

- The first step was to choose the nozzle that would deliver the correct application rate.

- The application rate was determined by multiplying the manufacturers application rate by the grain flow into the cleaner.

- This unit will be tested at set incoming grain flow rates. After initial data is collected a variable rate controller could be used to adjust the pesticide rate for variances in the grain input.

Chemical	Application Rate
Actellic (Pirimiphos-methyl)	8.6 to 11.5 oz diluted with water to make 5 gallons solution per 1000 Bushels
Spinosad	1 mg per kg of grain diluted with water to 1ppm
Storicide® II (Chlorpyrifos-methyl + Deltamethrin)	12.4 oz diluted with water to make 3 ppm chlorpyrifos-methyl and 0.5 ppm deltamethrin



- The area that needed to be covered was then measured by turning the machine on and running grain through the cleaner to determine the area that needs to be covered.

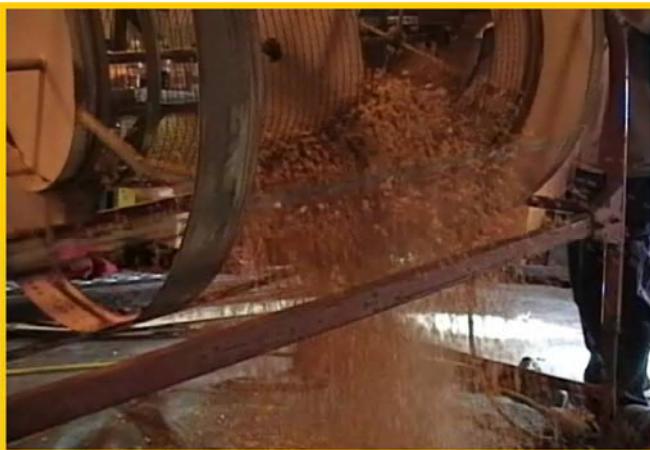
- A grid was placed on a tarp similar to a spray table, this helped determine the required spray geometry.

- This process was also recorded and the video was analyzed to help understand how the grain moves inside the cleaner.

- The nozzle geometry was then paired with the flow requirements and nozzles were selected.

- After the nozzles were selected the boom had to be placed inside the rotating drum in the correct location.

- This was accomplished by cutting a channel out of the front of the cleaner allowing the boom to be supported and not interfere with the rotation of the cleaner.



- The outside chamber could not support itself once the channel was cut out.

- This problem was solved by installing small wheels on the bottom of the drum to prevent it from sagging.

- Metal conduit was used as the boom, this will protect the tubing and provide support for the nozzle.

