Comparison of Agricultural Dust Production and Dynamic Soil Properties in Conservation and Standard Tillage Systems. (S05-baker132424-Poster)

Authors:

- J.B.Baker - *University of California, Davis*
- R.J.Southard - *University of California, Davis*
- J.P.Mitchell - *University of California, Davis*

Abstract:

We are evaluating four management systems to assess impacts on soil properties and dust production for a cotton-tomato rotation in California's San Joaquin Valley: standard tillage with and without cover crop, and conservation tillage with and without cover crop. Total and respirable dust was collected in the plume generated by field implements. Gravimetric analysis showed that the conservation tillage treatments produced less dust compared to standard tillage due to the decreased number of field operations. Both of the cover crop treatments showed increased dust production relative to the non-cover crop treatments, corresponding to an increased number of field operations. Soil water content, a field texture gradient, water stable aggregates(WSA), and particulate organic matter(POM) also affect dust production. Texture, WSA, and POM indirectly affect dust production through their impact on soil moisture, which is negatively correlated to dust production. While dust emissions show an immediate decrease due to fewer field operations for the conservation tillage treatments, long-term sampling is necessary to determine the effects that changing soil properties may have on dust production.

Corresponding Author Information:

Julie Baker
University of California, Davis
618 Hermosa Pl
Davis, CA 95616

phone: 5302977628
e-mail: jbbaker@ucdavis.edu

Presentation Information:

Presentation Date: Monday, November 11, 2002
Presentation Time: 9:00-11:00 am
Poster Board Number: 2019

Keywords:
dust, conservation tillage, aggregate stability, particulate organic matter