



Workshop on Agricultural Air Quality: State of the science

Viney P. Aneja^{a,*}, Jessica Blunden^a, Paul A. Roelle^a, William H. Schlesinger^b,
Raymond Knighton^c, Dev Niyogi^d, Wendell Gilliam^e,
Greg Jennings^f, Clifford S. Duke^g

^a*Department of Marine, Earth, and Atmospheric Sciences, North Carolina State University, Raleigh, NC 27695-8208, USA*

^b*Institute of Ecosystem Studies, Millbrook, NY 12545, USA*

^c*US Department of Agriculture, Washington, DC 20250, USA*

^d*Purdue University, West Lafayette, IN 47907, USA*

^e*Department of Soil Sciences, North Carolina State University, Raleigh, NC 27695, USA*

^f*Department of Biological and Agricultural Engineering, North Carolina State University, Raleigh, NC 27695, USA*

^g*Ecological Society of America, Washington, DC 20006, USA*

Received 18 June 2007; received in revised form 9 July 2007; accepted 11 July 2007

Abstract

The first Workshop on Agricultural Air Quality: State of the Science was held at the Bolger Center in Potomac, Maryland from 4 to 8 June 2006. This international conference assembled approximately 350 people representing 25 nations from 5 continents, with disciplines ranging from atmospheric chemistry to soil science. The workshop was designed as an open forum in which participants could openly exchange the most current knowledge and learn about numerous international perspectives regarding agricultural air quality. Participants represented many stakeholder groups concerned with the growing need to assess agricultural impacts on the atmosphere and to develop beneficial policies to improve air quality. The workshop focused on identifying methods to improve emissions inventories and best management practices for agriculture. Workshop participants also made recommendations for technological and methodological improvements in current emissions measurement and modeling practices.

The workshop commenced with a session on agricultural emissions and was followed by international perspectives from the United States, Europe, Australia, India, and South America. This paper summarizes the findings and issues of the workshop and articulates future research needs. These needs were identified in three general areas: (1) improvement of emissions measurement; (2) development of appropriate emission factors; and (3) implementation of best management practices (BMPs) to minimize negative environmental impacts. Improvements in the appropriate measurements will inform decisions regarding US farming practices. A need was demonstrated for a national/international network to monitor atmospheric emissions from agriculture and their subsequent depositions to surrounding areas. Information collected through such a program may be used to assess model performance and could be critical for evaluating any future regulatory policies or BMPs. The workshop concluded that efforts to maximize benefits and reduce detrimental effects of agricultural production need to transcend disciplinary, geographic, and political boundaries. Also, such efforts should

*Corresponding author. Tel.: +1 919 515 7808, fax: +1 919 515 7802.

E-mail address: viney_aneja@ncsu.edu (V.P. Aneja).