggy and mounted a six-gallon-per-minute Bean Sprayer on it. It worked so well that we have since acquired three more, respectively, 14, 20, and 35-gallon-per-minute jobs, all mounted on all-wheel drive trucks with large tires. Two are mounted on 13.50 x 24 tires, the other two on 13.50 x 32 farm tractor tires. Our experience has been with small and large pumps mounted on both conventional and cab-over-engine trucks, used in mosquito breeding areas that were at one time controlled entirely by hand sprayers.

Breeding areas differ in size, shape, and density of vegetation. Mid-summer or late summer spraying is in dense vegetation and a person needs plenty of force to drive the larvicide through the vegetation to the water surface. If done by hand the operator can spray a swath not more than four feet on each side of him, or a total of eight feet wide. A power sprayer of six-gallon capacity per minute, under the same conditions, will cover 16 feet; a 14-gallon-per-minute will cover 40 feet; a 20-gallon-per-minute will cover 60 feet; and a 35-gallon-per-minute will cover 80 feet. Any one of these sprayers can be choked down to as low as three gallons

per minute if necessary, by simply changing the size of the tip of the nozzle.

Pumps from six gallons to 20 gallons per minute take up the same space and have about the same weight. Larger ones require heavier construction and heavier motor, so the division is at the 20-gallon size.

Experience teaches that labor cost is the largest item in spraying. A man spraying does not recognize how many gallons per acre he is using, but he does recognize a standard film that will kill mosquito larvae. It is logical that the more gallons per minute he can spray and yet hold to that standard film the cheaper the cost per acre; therefore, it is cheaper to use the larger sprayer because of the increased distance the spray will reach. He can cover an area of 40 feet from the truck without taking out hose or even getting off the truck. By taking advantage of the wind drift, it is possible to reach as much as 200 feet.

Another very important item is the fact that mixed oil, one part oil and 10 parts water, thoroughly agitated, and sprayed under 500 to 800 pounds pressure injures no vegetation. The force of this driving spray will penetrate the most dense vegetation, leaving a thin toxic film on the water surface. This film should take about 15 gallons of oil per acre on non-polluted areas. Polluted areas require from 15 to 25 gallons per acre, depending on the amount of surface scum which retards the spread of the oil.

Power sprayers are going to play a big part in the use of DDT. We handled it very successfully against flies, especially on city dumps and in horse barns. Should an epidemic of polio break out, we are well equipped to fog a whole town with this new miracle insecticide.

The use of power sprayers is not new;

neither is the use of all-wheel drive trucks. Mosquito control organizations have been slow to recognize the advantage of combining the two, and mounting the truck with 13.50 x 24 or 13.50 x 32-inch farm tractor tires. Without trying to diagnose the reason for this hesitancy, I will try and paint a word picture of our 20-gallon unit.

cab to the back end of the truck frame. The platform should be flush with the frame and about 8 inches wide, except about three feet of the back end. Here the entire width of the frame is covered to form a platform. The railing should be about 36 inches high, the same height as the cab, and have a 14-inch hook on each upper rear corner on which to hang



Fig. 1. The skeeter-eater demonstrating heavy going in a polluted marsh area.

Take an all-wheel drive truck chassis, cab-over-engine type, 101-inch wheel base. Leave the windshield on, but remove the cab. Replace the conventional tires and wheels with 13.50 x 24-inch, or 13.50 x 32-inch farm tractor tires and wheels to match. You now have a foundation on which to build. With about 20-gage sheet metal, build a wide cab (no top) about 38 inches high, this will come about a foot below the top of the windshield. Two bucket seats make up the furniture. With one-inch pipe and step plate steel build a railing and platform entirely around the truck, from the rear of the

hose. We use about 200 feet (Hose Test—1800-pound working pressure).

The cab will take up about 5 feet of the frame and the rear platform 3 feet. In the six-foot space between the two we pack our spraying unit which consists of a 200-gallon tank, 20-gallon-per-minute pump, and gasoline motor which drives the pump and agitator. This tank is 36 inches high and mounted forward. It is divided into three sections, a tool box, a 60-gallon supply compartment, and a 100-gallon mixing compartment. The mixing compartment houses an agitator which keeps the larvicide thoroughly

mixed. A pipe line leads from the mixing tank to the supply tank; two pipe lines lead to the spray hose, one out of the sump on the bottom of the tank, and one about an inch above the bottom of the tank. Spraying is done from the latter, so that the pump will not lose its prime before the tank is empty. Refilling is done from the sump connection. The injector type refiller, mounted on the side of the mixing tank is connected to the sump and empties into the top of the tank through a screen. For refilling, 15 feet of 2½-inch suction hose is connected to the refiller. This has a screened end to prevent sucking up foreign material which would clog or ruin the pump.

The 60-gallon supply tank is enough to cover four acres of marsh or six refills in the mixing tank. Seven minutes is the approximate time it takes to refill. This spray unit is operated by three men, and has sprayed as much as 25 acres in one day (8 hours).

The 20-gallon high pressure pump is connected with pipes to the supply tank, mixing tank (top and bottom), refiller, and spray hose line, and is mounted just behind the 200-gallon compartment tank. The bottom of the pump is flush with the truck frame. A simple valve system

enables each line to the pump to work independently of the other.

The little Hercules gasoline motor which powers the pump and agitator is suspended above the pump by a framework of angle iron, and anchored firmly to the truck frame. It faces to the rear of the truck, the crank extending into the rear platform to avoid an awkward cranking position.

This unit will negotiate a three-foot ditch if the ditch has one to one and one-half slopes. It will travel in 3½ feet of water without "shorting out" the motor. It has about 22 inches clearance underneath, so will wallow through plenty of mud or clear quite high obstacles such as stumps, logs, or bent-over saplings. This is a very efficient off-the-highway unit.

The unit is sturdy and will take dual tires on both front and rear wheels. Each 13.50 x 24 tire operating in 3 inches of mud has 9 inches by 24 inches, or 216 square inches of contact with the ground. In a foot of mud this increases to about 13.50 x 36, or 486 square inches.

Larger units than 20-gallon-per-minute require a longer wheel base and are less maneuverable, but are much the better unit for large ditches or marshes where it is necessary to take out the hose.