INFORMATION TO USERS

This reproduction was made from a copy of a document sent to us for microfilming. While the most advanced technology has been used to photograph and reproduce this document, the quality of the reproduction is heavily dependent upon the quality of the material submitted.

The following explanation of techniques is provided to help clarify markings or notations which may appear on this reproduction.

1. The sign or "target" for pages apparently lacking from the document photographed is "Missing Page(s)". If it was possible to obtain the missing page(s) or section, they are spliced into the film along with adjacent pages. This may have necessitated cutting through an image and duplicating adjacent pages to assure complete continuity.

2. When an image on the film is obliterated with a round black mark, it is an indication of either blurred copy because of movement during exposure, duplicate copy, or copyrighted materials that should not have been filmed. For blurred pages, a good image of the page can be found in the adjacent frame. If copyrighted materials were deleted, a target note will appear listing the pages in the adjacent frame.

3. When a map, drawing or chart, etc., is part of the material being photographed, a definite method of "sectioning" the material has been followed. It is customary to begin filming at the upper left hand corner of a large sheet and to continue from left to right in equal sections with small overlaps. If necessary, sectioning is continued again—beginning below the first row and continuing on until complete.

4. For illustrations that cannot be satisfactorily reproduced by xerographic means, photographic prints can be purchased at additional cost and inserted into your xerographic copy. These prints are available upon request from the Dissertations Customer Services Department.

5. Some pages in any document may have indistinct print. In all cases the best available copy has been filmed.

University
Microfilms
International
300 N. Zeeb Road
Ann Arbor, MI 48106

Schaible, Glenn David

ECONOMIC IMPACTS FROM WEATHER VARIABILITY IN NEBRASKA

The University of Nebraska - Lincoln PH.D. 1984

ECONOMIC IMPACTS FROM WEATHER VARIABILITY IN NEBRASKA

by

Glenn David Schaible

A DISSERTATION

Presented to the Faculty of
The Graduate College in the University of Nebraska
In Partial Fulfillment of Requirements
For the Degree of Doctor of Philosophy

Major: Agricultural Economics

Under the Supervision of Professor Raymond J. Supalla

Lincoln, Nebraska

December, 1984

TITLE

Economic Impacts From Weather Variability In Nebraska

BY

Glenn David Schaible

APPROVED	DATE
Dr. Dale Anderson	Dec. 17, 1984
Dr. Raymond J. Supalla	Dec. 17, 1984
Dr. James Hassler	Dec. 17, 1984
Dr. Mike Turner	Dec. 17, 1984
Dr. Charles F. Lamphear	Dec. 17, 1984

SUPERVISORY COMMITTEE

GRADUATE COLLEGE **UNIVERSITY OF NEBRASKA**

GRAD 52002 300 5-84(T)

ECONOMIC IMPACTS FROM WEATHER

VARIABILITY IN NEBRASKA

Glenn David Schaible, Ph.D.

University of Nebraska, 1984

Advisor: Raymond J. Supalla

This study was concerned with the issue of direct economic impacts of abnormal weather conditions on the Nebraska agricultural economy. The study included several objectives: (1) to measure the impact of weather variability on cropping pattern shifts and crop yield impacts; (2) to analyze the effect of changes in cropping patterns and yields on the value of production, selected input expenditures and net farm income; and (3) to analyze the regional sensitivity of weather induced economic impacts, and the sensitivity of such impacts over time, for selected non-average weather events.

Cropping pattern shifts for spring/fall weather events were measured through the use of derived reduced form impact multipliers acquired from a system of crop acreage response functions that incorporated both temperature and precipitation variables. Three-stage least squares was used to estimate the system of acreage response functions for each Crop

Reporting District (CRD). Yield response functions were estimated by crop, by CRD, using an autocorrelated model within the framework of maximum likelihood estimation. For yield functions, precipitation and temperature variables were entered into each equation for the planting season, the reproductive growth stage and the harvest period. Additional variables were included for temperature stress and temperature/precipitation interaction during the reproductive growth stage per crop. For input usage impacts, deterministic or engineering cost relationships and crop budget techniques were used to estimate changes in input costs for energy, fertilizer/chemical usage and short-term interest.

Each of the above components were incorporated into a computerized user-interactive weather event assessment model. This model was designed to operate on an IBM-PC with a minimum of 64K internal memory. Three weather events were evaluated with respect to the magnitude and distributional differences in direct economic impacts. These events included a cold spring, a dry spring and a season-long drought. In addition, the empirical results include analysis of intertemporal changes in impacts, as well as the required price effects needed to offset value of production impacts.

TABLE OF CONTENTS

TABLE OF CONTENTS (Continued)

TABLE OF CONTENTS (Continued)

TABLE OF CONTENTS (Continued)

LIST OF FIGURES

LIST OF TABLES

LIST OF TABLES (Continued)

LIST OF TABLES (Continued)

LIST OF TABLES (Continued)

LIST OF TABLES (Continued)

LIST OF TABLES (Continued)

LIST OF TABLES (Continued)

LIST OF TABLES (Continued)