Assessing Heavy Use Area Protection on Poultry Farms

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ABSTRACT

Poultry growers continue to work on improving their environmental footprint and one of the tools they use is Heavy Use Area Protection (HUA). HUAs are a Natural Resource Conservation Service (NRCS) approved practice code 561. The purposes and benefits include: reduction in the runoff of nutrients and other pollutants that impact water quality, prevention of soil erosion by providing a stable surface for livestock or equipment, and maintaining and/or improves livestock management and health. HUAs are concrete pads that stabilize areas that can be disturbed by heavy equipment used during the production and rearing of poultry. These areas (typically, 148.6 m²) are located at the end doors of the poultry house, which receive heavy use during load out, clean out, and placement of the birds. Additionally, areas in front of the litter storage structures and mortality composting facilities are considered HUAs.

In order to determine the quantity of nutrients from the animal waste that are prevented from entering the local environment and waterways, all the litter left on the HUAs after loading out the birds was collected and weighed. A total of four different farms were used and the farms were visited multiple times during the year. An average of 0.328 kg/m² were recovered after each load out. The nutrient content of litter sampled was: 4.66% N and 3.85% P (dry basis). Therefore, in this study HUAs prevented 0.013 kg/m² of nitrogen and 0.01 kg/m² of phosphorus from entering the environment per load-out/clean-out.

RESULTS AND DISCUSSION

1. The HUAs evaluated had a mean retention of 0.317 kg/m² for each load out while the amount ranged from as low as 0.03 kg/m² to as high as 1.43 kg/m². One of the largest factors that influenced the amount of litter recovered was the weather. Rainy weather resulted in more litter being removed from the house as it tended to stick to the wet tires, while windy conditions resulted in less litter being recovered due to it blowing off the pads.

2. The average nutrient content of litter sampled was: 4.02% N, 3.10% P and 3.63% K (dry basis). Therefore, in this study HUAs prevented 0.011 kg/m² of nitrogen and 0.008 kg/m² of phosphorus from entering the environment after each load-out.

3. Equipment is available to help growers clean HUAs.

CONCLUSION

The average amount of litter recovered was 0.317 kg/m² for each load out while the amount ranged from as low as 0.03 kg/m² to as high as 1.43 kg/m². One of the largest factors that influenced the amount of litter recovered was the weather. Rainy weather resulted in more litter being removed from the house as it tended to stick to the wet tires, while windy conditions resulted in less litter being recovered due to it blowing off the pads.

The average nutrient content of litter sampled was: 4.02% N, 3.10% P and 3.63% K (dry basis). Therefore, in this study HUAs prevented 0.011 kg/m² of nitrogen, 0.008 kg/m² of phosphorus and 0.01 kg/m² of potassium from entering the environment after each load-out.

There are approximately 4,620 chicken houses on Delmarva. If HUAs are located at each end of the houses they can prevent 2,395,503 kg of litter from entering the environment (47.14 kg/m² x 2 x 4,620 x 5.5).

INTRODUCTION

MATERIALS AND METHODS

A total of four different farms located on the Delmarva Peninsula were used. These farms were visited multiple times throughout the year. The grower was responsible for cleaning the HUAs and putting the manure in a pile so that it could be weighed. While having the growers do the cleaning resulted in some variation between farms due to differences in cleaning methods and attention to detail, this method gave real results as to how effective HUAs are. Methods of cleaning HUAs included hand broom sweeping, scraping HUA with a loader bucket on front of a tractor or skid loader, and mechanical brooms that connect to front and loaders or skid loaders (photos 4, 5 and 6). These mechanical brooms allowed the growers to clean the HUAs quicker and more thoroughly.

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1. The HUAs evaluated had a mean retention of 0.317 kg/m² of litter that was recovered after each load-out. This equates to 47.14 kg per average size HUA.
2. The average nutrient content of litter sampled was: 4.02% N, 3.10% P and 3.63% K.
3. Equipment is available to help growers clean HUAs.