

Greater Harmony Between Agriculture and the Environment

PM-10 Dust Measurements

Issue

Dust produced through tillage operations can result in lost topsoil, reduced visibility, hazards for equipment operators and reduced air quality. Growers would like to reduce dust emissions from farm practices, and in the past decade several tillage implements have been developed to deal with the problem. Since the late 1980s, when the Yuma-Somerton area and parts of Maricopa County were found to be in violation of the National Ambient Air Quality Standards (NAAQS), work has been underway to evaluate different minimum tillage systems to reduce emissions.

What has been done?

At the request of the Arizona Department of Environmental Quality, Wayne Coates, a professor in the UA Office of Arid Lands Studies, has measured particulate emissions from five different tillage systems and has evaluated the appropriateness of an equation used by the EPA to estimate emissions in Yuma-Somerton and other areas. In his work he has quantified particulate emissions from tillage operations and assessed the magnitude of reduction that would be obtained if reduced tillage practices were adopted. Coates determined that a stalk puller and a USM (uprooter/shredder/mulcher) implement produced the fewest emissions. He also determined that the EPA's AP-42 emissions factor equation was inaccurate to begin with because it only had one variable in it: silt content.

Impact

Coates' goal was to provide improved data to document more accurately the dust contribution from agricultural tillage operations. To this end, he has testified before a U.S. House subcommittee, comparing his measured emissions figures with those from the equation: his measurements for the Yuma area were half those predicted by the equation. During the 1998 session, the Arizona Legislature passed a law creating a task force to set up best management practices (BMPs) for field operations to help reduce dust in the air. Coates' research is contributing to the development of reasonable practices growers can implement to meet the BMPs.

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