The Effect of LED Light Color and Feed Type on the Performance of Male Broiler Chicks to 21 Days.

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Introduction

- Poultry producers are rapidly adapting new lighting technology that reduces labor and energy costs.
- There are numerous choices of color or spectrum, brightness, control systems, and lenses available in the marketplace. These choices will impact energy use, bird performance, and animal welfare as well as farm workers.
- Intensity and color may impact how a bird views the water and feed devices, litter, and other birds.

Objectives

- The study was designed to determine broiler prestarter and starter performance when placed under 4 colors of lights and two feed types.

Experimental Procedures

- 4 colors of lights: red, green, blue, and white and two feed types: sorghum-soy or corn-soy based in a 4 by 2 factorial arrangement with 4 reps for each combination of treatments.
- Pens were fitted with LED focal lights 72” over the litter, with the ring of light focused between the feed pan and the nipple drinker line.
- The pens were 5’ by 14’ with 4” of pine shavings.
- Twelve male Cobb broiler chicks were placed in each pen which was randomly assigned a light color and feed type
- At placement, house incandescent lights at 25 lumens were provided for 48 hours, then reduced to 15 lumens for 24 hours
- On day 4, the house lights were extinguished and only the LED lamps were used, and were set at 15 lumens in the focal area.
- Pen weights and feed were recorded at day 10 and 21.

Corn-Based Diet

Self-mixed rations :	10d	21d
Ingredients		
Corn	44.70 kg	132.0 kg
Soybean meal	24.30 kg	59.2 kg
Limestone	1.152 g	3.10 kg
Mono Dical	0.790 kg	1.90 kg
Salt	0.274 kg	676 g
Soybean oil	0.216 kg	1.60 kg
Biolys 70	0.205 kg	530 g
DL Methionine	0.180 kg	470g
KSTATE Po	0.202 kg	500 g
Ronozyme H	13.70 g	38 g
Coban	28.00 g	100 g

Sorghum-Based Diet

Self-mixed rations:	10d	21d
Ingredients		
Milo	44.07 kg	130.2 kg
Soybean meal	24.30 kg	59.2 kg
Limestone	1.152 g	3 kg
Soybean oil	0.864 kg	3.60 kg
Mono Dical	0.154 kg	1.90 kg
Salt	0.274 kg	0.676 kg
Biolys 70	0.194 kg	0.5 kg
DL Methionine	0.194 kg	430 g
KSTATE Po	0.187 kg	0.5 kg
Ronozyme H	13.70 g	38 g
Coban	28.00 g	100 g

Treatment Means :

Treatment	BWG0_10 (kg)	FI0_10 (kg)	G/F0_10	BWG10_21 (kg)	FI10_21 (kg)	G/F10_21	BWG0_21 (kg)	FI0_21 (kg)	G/F0_21
Corn	2.17a	2.51a	0.87a	7.19a	10.00a	0.72a	9.34a	12.52a	0.75a
Sorghum	2.17a	2.61a	0.83b	7.24a	10.00a	0.72a	9.40a	12.61a	0.75a
Blue	2.24a	2.59a	0.87b	7.10a	9.93a	0.71a	9.34a	12.52a	0.75a
Green	2.14a	2.54a	0.84ab	7.25a	10.02a	0.72a	9.40a	12.56a	0.75a
Red	2.15a	2.59a	0.83a	7.24a	10.03a	0.72a	9.37a	12.61a	0.74a
White	2.15a	2.54a	0.85ab	7.27a	10.04a	0.72a	9.42a	12.57a	0.75a
Blue Corn	2.25b	2.50ab	0.90b	7.08a	9.97a	0.71a	9.33a	12.47a	0.75a
Blue Sorghum	2.23b	2.67b	0.84a	7.11a	9.90a	0.72a	9.34a	12.57a	0.74a
Red Corn	2.19ab	2.62b	0.84a	7.27a	10.16a	0.72a	9.45a	12.78a	0.74a
Red Sorghum	2.10ab	2.56ab	0.82a	7.22a	9.90a	0.73a	9.30a	12.45a	0.75a
Green Corn	2.06a	2.40a	0.86ab	7.21a	9.90a	0.73a	9.27a	12.29a	0.75a
Green Sorghum	2.22ab	2.67b	0.83a	7.29a	10.15a	0.72a	9.51a	12.82a	0.74a
White Corn	2.19ab	2.54ab	0.86ab	7.20a	10.00a	0.72a	9.38a	12.54a	0.75a
White Sorghum	2.05ab	2.54ab	0.83a	7.35a	10.07a	0.73a	9.50a	12.61a	0.75a

Conclusions

- At 10d, sorghum fed chicks were significantly less feed efficient than corn fed chicks, however, no other measurement in the study was affected by diet type.
- At 10d, only the chicks under blue light had increased BWG. The chicks under blue lights fed corn were significantly more efficient.
- There were no main effects of light color, feed type, or interaction observed for any of the treatments. The results indicate that under blue, red, green or white lights, early performance of male broiler chicks are remarkably similar.

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