

GIN TRASH STUDIES CONDUCTED IN GEORGIA

Michael J. Bader, R. Keith Bramwell,
Robert L. Stewart and Gary M. Hill
University of Georgia
Tifton, GA

Abstract

Three studies are currently being conducted to determine the feasibility of utilizing gin trash in Georgia. Two of these studies involve evaluating the potential use of gin trash as a cattle feed. The other study involves the potential of utilizing gin trash in poultry houses as a replacement for pine chips.

Introduction

Cotton production in Georgia has increased rapidly from 427,000 acres in 1991 to 1,440,000 acres in 1997. This growth in production has increased the amount of gin trash in Georgia. Currently the disposal at many gins is costly. Many methods of utilizing gin trash have not been investigated. Additional research is needed to define ways in which gin trash can be utilized.

There are currently 710,000 beef cows on 29,000 farms in Georgia. Every operation depends on forages for the majority of nutrition for the cow herd. Stored forages in the form of hay or silage are the basis of winter feeding programs for almost every cattle operation. Feed costs are the greatest expenses incurred in beef production, and untreated gin trash has crude protein and fiber content comparable to the lower quality hays fed to beef cattle in Georgia each year. The nutrient content of gin trash is variable with the ginning process, variety of cotton, harvest weather, date and moisture content, condition of trash after stacking, and the amount of dirt it contains. In 1996 eighteen samples were obtained and analyzed for nutrient value. The average TDN, total digestible nutrient, of the samples taken was 44.9 percent. The average crude protein was 14.0 percent. According to the National Research Council, the nutritional goals for a lactating cow should be 56.0 percent TDN and 11.5 percent crude protein. Another concern was the amount of dirt contained in gin trash. The samples obtained in 1996 were sampled for ash content, which is an indication of the dirt content. The samples averaged 13.4 percent ash content.

Broiler producers in Georgia produced 1,154 million birds in 1996. Georgia ranks second behind Arkansas in the number of broilers produced. Currently, it costs 700 to 800 dollars to litter a 20,000 square foot chicken house with pine shavings. If gin trash can be substituted for pine

shavings, it could reduce the costs of litter and provide a use for gin trash.

Studies Being Conducted in 1997

One of the studies involves determining the feasibility of using gin trash as a litter for a substitute for pine shavings in chicken houses. The study consists of raising day-old broiler chicks to six weeks of age (42 days) on each of the following poultry bedding application systems: 1) from 1-42 days on pine shavings, 2) from 1-14 days on pine shavings and 15-42 days on cotton gin trash, 3) from 1-42 days on cotton gin trash. Treatments 1 and 3 consists of 8 pens per treatment with 30 birds per pen, and treatment 2 consists of 4 pens of 30 birds per pen. The birds will be raised in an environmentally controlled broiler growout facility at The University of Georgia Poultry Research farm in Athens. Chicks will be provided food, water and lighting systems similar to that used in many commercial broiler operations in the State of Georgia. All birds will be weighed at 0, 14, 28 and 42 days of age to obtain a single mean weight for each treatment pen.

If mortality is unusually high or after obtaining any of the scheduled body weights a specific pen or treatment has significantly different body weights or feed conversion, 3-4 birds will be randomly removed from that group and thoroughly examined. In this event, birds will be humanely killed by cervical dislocation and opened for internal examination. In addition, when weighing birds at the above scheduled intervals, a sample of birds will be necropsied and examined by veterinarians at The University of Georgia Poultry Disease Research Center. After obtaining the final body weights at 42 days of age, all birds will be examined for any external physical problems (key areas included leg joints and foot pads) as well as a thorough examination of internal systems (key areas included the lungs and air sacs) from 6 birds per pen. Following the internal examination, birds exhibiting problems will be further evaluated as to the nature and cause of the disorder. The fat pad and liver will be removed from the abdominal cavity of each of the 6 randomly selected broilers and pooled by pen. The pooled fat pad samples from each of the treatment pens are to be subjected to a chlorinated and organophosphate pesticide scan at the Agricultural Services Laboratory (University of Georgia-Athens). The liver from each of the selected birds will also be submitted to the same laboratory and analyzed for the presence of arsenic. Data will be evaluated to determine if there is any residues retained in the fat pad or liver that may cause an increase in condemnations at the processing plant.

Another study involves investigating processes that may improve the utilization of gin trash by beef cattle. Several preliminary treatments will be screened for effectiveness in improving quality of gin trash. The treatments currently being investigated are: 1) control, 2) lime treated by adding 5% builders lime, mixing, bringing moisture up to 30% and allowed to stand for 14 days, 3) urea treated by adding 3%

urea, mixing, bringing moisture up to 30% and allowed to stand for 14 days, 4) lime and urea treated by adding 5% lime and 3% urea, mixing, bringing moisture up to 30%, and allowed to stand for 14 days, 5) aerated compost by bringing moisture up to 40%, insulating mixture, and replacing the air volume once a day, 6) ambient compost by bringing moisture up to 40 %, insulating the mixture, and allowing air into the mixture, 7) treating 50% of treatments 2 and 4 with 0.5% carbon disulfide, sealing bags for 2 days, and allowing to vent for 24 hours. All treated products will be chemically analyzed for dry matter, crude protein, fiber (NDF and ADF), and lignin. In addition, control and treated products will be subjected to in vitro dry matter disappearance (IVDMD) using ruminal fluid from steers fed

a bermuda grass hay diet; a technique that is relatively inexpensive but highly correlated with apparent digestion of feeds by cattle.

Another study is determining the quality variability of gin trash. Gin trash is being collected at several locations across Georgia and analyzed for nutritional value.

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