

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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Contents

CHAPTER 1

Purpose, Progress and Perspectives	5
Introduction	5
Farming with the Wind: The First Five Years (1992-97)	7
Background and Current Status of Regional Particulate Matter Standards	8
Summary Observations	10

CHAPTER 2

An Analysis of Historical and Present Dust Depositions on the Columbia Plateau	13
Fourth of July Lake Core Study	13
The Role of Geologic Input on the Generation, Transport and Deposition of Sediments on the Columbia Plateau	14
Summary Observations	15

CHAPTER 3

Wind Erosion, Dust Emissions and Air Quality Prediction	17
Wind Erosion and Dust Emissions Modeling	17
Assessments of Erosion and PM ₁₀ Emissions Potential of Columbia Plateau Soils	19
Measuring and Predicting the Transport and Dispersion of PM from Wind Erosion	23
Summary Observations	25

CHAPTER 4

Cropping Systems Research to Control Wind Erosion and Dust Emissions on Dryland Farms	29
Agricultural Outlook on the Columbia Plateau	29
Controlling Wind Erosion and Dust Emissions with Soil Cover and Random Roughness	30
Winter Wheat-Fallow Systems	31
Winter Wheat-No-Till Spring Cropping Systems	35
Continuous No-Till Spring Cropping Systems Compared with Minimum Tillage Fallow: The Ralston Field Study	37
Continuous No-Till Spring Wheat Compared with Winter Wheat-Fallow in the Horse Heaven Hills of South Central Washington State	41
Drought Effects on the Economic Risk of Continuous No-Till Spring Crops Compared with Winter Wheat-Fallow in Adams (Ralston) and Benton (Horse Heaven Hills) Counties	43
Continuous No-Till with Alternative Spring Crop Rotations	44
Managing Russian Thistle in Dryland Cropping Systems	48
Summary Observations	50

CHAPTER 5

Wind Erosion Control Research on Irrigated Lands of the Columbia Plateau	53
No-Till Sowing in Stubble of Irrigated Crops Instead of Burning and Plowing	53
Managing Cover Crops for Erosion Control and as a N Source for Crops	54
Use of Remote Sensing to Assess Soil Surface Characteristics and Cover Crop Adoption by Growers	58
Summary Observations	60

CHAPTER 6

On-Farm Testing and Extension Outreach to Aid Adoption of Best Management Practices	63
On-Farm Testing Project	63
Management of Spring Wheat in Direct Seed and Minimum Tillage Systems	63
Economic Comparison of Hard Red Spring Wheat (HRSW) with Soft White Spring Wheat (SWSW)	66
Agronomic and Economic Comparisons of Direct Seed and Conventional Planted Spring Barley	66
Effect of Increased Seeding Rates and Seed Treatments on Grain Yield and Economics of Direct Seed (No-Till) Spring Wheat and Barley	68
Extension Education in Wind Erosion and Air Quality Control	69
Summary Observations	71

CHAPTER 7

Promoting and Applying Conservation Practices on Dry and Irrigated Croplands	73
Farming to Protect Soil Ecosystem Health	73
Farming with the Air Quality Standards and the Natural Events Policy	75
What Factors Motivate Growers to Adopt Conservation Practices?	80
Summary Observations	81

CHAPTER 8

Wind Erosion and Air Quality Issues Addressed in the 2002 Farm Bill	83
Conservation Reserve Program (CRP)	83
Environmental Quality Incentives Program (EQIP)	84
Conservation Security Program (CSP)	84
Summary Observations	85

CHAPTER 9

Summary: CP₃ Highlights and Priorities for the Future	87
Highlights	87
Looking Ahead: Research and Education Priorities for the Future	91

APPENDIX A

Abbreviated Objectives of the Northwest Columbia Wind Erosion/Air Quality Project	93
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APPENDIX B

Supplemental Photographs	94
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APPENDIX C

Tribute to Roger Veseth	96
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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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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. Aikengall II wind farm development. Powersystems designed, supplied, installed, tested and commissioned a 132kV outdoor open-terminal substation for a new 60.8MW wind farm including; A 90 MVA 132/33kV grid transformer and associated 132kV circuit breaker, disconnectors, VTs, protection panels and substation SCADA system. Also inclusive of a 6-panel 33kV indoor switchboard, and the associated wind farm 33kV cabling to 19 wind turbines. Aikengall II Community Wind Farm was given planning consent by the Scottish Government on Friday 1 March 2013. The wind farm has an installed capacity of 60.8 MW to generate clean, green electricity. Aikengall II Community Wind Farm became operational in November 2017. What the client wanted 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 2 nd phase was also completed in the same year and included 55 2.3 MW Siemens machines. It is partly owned and run Årsted, 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. A wind farm or wind park, also called a wind power station or wind power plant, is a group of wind turbines in the same location used to produce electricity. Wind farms vary in size from a small number of turbines to several hundred wind turbines covering an extensive area. Wind farms can be either onshore or offshore. Many of the largest operational onshore wind farms are located in China, India, and the United States. For example, the largest wind farm in the world, Gansu Wind Farm in China had a... An onshore wind farm proposal located near to Huntly, Aberdeenshire. The proposal consists of 14 turbines, each with up to a 6MW capacity and with a tip height of 180m. Proposals for Clashindarroch II are to enter the planning process in January 2020. The 77MW scheme would consist of 14 new turbines, each with around a 6 megawatt (MW) capacity. The turbines are expected to produce enough fossil-free electricity to meet the equivalent demand of more than 55,000 UK households, and annually prevent more than 70,000 tonnes of carbon dioxide from entering the atmosphere. Clashindarroch Wind Farm, Aberdeenshire. Reaching net zero.