

INNOVATION

A method of metering pesticides and fertilizers through pulsing solenoid valves that is highly accurate, economically feasible, and desirable for users.

ACCOMPLISHMENTS

- ▶ For the first time, pesticide applicators are able to control pressure and flow rate independently on spray equipment.
- ▶ Unique aluminum manifold design provides liquid ammonia, not the normally expected mix of liquid and vapor, to each metering valve enabling:
 - Highly consistent distribution across the toolbar
 - Accurate application rate (up to 2%)
 - Operation in cold temperatures
- ▶ American Society of Agricultural Engineers (ASAE) recognized both systems with AE-50 Awards for Outstanding Design. The pesticide application system won the 1999 ASAE Engineering Concept of the Year Award.



N-JECT LF INSTALLED ON A TOOLBAR

COMMERCIALIZATION

- ▶ Capstan sells its pesticide application system ("Synchro") through Case IH Application Systems on an original equipment manufacturer (OEM) installation basis and as retrofits through Case's sprayer distributors and grower spray centers.
- ▶ Capstan's ammonia injection system "N-Ject" is marketed principally through Case distributors and dealers.

IMPACTS

- ▶ Over 20 million acres are being sprayed annually using Capstan designed pesticide application systems. These systems are superior in suppressing exposure to pesticide drift and simultaneously aligning application rates for variable needs within fields.
- ▶ With Capstan's N-Ject ammonia and N-Ject LF liquid fertilizer applicators, there is no need to over-apply, thus saving material and lessening the probability of excess nitrogen moving into the water table or adjacent water courses.

SBIR COMPETITIVELY AWARDS SMALL BUSINESS GRANTS FOR INNOVATIVE RESEARCH THAT HAS THE POTENTIAL OF SOLVING IMPORTANT AGRICULTURE AND RURAL DEVELOPMENT PROBLEMS.