

EFFECTS OF DINOSEB AND ETHEPHON ON THE YIELD
OF CORN (ZEA MAYS, L.) AND GRAIN SORGHUM
(SORGHUM BICOLOR, (L.) MOENCH).

by

SAMUEL TEMITAYO JAIYESIMI

B.Sc., Ahmadu Bello University, Nigeria, 1972.

A MASTER'S THESIS

submitted in partial fulfillment of the

requirements for the degree

MASTER OF SCIENCE

Department of Agronomy

KANSAS STATE UNIVERSITY

Manhattan, Kansas

1977

Approved by



Major Professor.

LD
2668
T4
1977
J35
C.2
Document

TABLE OF CONTENTS

LIST OF TABLES.....	ii
INTRODUCTION	1
LITERATURE REVIEW.	2
MATERIALS AND METHODS.	4
Corn Experiment.	4
Sorghum Experiments.	5
RESULTS AND DISCUSSION	8
Corn Experiment.	8
Sorghum Experiments.	11
SUMMARY AND CONCLUSSIONS	17
ACKNOWLEDGEMENTS	18
LITERATURE CITED	19
APPENDIX.	21

LIST OF TABLES

Table	Page
1. Dates of treatment application on grain sorghum at Manhattan, Kansas in 1976.	5
2. Corn. Average number of days from emergence to 50% silking, average ear weight, and average number of ears per plant at Manhattan, Kansas.	9
3. Corn. Average weight of 1000 kernels, average percent of barren plants, average percent of 2-eared plants, and average grain yield at Manhattan, Kansas.	10
4. Grain Sorghum. Days from emergence to 50% flowering at Manhattan, Kansas.	12
5. Grain Sorghum. Average number of heads per plot at Manhattan, Kansas.	12
6. Grain Sorghum. Average weight per head at Manhattan, Kansas.	14
7. Grain Sorghum. Average weight of 1000 kernels at Manhattan, Kansas.	14
8. Grain Sorghum. Average number of kernels per head at Manhattan, Kansas.	16
9. Grain Sorghum. Average grain yield at Manhattan Kansas.	16
10. Corn. Analyses of variance for number of days to 50% silking, percent barren plants, percent 2-eared plants, and percent lodged plants at Manhattan, Kansas.	22
11. Corn. Analyses of variance for 1000 kernel weight, number of ears per plant, ear weight and	

- grain yield at Manhattan, Kansas. 23
12. Grain Sorghum. Analyses of variance for number of days to flowering, average number of heads per plot, and average grain weight per head at Manhattan, Kansas. 24
13. Grain Sorghum. Analyses of variance for 1000 kernel weight, average number of kernels per head, and average yield per hectare at Manhattan, Kansas. 25
14. Grain Sorghum. Analysis of variance for grain yield per hectare at Garden City, Kansas. 26

INTRODUCTION.

Corn (Zea mays, L.) and grain sorghum (Sorghum bicolor, (L.) Moench) are two crops of immense importance to the economy of the Great Plains. Consequently any practice that will increase yields of these crops is always welcome. Dinoseb (2-sec butyl-4,6-dinitrophenol) traditionally used as a herbicide recently has been proclaimed as a yield stimulant when applied to corn foliage at low rates and at the proper stage of development. Ethephon (2-chloroethane-phosphonic acid) is another growth promoting chemical that is currently being tested on grain crops.

Results have been conflicting on the mode of action of dinoseb on yield response at the very low rates suggested. Earlier silking date and decreased barrenness are major reasons that have been advanced for the increase in corn yield (4). Other workers have not been able to consistently obtain yield increases on corn. Results on ethephon have also varied with different crops (2,6,8,14).

These two chemicals were applied to corn and grain sorghum to investigate their effects on yield, and in the case of grain sorghum to determine the best time of application.