

Foreword

The first edition of "Sunflower Production and Marketing Extension Bulletin 25" was published in 1975. This publication provided general information for growers, seedsmen, processors, marketing agencies and Extension personnel. Revised editions followed in 1978, 1985 and 1994. Interest and knowledge about sunflower production and marketing in the U.S. has increased greatly in the past 30 years. Marketing and processing channels have stabilized and have become fairly familiar to growers since 1985, but pest problems have shifted and new research information has become available to assist in production decisions.

This publication is a revision of the "Sunflower Production and Marketing Bulletin" published in 1994. The purpose is to update information and provide a production and pest management guide for sunflower growers. This revised publication is directed primarily to the commercial production of sunflower, not to marketing and processing. It will attempt to give specific guidelines and recommendations on production practices, pest identification and pest management, based on current information.

This publication also is directed primarily toward sunflower production in the northern Great Plains of the U.S. However, much of the information is relevant to other production areas. All pesticides recommended have a U.S. Environmental Protection Agency label unless otherwise specified. This publication contains certain recommendations for pesticides that are labeled ONLY for North Dakota. The users of any pesticide designated for a state label must have a copy of the state label in their possession at the time of application. State labels can be obtained from agricultural chemical dealers or distributors. USE PESTICIDES ONLY AS LABELED.

Acknowledgements

The editor is indebted to the contributors for writing sections of this publication. The editor also appreciates the efforts made by previous contributors, as these previous sections often were the starting point for current sections.

Contributors

- Roger Ashley, Area Extension Agronomist, Dickinson Research Extension Center, Dickinson, ND 58601
- Duane R. Berglund, Professor Emeritus and Former Extension Agronomist, NDSU Extension Service, North Dakota State University, Fargo, ND 58105
- Carl Bradley, Former Extension Plant Pathologist, NDSU Extension Service, North Dakota State University, Fargo, ND 58105
- Gary Brewer, Former Department Chair and Professor, Department of Entomology, North Dakota State University, Fargo, ND 58105
- Lawrence Charlet, Research Entomologist, ARS-USDA, North Dakota State University, Fargo, ND 58105
- Greg Endres, Area Extension Agronomist, NDSU Research Extension Center, Carrington, ND 58421
- George Flaskerud, Extension Agricultural Economist, NDSU Extension Service, North Dakota State University, Fargo, ND 58105
- Dave Franzen, Extension Soils Specialist, NDSUExtension Service, North Dakota State University,Fargo, ND 58105
- Thomas Gulya, Research Plant Pathologist, ARS-USDA, North Dakota State University, Fargo, ND 58105
- James Hanzel, Sunflower Breeder, Proseed Inc., Harvey, ND 58341
- Kenneth Hellevang, Extension Agricultural Engineer, NDSU Extension Service, North Dakota State University, Fargo, ND 58105
- Vernon L. Hofman, Professor Emeritus and Former Extension Agricultural Engineer, NDSU Extension Service, North Dakota State University, Fargo, ND 58105
- Larry Kleingartner, Executive Director, National Sunflower Association, Bismarck, ND 58503

- Jan Knodel, Extension Entomologist, NDSU Extension Service, North Dakota State University, Fargo, ND 58105
- Greg Lardy, Extension Beef Cattle Specialist,
 Department of Animal and Range Sciences,
 North Dakota State University, Fargo, ND 58105
- **George Linz**, Wildlife Biologist, USDA-APHIS, Bismarck, ND 58501
- Sam Markell, Extension Plant Pathologist, NDSU Extension Service, North Dakota State University, Fargo, ND 58105
- Jerry Miller, Retired Sunflower Breeder, USDA-ARS, North Dakota State University, Fargo, ND 58105
- John Sandbakken, Marketing Specialist, National Sunflower Association, Bismarck, ND 58503
- Tom Scherer, Extension Irrigation Engineer, NDSU Extension Service, North Dakota State University, Fargo, ND 58105
- Don Tanaka, Soil Scientist, ARS-USDA, Northern Great Plains Research Laboratory, Mandan, ND 58554
- Richard Zollinger, Extension Weeds Specialist, NDSU Extension Service, North Dakota State University, Fargo, ND 58105
- Former Editors: David W. Cobia, David E. Zimmer, Marcia McMullen and Duane R. Berglund
- Former Contributors: Ron R. Allen, William S. Ball, James Bauder, Al Black, David W. Cobia, William Danke, Alan Dexter, Carl Fanning, Gerhardt N. Fick, Basil Furgala, Phil Glogoza, James Helm, Harvey J. Hirning, Edna T. Holm, David H. Kinard, Arthur Lamey, Darnell Lundstrom, Dean McBride, Hugh McDonald, John Nalewaja, Berlin Nelson, David M. Noetzel, William K. Pfeifer, Lyle Prunty, Charlie E. Rogers, LeRoy W. Schaffner, Albert Schneiter, Robert and Jay Schuler, John T. Schulz, Tommy E. Thompson, Sebastian Vogel, Howard D. Wilkins, David E. Zimmer and Joseph C. Zubriski

Sunflower Production

Edited and Compiled by

Duane R. Berglund

Professor Emeritus and Former Extension Agronomist North Dakota State University Extension Service

Extension Publication A-1331 (EB-25 revised) September 2007

North Dakota Agricultural
Experiment Station
and
North Dakota State University
Extension Service

North Dakota State University Fargo, North Dakota 58105

Contents

	page
Foreword	
Acknowledgements	
I. Introduction	
Historical perspective	1
Taxonomy.	
Growth stages	
II. Production	
World production	
U.S. production	
Acreage	
Pounds of seed production	7
Processing plants.	
Prices Sunflower marketing strategy	
III. Hybrid Selection and Production Practices	
Hybrid selection	. 10
Oilseed (NuSun), traditional and confectionary	
Criterial for hybrid selection	
Sunflower branching	. 13
Production practices	
Soils.	
Soil fertility	
Fertilizer recommendations Fertilizer application	
Water requirements for sunflower	
Soil water management for dryland sunflower	
Irrigation Tillage, seedbed preparation and planting	. 18
Crop rotation	. 23
Pollination	
IV. Pest Management	
Insects	
Weeds	
Birds Other	
/. Hail Injury	
VI. Herbicide Drift and Chemical Residue	
VII. Harvesting Maturity	
Harvesting attachments	101
Combine adjustments	
VIII. Drying and Storage	105
IX. Feeding Value of Sunflower Products in Beef Cattle Diets	109
K. U.S. Grades and Standards	112
KI. Other Information Sources.	113
Glossary	115
Appendix 1. Diseases	117