

RECOMMENDATIONS FOR POULTRY ACIDIFYING LITTER AMENDMENTS

United States Department of Agriculture – Natural Resources Conservation Service

Conservation Practice Fact Sheet

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INTRODUCTION

The use of amendments to suppress ammonia volatilization from litter will reduce emissions from poultry production facilities. In these confined spaces, poultry litter amendments can improve air quality for poultry living in the houses as well as humans working in this environment. Additionally, some amendments suppress bacterial pathogens in litter and may improve poultry health. With the reduction in ammonia in houses, the need for ventilation may be reduced, resulting in potential energy savings.

The reduction of ammonia emissions will also increase the proportion of nitrogen in the litter, making the litter a more economically valuable and balanced fertilizer.

Some litter amendments have been shown to effectively provide multiple benefits for air quality, water quality, and poultry health. Preference should be given to amendments with the greatest environmental and economic benefit.

The use of an amendment may alter the composition of the litter. Changes in litter nutrient content and/or consistency need to be identified and addressed in the poultry operation's nutrient management plan and waste management system plan.



Photo by Stephen Ausmus, USDA-ARS

If the use of litter amendments will be cost-shared through federal or state programs, the selection of amendments should be mutually agreed to by all contractual parties, and compatible with the intended end use of the litter.

Refer to the table on the next page for a list of acceptable poultry litter amendments. This table addresses the rate, timing, method, and safety concerns for use of the products.



Photo by Anne Lynn, USDA-NRCS

Table 1. Recommendations for Poultry Acidifying Litter Amendments¹

Product trade name and active ingredient chemistry	PLT Sodium Bisulfate- NaHSO ₄	Poultry Guard Acidified Clay- 46% H ₂ SO ₄	Al ⁺ Clear Dry Alum- Al ₂ (SO ₄) ₃ •14H ₂ O	Liquid Al ⁺ Clear A7 Acid + Liquid Alum- 7% H ₂ SO ₄ + 36% Al ₂ (SO ₄) ₃ • 14H ₂ O	Klasp™ Compounded Iron III Sulfate Hydrate granules - patented formulation based on crystalline Fe ₂ (SO ₄) ₃ •nH ₂ O
Purpose	Decrease litter pH, bind ammonia.	Decrease litter pH, bind ammonia.	Decrease pH, bind ammonia and solu- ble phosphorus.	Decreases litter pH, bind ammonia and soluble phosphorus	Decreases litter pH, binds ammonia and soluble phosphorus.
Container size	50 lb bag, 2,000 lb super sack.	50 lb bag, 1,000 and 2,000 lb super sacks.	50 lb bag, 2,000 lb super sack, and bulk.	Bulk.	50 lb bag, 2,000 lb super sack.
Rates of application	93 lbs per 1,000 SF	93 lbs per 1,000 SF	100 lbs per 1,000 SF	25 gals per 1,000 SF	100 lbs per 1,000 SF (based on compari- tive studies to date with Alum)
Time of application in brood and grow-out chambers	Apply to whole house as close to chick placement as possible and not more than 1-day prior. For split ap- plications, apply in off-chamber as close to bird migration as possible. Can be applied in the pres- ence of birds.	Apply as close to chick placement as possible or move- ment to grow-out chambers and not more than 3 days prior. For split ap- plications, apply one day before move- ment into off- chamber while birds are separated by curtains.	Apply whole-house 1-7 days before chick placement. Apply 5-7 days for dry litter and con- sider liquid acid alum for very dry litter.	Apply whole-house 1-5 days before chick placement, 1-2 days if wet litter, 3-5 days if dry litter. Cannot be used when birds are in the house.	Apply to whole house or brood chamber 1-4 days before chick place- ment or bird move- ment in off- chamber. Can be applied in the pres- ence of birds.
Method of application	Spinner or drop spreader, no incor- poration.	Spinner or drop spreader, no incor- poration.	Spinner or drop spreader, incorpo- rate top 1 inch if dry litter.	Certified applicator, no incorporation.	Spinner or drop spreader, no incor- poration required.
Safety concerns	Wear gloves, gog- gles, particle mask, and clothing to pro- tect exposed skin	Wear gloves, gog- gles, particle mask, and clothing to pro- tect exposed skin.	Wear gloves, gog- gles, particle mask, and clothing to pro- tect exposed skin.	Wear gloves, gog- gles, particle mask, and clothing to pro- tect exposed skin.	Wear gloves, gog- gles, particle mask, and clothing to minimize skin/eye/respiratory contact.
Special handling and storage	Hygroscopic; store in dry location.	Hygroscopic; store in dry location. DOT – HAZMAT.	Hygroscopic; store in dry location.	Requires special equipment and trained applicator. DOT – HAZMAT.	Store in dry loca- tion. 2,000 lb super sacks are DOT – HAZMAT.

Notes:

¹Other products with ammonia and/or phosphorus-binding efficacy may be added to this list when scientific documentation becomes available.

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