THE EFFECT OF A MOLD INHIBITOR ON THE PERFORMANCE OF GROWING TURKEYS

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B.S., Kansas State University, 1969

A MASTER'S THESIS

submitted in partial fulfillment of the

requirements for the degree

MASTER OF SCIENCE

Department of Dairy and Poultry Science

KANSAS STATE UNIVERSITY

Manhattan, Kansas

1971

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TABLE OF CONTENTS

INTRODUCTION

A major problem associated with today's large scale poultry operations is an increased awareness of the incidence of molds. Interest of medical and agricultural researchers in this problem has been stimulated by reports from Britain, cited by the USDA (Anonymous, 1965a), of a large number of turkeys poisoned from feeding on contaminated peanut meal. Analysis of the peanut meal showed that it contained a toxic by-product of a common mold, *Aspergillus flavus*. The mycotoxin, as mold-caused toxins are called, was given the name aflatoxin.

There are several significant reasons for an increasing mold problem in poultry production units. One is the trend toward mechanical harvesting of high moisture grains. High moisture content is the single most important condition contributing to microbial deterioration of grain, according to Olafson as quoted by Simon (1970). The second is an increase in multiple flock brooding and rearing facilities with short intervals for clean-up between flocks. Under such conditions if proper management and sanitation practices are not undertaken, a buildup of fungal organisms can occur followed by invasion of secondary infections. A third and vital reason that may contribute to increasing contamination by molds is an increase in the use of antibiotics in poultry flocks. According to Pomeroy as quoted in Squibbs' Technical Bulletin on Mycosis (Anonymous,____b), prolonged use of antibiotics alters the bacterial flora of the intestinal tract allowing the yeast-like organisms to take over and become established in the lining of the intestinal tract. Since mold organism are not susceptible to the commonly used antibiotics and other drugs, they thrive under these conditions.

A method that has been explored for control of mold infections in poultry is to inhibit the growth of mold in feed by the addition of chemical additives. The purpose of this experiment was to evaluate the effect of a mold inhibiting chemical[1/] on the performance of growing turkeys and mold growth in feed.

1/ Mold Curb (R) — Registered trademark for a product supplied by Kemin Industries, Inc., Des Moines, Iowa.

REVIEW OF LITERATURE

Mold Damage to Grain

According to conservative estimates by Johnson as reported by Semenuik (1954), the activities of storage fungi result in the loss of between one and two percent of the world's grain production. The threat of this loss causes even greater cost in added expenditures for drying and storing and in penalties inflicted by untimely marketing and lower commercial grading.

More than 50 species of fungi and a considerable number of species of bacteria have been isolated from agricultural seeds. Bacteria do not normally appear to be agents in the deterioration of stored seeds because they require free water to grow.

Fungi in seeds may be rather arbitrarily divided into two groups, field fungi and storage fungi. The field fungi are those that invade the developing seed while it is still on the plant. The storage fungi, principally *Aspergillus* and *Penicillium*, are those which develop on and within seeds at moisture contents often encountered in storage.

Christensen as quoted by Wogan (1966) reported that in terms of their distribution, there is virtually no overlap between field and storage fungi. In his examinations of several thousand samples of wheat, corn, and barley from the United States, Canada, Mexico, England, and Germany, storage fungi were found in only 0.1 to 0.2 percent of the samples as they were received from the field. Instead, these storage fungi invaded the seeds only after the moisture content was reduced to a level of 14 to 18 percent.

A. glacus is one of the major fungi that invade stored seeds (Christensen, 1957). This group is divided into nine series, each of which contains a number of subspecies. Four of these series, *A. amstelodami*, *A. ruber*,