

RONNEL AND ITS EFFECTS ON FEEDLOT PERFORMANCE

by

DWIGHT NOLAN TOBYNE

B. S., Kansas State University, 1975

A MASTER'S REPORT

submitted in partial fulfillment of the

requirements for the degree


MASTER OF SCIENCE

Department of Animal Science

KANSAS STATE UNIVERSITY
Manhattan, Kansas

1976

Approved by:


Major Professor

LD
2668
R4
1976
T62
C2
Document

109

TABLE OF CONTENTS

	page
I. SUMMARY.....	1
II. INTRODUCTION.....	1
Ronnel's Chemical Structure and Use.....	2
Research Done on Ronnel as a Feed Additive....	2
III. EXPERIMENTAL PROCEDURE.....	3
IV. RESULTS.....	7
Results of the Growing Phase.....	7
Results of the Finishing Phase.....	7
Results of the Carcass Parameters.....	12
V. DISCUSSION.....	12
VI. LITERATURE CITED.....	16

LIST OF TABLES

TABLE	PAGE
1. COMPOSITION OF RATION AND SUPPLEMENT DURING GROWING PHASE	4
2. COMPOSITION OF RATION AND SUPPLEMENT DURING FINISHING PHASE	5
3. LEVEL OF DAILY ADDITIVE PROVIDED IN RATION PREMIX . .	6
4. EFFECT OF RONNEL AND RUMENSIN ON PERFORMANCE OF FEEDLOT STEERS DURING GROWING PHASE	9
5. EFFECT OF RONNEL AND RUMENSIN ON PERFORMANCE OF FEEDLOT STEERS DURING FINISHING PHASE	10
6. EFFECT OF RONNEL AND RUMENSIN OF PERFORMANCE OF FEEDLOT STEERS DURING TOTAL 139 DAY TRIAL	11
7. EFFECT OF RONNEL AND RUMENSIN ON CARCASS CHARACTERISTICS OF FEEDLOT STEERS	13
8. COMPREHENSIVE SUMMARY OF RESULTS FROM RONNEL FEEDLOT TRIAL	14

ACKNOWLEDGEMENTS

Sincere appreciation is expressed to Dr. Jack Riley, major professor, for his advice, counseling, and patience in completing this report.

The writer also wishes to thank the members of his committee: Drs. Bill Able and Ed Smith, for their help in this project and also Galen Fink and his workers for their efforts.

Special thanks are expressed to the writer's wife, Shari, whose encouragement and assistance made possible the completion of this paper

SUMMARY

Two hundred sixteen yearling Hereford and Angus X Hereford crossbred steers weighing approximately 645 lbs. were used in a 139 day feeding trial designed to evaluate the effect of feeding Ronnel at four different levels in feedlot rations on feedlot performance and carcass characteristics. The four levels were compared to a control group and a group which was fed a daily 200 mg. level of monensin sodium (trade name Rumensin). All steers were on a 50 percent concentrate ration for the first 56 days of the test and then increased to an 85 percent concentrate ration for the remaining 83 days of the feeding period. The trial was designed to follow normal feedlot feeding and management practices as closely as possible. Levels of Ronnel fed in the ration were 180 mg. per 100 lbs. body weight per day, 90 mg. per 100 lbs. body weight per day, 45 mg. per 100 lbs. body weight per day, and 22.5 mg. per 100 lbs. body weight per day. Average daily gain and total gain favored lower levels of Ronnel and the group fed Rumensin. Efficiency of gain was significantly affected by treatments. Rumensin significantly ($P < .10$) improved efficiency of gain when compared to all other treatments. The 90mg. level of Ronnel was significantly ($P < .10$) more efficient than the control group and the 180 mg. level ($P < .05$). Results from carcass characteristics studied (loineve area, back fat, dressing percent, yield grade, and quality grade) indicated no significant differences.

INTRODUCTION

Ronnel has been shown to be a very effective insecticide. It

is an organophosphate (O, O-dimethyl O-(2, 4, 5-trichlorophenyl) phosphorothioate) approved for use as an oral systemic for heel fly larvae, lice and grubs, and as a larvicide for horn fly control. It is insoluble in water, stable at room temperature, and unstable in an alkaline media.

More recently it has been studied for use as a feed additive to improve efficiency of gain. Rumsey et al. (1975) studied performance of steers fed Ronnel and found that it had no significant effect on gain, diet digestibility and nitrogen balance. But daily gain and daily feed intake were somewhat greater. From ruminal characteristics it was shown that molar percentage of acetate was higher (52.9 versus 47.5) for the Ronnel fed treatments compared to the control group. Ronnel rations also had higher levels of plasma total essential amino acids (95.0 versus 76.8 μ Moles per ml.) non-essential amino acids (143.9 versus 124.4) and ammonia (57.3 versus 47.7). However, some of the differences noted could be due partly to intake differences of the Ronnel versus the control.

In work done by Rumsey (1976) it was shown that Ronnel had no apparent effect on ruminal pH, NH_3 , or total volatile fatty acid concentrations. But the molar percentage acetate increased and the molar percentage butyrate decreased for the Ronnel-fed steers. This work did not show an increase in feed intake, but there was approximately 12 percent improvement in efficiency of feed utilization and gain.

There is only limited research available on Ronnel and its effects on feedlot performance that has been published. The present trial was designed to study Ronnel as an additive similar to the way it would be used in a feedlot situation. The purpose was to compare