

EFFECTS OF TEMPERATURE PELLETING AND SOME CHEMICALS
ON THE BIOLOGICAL CONTAMINATION OF FEEDS

by 1264

SYED FARHATULLA QUADRI

B.Sc., (Agri.), Marathwada University, India, 1966

A MASTER'S THESIS

submitted in partial fulfillment of the

requirements for the degree

MASTER OF SCIENCE

Department of Grain Science and Industry

KANSAS STATE UNIVERSITY
Manhattan, Kansas

1970

Approved by:


Major Professor

LD
2668
T4
1970
93

TABLE OF CONTENTS

INTRODUCTION 1

REVIEW OF LITERATURE 2

Salmonella 2

Salmonella in Animals 3

Salmonella in Animal Feeds 4

Salmonella in Humans 9

 Control 10

 Food and Drug Administration and the United States Department of
 Agriculture Programs for the Salmonella Problem . 13

 Heat Resistance of Salmonella senftenberg 14

 Molds 15

 Control 17

MATERIALS AND METHODS 20

Salmonella Studies 20

 Mold Studies 23

RESULTS AND DISCUSSION 26

Salmonella Studies 26

 Mold Studies 34

SUMMARY 52

ACKNOWLEDGMENTS 53

LITERATURE CITED 54

**THIS BOOK
CONTAINS
NUMEROUS PAGES
WITH DIAGRAMS
THAT ARE CROOKED
COMPARED TO THE
REST OF THE
INFORMATION ON
THE PAGE.**

**THIS IS AS
RECEIVED FROM
CUSTOMER.**

INTRODUCTION

Food and feed for humans or animals should be nourishing, attractive and free of injurious biological contamination. Biological contamination in this report refers to Salmonella and mold contamination in feeds.

Salmonellosis, a disease caused by Salmonella organisms, is presently the most important disease transmitted from animal to man. Certain feed ingredients are contaminated with Salmonella organisms and thus may result in contaminated mixed feeds. The latter acts as a vehicle in the transmission of Salmonella to animals which then become healthy carriers and give rise to the production of contaminated foods of animal origin.

Mycotoxicosis is a condition caused by mycotoxins that are produced by certain molds which can grow on and in grain, forage or feedstuffs. Feed or food ingredients containing mycotoxins used in formulations can result in disease and serious economic losses due to reduced growth rate, impaired performance, disease and death.

The importance of controlling Salmonellae and molds in feeds was emphasized by the studies of Erwin (1) for Salmonella and the heavy death losses of turkey poults in England in 1960 due to turkey-x-disease. Later attempts have been made by other workers to control the two organisms by various means.

The purpose of this study was to investigate the effectiveness of pelleting of feed at different temperatures, and addition of chemicals to the feed, for Salmonella or mold control in feeds.

REVIEW OF LITERATURE

Salmonella:

The Salmonella problem is believed by many to be one of the major food related health problems in the United States and other parts of the world. According to the reported cases, of paratyphoid and other salmonellosis compared with typhoid fever for the ten year period 1946 to 1955 in the United States (TABLE 1), it is apparent that, while typhoid fever gradually declined during this period, paratyphoid fever and other salmonellosis increased sevenfold (2). Greze (3) stated that, "Salmonella infections are

TABLE 1. TOTAL REPORTED CASES IN THE UNITED STATES, 1946 TO 1955^{1/}

	Typhoid	Paratyphoid and other salmonellosis
1946	3,268	723
1947	3,075	951
1948	2,840	882
1949	2,795	1,243
1950	2,484	1,233
1951	2,128	1,733
1952	2,341	2,596
1953	2,252	3,946
1954	2,169	5,375
1955	1,704	5,447
Total	23,352	24,129

^{1/}From Edward, P. R. (2).