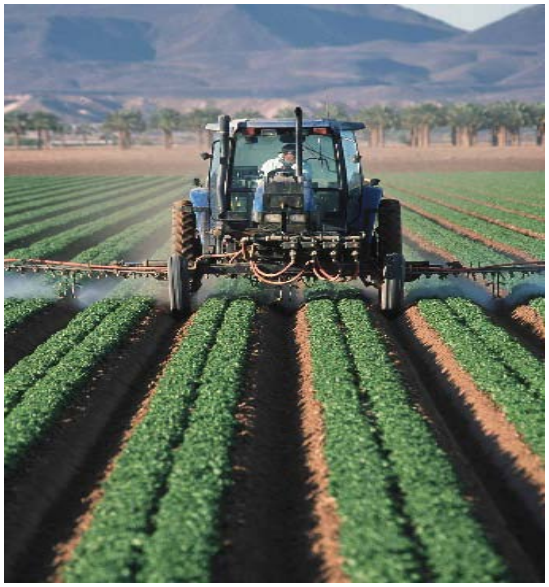
Air Quality Enhancement Activity – AIR07 – GPS, targeted spray application (SmartSprayer), or other chemical application electronic control technology



Enhancement Description
Utilize electronically-controlled or managed chemical spray application technology to more precisely apply agricultural pesticides to their intended targets.

Land Use Applicability
Cropland, Pastureland, Rangeland, Forestland

Benefits
These activities will provide improvements in water and air quality by reducing the total amount of chemical applied, and reducing the potential for airborne chemical drift when agricultural chemicals are applied. This enhancement can be used only if chemical applications are done according to label directions. Reducing chemical drift will help to reduce both particulate matter (liquid droplets) in the air and the production of volatile organic compounds, which are an integral part of production of ozone, a pollutant in the lower atmosphere. Reduced chemical drift will improve water quality by minimizing the delivery of chemical compounds through the air to water bodies.

Conditions Where Enhancement Applies
This enhancement applies to all crop, pasture, range or forest land use acres.

Criteria
The implementation of this enhancement for precision pesticide application technology to reduce spray drift and the total amount of pesticide applied requires the use of GPS data loggers (i.e., devices that record the track, time and location of field trips for download to maps) in order to document site-specific compliance with all label requirements for drift mitigation, and additionally, one or more of the following techniques:

1. Precision guidance systems that reduce ground or aerial spray overlap to less than 12 inches
2. Variable rate technologies (VRT) that allow the rate of pesticide application to dynamically change for site specific applications
3. “Smart sprayers” that utilize automatic sensors and computer controlled nozzles to turn individual nozzles on and off
4. Computer guided application systems that integrate real time meteorological data and computer model guidance to reduce pesticide drift from aerial application
5. Re-circulating spray technologies that capture and reuse overspray to reduce overall pesticide application rate and off-site spray drift

6. Electrostatic spray technologies to reduce overall application rate and off-site spray drift

Adoption Requirements

This enhancement is considered adopted when site-specific compliance requirements plus one or more of the above criteria have been implemented and documented to satisfaction of the NRCS State Office.

Documentation Requirements

Each year the following must be supplied:

1. Type of electronic spray control technology used,
2. Dates technology is used, and
3. Acres treated.

References

Brown D.L., D.K. Giles, M.N. Oliver, P. Klassen. 2008. Targeted spray technology to reduce pesticide in runoff from dormant orchards. Crop Prot. 27(3-5):545-52. DOI: 10.1016/j.cropro.2007.08.012

Downey D. and D.K. Giles. 2005. Reducing orchard spray rates and ground deposit by using tree sensors and sprayer control. Ann Rev Ag Eng. 4:229-36.

Giles D.K., M.J. Delwiche and R.B. Dodd. 1987. Control of orchard spraying based on electronic sensing of target characteristics. Trans ASAE. 30(6):1624-30.

Giles D.K., P. Klassen, F.J.A. Niederholzer and D. Downey. 2011. *California Agriculture*. 65(2):85-89. DOI: 10.3733/ca.v065n02p85.
http://californiaagriculture.ucanr.org/landingpage.cfm?article=ca.v065n02p85&fulltext=yes

Tien, L. 2002. Development of a sensor-based precision herbicide application system. Computers and Electronics in Agriculture, 36:133-149.

CSP 2013-1

MISSISSIPPI SUPPLEMENT

AIR07 - GPS, Targeted Spray Application (SmartSprayer), or other chemical application electronic control technology

Producer Name:			**Date:**		
Tract Number (s)			**County:**		
Field Number(s):					
Type of Electronic Spray Control Technology Used:					
Acres Treated:					

Documentation Form

Refer to the criteria section of this enhancement for acceptable chemical application electronic control technologies.

The submitted information accurately reflects the implementation of this enhancement.

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Signature Date