

# EFFECTS OF MAGNESIUM-MICA ON PRODUCTION AND PELLET QUALITY OF A 20 PERCENT PROTEIN RANGE CUBE

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## Story in Brief

Magnesium mica was added to a test feed mixture at levels of 0, 2.5, 5.0 and 7.5 percent. The product increased pellet mill production .51 tons per hour for each one percent addition. At the highest level, this represented an increase of 100 percent in the production rate of the test mill. When adding magnesium mica to a formula, each percent added will increase the level of elemental magnesium in the formula 0.08 percent. In many cases this is desirable in supplements which only make up a small percentage of the diet. When added to complete formulas only 5 percent magnesium mica would by itself cause the magnesium in the formula to exceed the NRC recommended maximum of 0.4 percent. The addition of magnesium mica to a 20 percent protein range cube greatly improved both production rate and pellet quality.

(Key Words: Magnesium Mica, Pellet Mill, Feed Production.)

## Introduction

The objective of the experiment was to determine if magnesium-mica would increase the production rate of a pellet mill while holding pellet quality constant as other production parameters varied to optimize input and pelleting consistency.

A test was conducted to evaluate the effect of adding magnesium-mica at 0, 2.5, 5.0, and 7.5 percent of the mixture on the production rate and pellet quality of a 20 percent protein range cube.

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## Materials and Methods

Equipment used was Century model 100 horse power California pellet mill. The feed was pelleted through a 3/4 inch die and the pellets were cooled using a Hays & Stokes double pass cooler.

To maintain the same protein level, the ratio of mids to cottonseed meal was altered when more magnesium-mica was added (Table 1).

**Table 1. Formula composition was as follows:**

Magnesium-mica level	0	2.5	5.0	7.5
Wheat Middlingss	76.00	72.00	67.75	63.50
Cottonseed meal	19.00	20.50	22.25	24.00
Molasses-masonex	4.96	4.96	4.96	4.96
Vitamin A-30,000	0.04	0.04	0.04	0.04
Magnesium-mica		2.50	5.00	7.50

## Results and Discussion

The addition of magnesium-mica (Table 2) significantly increased production rates of the test feed. These effects are shown graphically in Figure 1. The addition of more cottonseed meal to maintain a constant 20 percent protein content of the test feeds as magnesium-mica increased also may have had a slight beneficial effect on pellet quality and production. Production data are summarized on Table 2.

The half ton per hour increase in production facilitated by the addition of each 1 percent magnesium-mica is desirable from a production standpoint. However, including such high amounts of magnesium must be considered.

The maximum tolerable level of magnesium for cattle (NRC, 1984) is suggested to be 0.40 percent of the total diet. Each percent of magnesium-mica added to a complete diet adds 0.08 percent magnesium so that 7.5% magnesium-mica adds .60% percent magnesium. Because the range cubes produced in this test are a supplement and form only a fraction of the total diet, added magnesium probably has a limited effect. If one assumes that cattle consume a total of 20 pounds of feed of which 6 pounds is pelleted feed

**Table 2. Production test results.**

Control cubes: With the mill set to make the best quality of cube the following settings were used:

Amps	60
Reeves Drive	5.5
Mash Temperature	120
Tons per hour	4

**Magnesium-mica at 2.5%:**

Set Amps same as control:

Amps	60
Reeves drive	5.9
Mash Temperature	125
Tons per hour	5

Set mill to run best quality cubes:

Amps	80
Reeves Drive	6.5
Mash Temperature	130
Tons per hour	6.3

**Magnesium-mica at 5%:**

Set Amps same as previous:

Amps	80
Mash Temperature	126
Tons per hour	6.3

Set mill to run best quality cubes:

Amps	90
Mash Temperature	140
Tons per hour	7.1

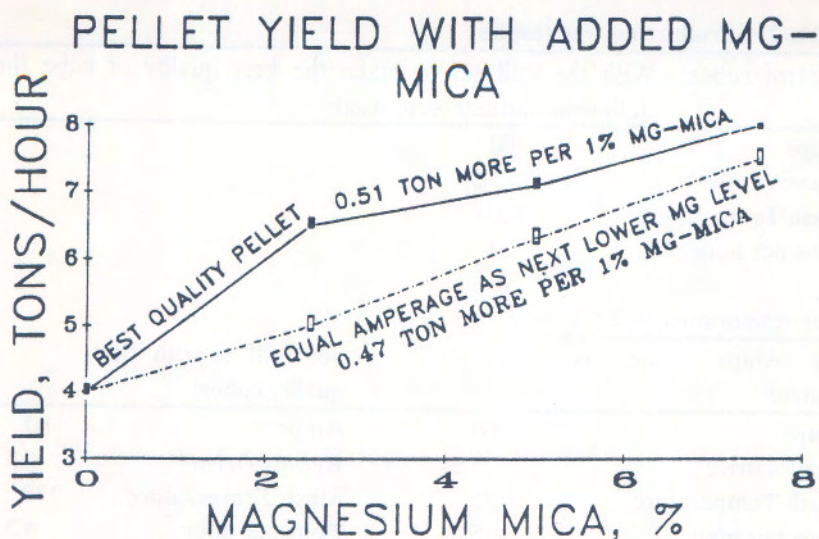
**Magnesium-mica at 7.5%:**

Set Amps same as previous:

Amps	90
Reeves drive	6.9
Mash Temperature	140
Tons per hour	7.5

Set mill to run best quality cubes:

Amps	85
Reeves Drive	7
Mash temperature	140
Tons per hour	8



**Figure 1.** The effects on Magnesium-mica on pellet production.

and 14 pounds is prairie hay, the magnesium levels in the total diet with 7.5% magnesium-mica in the pellet would be .53%. This level of magnesium is high compared to the NRC recommended maximum. Even at 2.5% the total diet would be .41% magnesium. In contrast, with low magnesium forage that may cause grass tetany due to magnesium deficiency, high magnesium pellets would prove helpful.

Including high levels of magnesium-mica into complete diets may prove toxic. Literature studies indicate that the magnesium in magnesium-mica is as available as magnesium oxide.