

OTHER APPLICATION EQUIPMENT TECHNOLOGIES TO IMPROVE EFFICACY AND MINIMIZE DRIFT. Robert E. Wolf, Extension Specialist, Biological and Agricultural Engineering, Kansas State University, Manhattan, KS 66506.

Several application equipment technologies have been developed to assist in the minimization of spray drift. The most popular and least costly to the industry has been in the design of spray tips. Most all manufactures have designed new tips with the emphasis on improved droplet size control to enhance efficacy and minimize drift potential. Chamber and venture style tips have been the most successful with this effort.

Two additional technologies have shown moderate success with drift minimization. One, air-assisted boom sprayers, uses a high velocity air stream channeled along the boom to assist the spray into the target. Research data will support improved deposition, but unless used in a canopied target the excess air velocity has potential to increase spray drift. The second involves the use of an electrostatic boom sprayer that will create and distribute electrically charged spray droplets into the target. The spray droplets are opposite polarity of the plant material and are attracted into the canopy. Electrostatic sprayers have proven more acceptable for increasing coverage in the canopy than for reducing the incidence of spray drift. For each, the additional cost added to the spray equipment has been a limiting factor in the adaptation of this technology.

The use of optical sensors to actuate spray tips in combination with individual row hoods can be an effective tool in reducing spray drift. By design the system only sprays a detected weed, and since it is not spraying all the time it is most effective for drift control because it is reducing the amount of pesticide being applied. However, in combination with improper tip selection and high pressures this technology would not be very effective.

Spray hoods and shields also have proven successful for reducing spray drift. Proper design is very critical for hoods to be beneficial. Hoods are typically designed to completely cover the boom while shields are usually placed in front or behind the boom and act strictly to shield the boom from wind. Field conditions, size and added weight to modern agricultural spray systems has limited the adaptation of this technology.

As future application guidelines regarding increased efficacy and spray drift minimization are established, more technologies will be developed and adapted regardless of cost. These developments will require sound research to support adaptation.