Analyzing the Relationship Between Herbicide Introduction and the Development of Gallus domesticus Embryos

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Due to much controversy in the past, there is currently much uncertainty as to whether or not current herbicides are safe. The purpose of this project is to study the effects of herbicides atrazine and glyphosate on Gallus domesticus development. A controlled experiment was set up with 6 experimental groups (9 embryos each) and a control group (13 embryos) that were regularly incubated. This experiment was first conducted by introducing the embryos to 0.5% and 1% concentrations of a weed killer containing glyphosate. Little data was gathered during this trial. For the second trial, the embryos were dipped into liquids: Group A into 5 mL/L of glyphosate, Group B into 5 mL/L of atrazine, Group C into 10 mL/L of glyphosate, Group D into 10 mL/L of atrazine, Group E into 15 mL/L of glyphosate, Group F into water, and Group G was the control. On day 16 of development, before the embryos reached vertebrate stage, the embryos were frozen. The embryos were then analyzed for percent mass change of the egg, color variance, and development hindrance. Standard deviation for percent mass change of the egg showed that Groups F and G lost ~10% of their original mass, while experimental groups A-E only lost ~7%, which is a significant difference. Standard deviation for development hindrance showed that Groups F and G developed to ~Day 14 of development, while experimental groups A-E only developed to ~Day 7, which is a significant difference. Chi-squared analysis for color variance showed that compared to the control, experimental groups C and E had significant difference in color. Based on these analyses, it was concluded that there is a negative association between the introduction of the herbicides atrazine and glyphosate and the development of Gallus domesticus embryos.