

EGG-CELLENT PRODUCTION

KELSEY GELB
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Background Information

- Vitamin E:
 - An antioxidant that helps with growth, reproduction, and the immune system
 - Prevents atherosclerosis- hardening of the arteries, which is common in chickens
- Vitamin C:
 - Also an antioxidant
 - Relieves stress
 - Helps with the immune system



- Terms to Know:
 - Antioxidant- protects cells from the damage that occurs when chickens break down the food they eat
 - Molting- when chickens lose and regrow feathers, which causes them to lay less or no eggs so they can build up their storage of nutrients and it causes a lot stress

Background Information (Continued)



Barred Plymouth Rock Hens:

- Tolerate cold temperatures well
 - Lay brown eggs
- Are classified as good egg layers (they are typically supposed to lay about 4 eggs per week)
- Originated in North America

Ameraucana Hens:

- Tolerate cold temperatures
 - Lay green/blue eggs
- Also classified as a good egg layers (they are typically supposed to lay around 3 eggs per week)
 - Originated in Chile





Background Information (Continued)



Last Year's Results:

- The Barred Plymouth Rock hens receiving the vitamin E laid about 17 eggs per week, but the hens not receiving it laid about 12 eggs per week
- The Ameraucana hens receiving vitamin E laid about 5 eggs per week, but the hens not receiving it laid about 11 eggs per week.

*Last year's experiment was to see if chickens would lay more eggs if they were given vitamin E. A group of 3 Barred Plymouth Rock hens and 3 Ameraucana hens were given vitamin E, while another group of 3 Ameraucana hens and 3 Barred Plymouth Rock hens weren't given any vitamin E.



Research Question

Does supplementing chickens with vitamin E *and* C affect their egg production?



Hypothesis

If the researcher gives chickens vitamins E and C, then they will lay more eggs.

This is because both vitamins are antioxidants that are beneficial for their growth, reproduction, and immune system strength. Introducing vitamin C along with the vitamin E could have more of an effect on the chickens' egg production than giving them only vitamin E, like in the previous experiment.



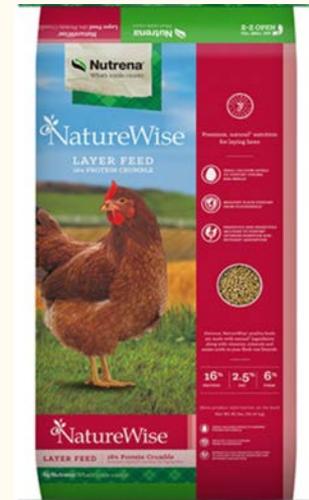
Why This Topic Was Selected



I chose to experiment on my chickens with different vitamins because my family loves eggs and wanted to find out how to get our chickens to lay even more. I researched which chickens were the healthiest and best egg layers, which ended up being Ameraucana and Barred Plymouth Rock chickens. On a previous science fair experiment, I gave a group of them vitamin E to see how many more eggs they would lay. There was a significant difference in how many eggs were laid. After more research, I decided to try giving vitamin C and E combined, compared to a group of chickens still only receiving the vitamin E with their food. These vitamins were chosen because they seemed to be the best for my chickens.

Materials

- 6 Barred Plymouth Rock hens
- 6 Ameraucana hens
- Vitamin E supplement- Emcelle Tocopherol Vitamin E
- Vitamin C supplement- Pure Synergy Pure Radiance C 100% Natural Vitamin C
- Nature Wise Layer Feed 16% Crumble (which already has 29.48 mg vitamin E/ kg food. It doesn't list any vitamin C on the bag)
- Chicken coops with a fenced outside run and artificial lights



Procedure

1. Split chickens into 2 groups- 3 Barred Plymouth Rock hens and 3 Ameraucanas in each, group A and group B
2. Feed both groups .68 kg of food, and give both groups .18 mL of vitamin E.
3. Give group A 200 mg of vitamin C along with their vitamin E supplement.
4. Record the amount of eggs from each group every day

Variables

Control Group: Group A, receiving vitamin E

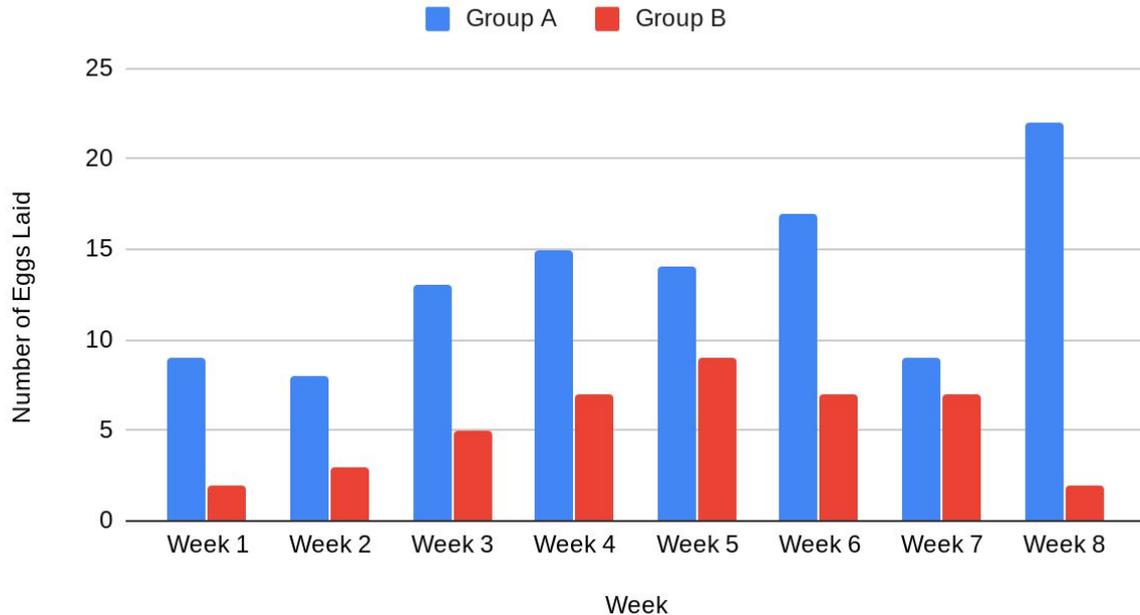
Experimental Group: Group B, receiving vitamin E and C

Independent Variable: Vitamins E and C

Dependent Variable: Number of eggs laid

Controls: Food, water, lighting, coops, yards- all the same

Chicken Eggs



Group A- receives vitamins E and C (experimental group)

Group B- receives vitamin E only (control group)

Only Barred Plymouth Rock chickens laid eggs this winter. None of the Ameraucana chickens laid eggs due to molting, which occurs after they're a year or two old. They lose and regrow their feathers, which causes them to lay less eggs so they can build up on nutrients

Data

*Amount of eggs laid by chickens over 8 weeks

Week	Group A	Group B
Week 1	9	2
Week 2	8	3
Week 3	13	5
Week 4	15	7
Week 5	14	9
Week 6	17	7
Week 7	9	7
Week 8	22	2

Data Analysis

The bar graph shows that the group of Barred Plymouth Rock chickens receiving Vitamin E and C laid an average of 13 eggs per week, while the group of Barred Plymouth Rock hens receiving only vitamin E, laid an average of 5 per week. The Ameraucana chickens were all still going through their molting phase for the duration of the study, which caused them to stop laying eggs.



Conclusion

- Original Research Question: “Does supplementing chickens with vitamin E and C affect their egg production?”
- Hypothesis: “If the researcher gives chickens vitamins E and C, then they will lay more eggs”
- Related to the background information that vitamin E and vitamin C are both important to chickens’ health
- Further confirms from last year’s study that egg production fluctuates with different breeds of chickens

Conclusion (Continued)

- Supports the hypothesis and proves that supplementing vitamin E and vitamin C is more effective than supplementing vitamin E.
- The chickens that were given both vitamins laid twice as many eggs as the chickens receiving one vitamin



Challenges & More Studies

- Challenges / Possible Sources of Error:
 - The chickens were going through their molting phase, which decreased the amount of eggs all the chickens were laying compared to last year's experiment since they were under one year old and didn't molt at the time. The Barred Plymouth Rock hens still laid eggs, however.
 - Varied temperatures this winter could've made changes in the chickens' egg laying
- Future Studies / Things to do Differently
 - Other vitamins / different amounts of the vitamins
 - Experimenting during a different season, where the temperature won't change as much and the chickens won't be molting (they only molt during the winter)

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**Thank you
for reading!**

