

Farming with the Wind II

Wind Erosion and Air Quality Control on the Columbia Plateau and Columbia Basin

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by

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ON THE COVER: *Grower Ron Jirava observes wheat harvest of direct-seed trials on his farm near Ritzville, WA. In the background is a dust cloud from wind erosion on an intensively tilled fallow field. The goal of the CP₃ is to control wind erosion on agricultural lands with soil conservation techniques under study on the Jirava farm and elsewhere in the Columbia Plateau and Basin.*

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Preface

This book is a follow-up to *Farming with the Wind* published in 1998 by the Columbia Plateau PM₁₀ Project (CP₃) on best management practices for controlling wind erosion and air quality on the Columbia Plateau. The need for *Farming with the Wind II* became apparent when reviewing research progress by University and USDA scientists and engineers in their efforts to develop new and improved methods, technologies and strategies for predicting and controlling wind-induced soil erosion and dust emissions from the region's farmlands since the earlier publication six years ago. Consequently, compiling and summarizing this new information for our user clientele involved with soil conservation and air quality issues was considered to be an urgent priority. So far, agriculture on the Columbia Plateau and Columbia Basin has not been implicated as contributing to nonattainment of EPA air quality standards due to increases of particulate matter in the atmosphere, both locally and downwind. This is attributed primarily to increased adoption of improved farming practices and new technologies based on CP₃ research and development along with input and innovations by growers themselves.

This book emphasizes throughout that maintaining year round vegetative cover as crop canopy or residue, and surface roughness is key to controlling wind erosion and dust pollution in downwind areas. Soils of the Columbia Plateau and Columbia Basin are highly susceptible to blowing because of the dry environments, limited vegetation, high winds, intensive tillage, and because they contain substantial quantities of readily erodible and suspendible fine particulates. Much of the potential for erosion is on cultivated dry and irrigated farmlands that the region depends on for the production of a variety of cereal, horticultural, vegetable and hay crops.

The goal of the CP₃ from its inception and yet today is to develop conservation practices that will enable growers to control wind erosion and dust emissions without suffering economic hardship, and to assist them with adopting these practices on their farms. Progress of the CP₃ toward this end has been highly successful, and indeed, exemplary. This can be attributed to the acumen and organized efforts of Project managers, scientists and educators from regional institutions and agencies working in collaboration with growers, grower organizations and the farming community. Without their combined contributions to an outstanding list of accomplishments, this publication would not have been possible.

It is far more economical and less frustrating for growers and society alike to prevent designation of an area as nonattainment for particulate pollution than to correct the problem and return to attainment status. Though much has been learned about the principles and control of wind erosion and dust emissions on the Columbia Plateau and Columbia Basin in the past decade, the work needs to be strengthened and continued with special emphasis on the development and implementation of control technologies at the farm level. This will help to ensure compliance with EPA ambient air quality standards by agriculture in the region. The CP₃ has the organization and experience to accomplish this task both effectively, and in the best interest of the public that it serves.

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(2016) measured the wake evolution downstream of multi-MW wind turbines of the Mont Crosin wind farm in complex terrain and the Altenbruch II wind farm on flat terrain. Results showed that the near-wake region in complex terrain extended up to two rotor diameters and was about 35% shorter than that over flat terrain. In that study the streamwise velocity and turbulence intensity profiles from the simulations agree well with the wind-tunnel measurements of Tian et al. (2013), and wind-turbine wakes were observed to follow the terrain topography. In contrast, Berg et al. Wind Farm with a Hill in the Middle. To evaluate the influence of a hill on the performance of wind farms, we performed simulations of aligned and staggered wind farms, which consist of 13 rows of five turbines. by Robert. I. Papendick Index (pdf) Chapter 1: Purpose, Progress, and Perspectives (pdf) Chapter 2: An Analysis of Historic and Present Dust (pdf) Chapter 3: Wind Erosion, Dust PDF Accessibility. If you require an alternative format for any of the content provided on this website, please contact: Samantha Crow Administrative Assistant 509-677-3671 samantha.crow@wsu.edu. A wind farm with 25 1.5 MW turbines costs upward of \$100,000,000. Although the leaders of Greenpeace, the Sierra Club, or the ridiculously misnamed Union of Concerned Scientists are evermore touting "green, renewable energy," a listing of the major players doesn't provide any evidence that these groups are putting their money up for wind-farm construction. While our environmentalist neighbors pay lip service to "clean energy" and "free fuel," they are seldom if ever involved in wind-farm projects. The Driving Force There are many wind-power worshippers, but we haven't located the individuals or groups with the deep pockets and clout to set in motion all of the wind-turbine construction that we've seen disfiguring the U.S. landscape. Gone with the Wind was the only book Margaret Mitchell wrote. When she died on 16 August 1949, killed by a speeding taxi, the people of Atlanta lost a valuable member of society. Margaret's generous work helping the sick had made her a much loved citizen. Gone with the Wind reached the bookshops in 1936 and sold over a million copies in its first six months. It won the famous Pulitzer Prize, and then became even more famous as a film in 1939. The book is now one of the world's best sellers stories of all time. "Yes, he does the best he can, but you'll never make a farm worker out of a Wilkes. Now, cool down and tell me how much money you want, and what you want it for." Scarlett tried to control her anger. The wind farm has about 627 wind turbines with the capacity to produce a combined total of 781.5 MW clean energy. The construction of the Roscoe Wind Farm took place in four phases. The first phase in 2008 and consisted of 209 1 MW Mitsubishi turbines. The 2nd phase was also completed in the same year and included 55 2.3 MW Siemens machines. It is partly owned and run by Arsted, with the Danish pension funds PKA and PFA collectively owning 50%. The project launched in September 2018. It has 40 MHI Vestas 8MW wind turbines and 47 Siemens Gamesa 7MW wind turbines with a total capacity of 659MW, enough to power 600,000 homes in the UK. The electricity is transmitted using two 4,000t offshore substations. Advertisement. Follow Us on.