

## Proportional Mixing: A New Sprayer Idea

IT IS INTERESTING that there has been very little effort devoted in the past 10 to 15 years to the development of pressure compensated spray equipment. One gets the impression that everyone has been so busy trying to refine existing spray outfits that very little attention has been directed to new and different concepts in chemical spraying.

But this is not true. Soaring chemical costs, increased-threat of short supplies and operator safety have prompted a few people to look upon proportional mixing with renewed interest.

John Behey is one. As president of Eastside Spraying Service, Kirkland, Washington, he has been working on his own spray rig design for nearly 15 years. And the "brains" of his unit is a pressure compensator.

"My first real reason for attempting to design this outfit was safety," said Behey. "The original concept would eliminate the need to handle chemicals and improve the accuracy of mixing and applying."

Behey's safety features eliminates flushing out the tank containing unused pesticide mixtures. Because the tank contains nothing but fresh water, there is no corrosive action in the tank by the residue.

In early 1974, Behey built a prototype unit using commonly available parts. A Delavan pump is mounted on the front bumper and connected to the truck engine with a 90 degree Ohio gear box and an air clutch. The spray pump is an 800 psi, 55 gpm John Bean positive displacement unit with its pressure regulator removed. This unit is presently in operation on his tank truck.

An improved unit is now being manufactured which incorporates the original five components into one mechanical unit. Behey expects the new unit to be ready for market in late spring.

The single unit spray outfit is 18 inches wide, 24 inches high and 52 inches long. With the engine it weighs 1,800 pounds and without 1,100 pounds. Behey, with the help of Weyer engineering and Manufacturing Co., Enumclaw, Wash., has designed the unit to adapt to most existing rigs. Market price has not been determined.

"The beauty of this outfit is the chemical handling

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John Behey demonstrates his 1974 prototype sprayer at last year's International Pesticide Applicators Association meeting in Seattle.

system," Behey points out. "The chemicals are supplied in recyclable five gallon containers and attached to the hose line leading from the truck tank by a "dry break" coupler. The operator never touches the chemical." The cans come sealed from the formulator and are returned empty but still sealed.

The flow rate is controlled by volume. As the water leaves the tank through the hose line, the chemical is injected at a predetermined proportion and the two are mixed before reaching the nozzle.

The pressure compensated pump operates only on demand so no mixing takes place unless the spray gun is in operation. Mixing can be controlled within plus or minus one percent accuracy. The variable displacement pump operates only as needed, so the spray nozzle controls the entire operation.

The pump can inject two different chemicals at the same time or the operator can switch from one to the other, since it is actually two pumps in one. The entire system shuts down the instant the nozzle is closed and the only mixed spray left over is that in the hose between the nozzle head and the proportioning pump. This can be flushed by removing the concentrate can and running water through the hose for a few seconds.

"Additional injection lines can be added to mix more than two chemicals in variable amounts at the same time," he said. It is also capable of pumping a wettable powder in solution by the addition of a small agitator.

There is no waste or spillage with Behey's system. The tank life is extended because nothing but water touches its walls. And with increased federal regulations on operator safety and chemical handling, Behey feels this type sprayer may be the system of the future. □