Deep litter for poultry- part 1

L J. Gaffney  
Department of Agriculture

Follow this and additional works at: https://researchlibrary.agric.wa.gov.au/journal_agriculture3

Recommended Citation  
Available at: https://researchlibrary.agric.wa.gov.au/journal_agriculture3/vol3/iss1/18

This article is brought to you for free and open access by Research Library. It has been accepted for inclusion in Journal of the Department of Agriculture, Western Australia, Series 3 by an authorized administrator of Research Library. For more information, please contact jennifer.heathcote@agric.wa.gov.au, sandra.papenfus@agric.wa.gov.au, paul.orange@dpird.wa.gov.au.
DEEP LITTER FOR POULTRY

by

L. J. GAFFNEY, B.Sc. (Agric.),
Poultry Adviser

NOT so many years ago it was customary for poultry farmers in Western Australia to clean out the droppings from their poultry sheds at daily or weekly intervals. Now, however, the majority of commercial poultry farmers clean out their sheds once yearly. This tremendous saving in labour has been achieved through the introduction of the deep litter system which entails no sacrifices of hygiene or comfort and which actually contributes to a general overall improvement in management.

Deep litter is a composted mixture of a suitable litter material and poultry droppings, developed over a period of six months or more and maintained in a dry, friable condition. The most important function of the litter is to absorb moisture from poultry excreta which contains about 80 per cent. of water when voided. This moisture is subsequently disposed of by evaporation and is also utilised in decomposition.

Various types of litter materials are used, such as sawdust, wood shavings, grain hulls, chopped-up straw, etc.; the essential requirements of the litter material being that it is cheap and plentiful, has adequate water-absorbing powers, is reasonably coarse so that packing does not readily occur, and in addition it must of course be capable of decomposition.

Let us first outline some of the features of deep litter as it concerns poultry farmers in Western Australia. A brief account of the history of the practice may be of interest.

The origin of deep litter dates back many years but it was during World War II that the system first achieved widespread prominence. Poultry farmers in the U.S.A. adopted the deep litter system as a temporary measure to help cope with the labour shortages and it was not very long before they realised that deep litter was one of the outstanding labour-saving practices of the century.

The results achieved with deep litter attracted the interest of scientists from many fields, and an extensive programme of investigatory work was commenced and is still continuing today at a high level. Research work in the fields of nutrition, disease, and manurial value uncovered a wealth of knowledge and as new facts were brought to light, so the subject of deep litter has become more complex.

SOURCE OF VITAMIN B₁₂

Firstly, came the astonishing discovery that deep litter could contain significant levels of vitamin B₁₂, the more recently identified vitamin which plays a vitally important role in animal nutrition. This had a tremendous impact on the industry in U.S.A. because it was shown that vegetable proteins generally were lacking in this essential vitamin, and most of the protein fed to poultry in that country was from vegetable sources. Chickens reared...
Fig. 2.—Deep litter with portion removed to show the depth of the layer (in this case between 10 and 11 inches). A good deep litter should be dry and friable throughout its entire depth.

on deep litter showed remarkably increased growth rates because the diet was supplemented by the growth-promoting vitamin B₁₂ contained in the litter. When chickens were fed a diet containing adequate levels of animal protein, they did not respond in the same way to the deep litter because the vitamin B₁₂ was being supplied in the animal protein. Thus the term animal protein factor (or A.P.F.) was evolved to denote a complex of factors which are contained in animal protein but which are lacking in vegetable protein, and of which vitamin B₁₂ is the best known and of foremost importance in poultry nutrition.

HYGIENE

The aspect of deep litter in relation to poultry hygiene has evoked considerable investigational work but most of the findings on the matter have been inconclusive. However, practical experience has proved that the proper use of deep litter presents no greater disease hazard than methods hitherto practised and it can be claimed that a good deep litter is less perilous from a disease aspect than the soil of poultry runs. The deep litter system has been primarily responsible for the successful housing of laying birds intensively on a commercial scale.

The importance of maintaining the body of litter in a dry condition cannot be over-stressed and the dryness of the medium largely accounts for its sanitary properties. It has been postulated that in a properly kept litter, a population of favourable micro-organisms is maintained rather than a populace of disease organisms. A friable and well-aerated litter encourages the favourable bacteria which present strong opposition to the unfavourable ones. There is reason to believe that ammonia and other disinfecting materials contained in the litter tend to suppress any sudden build-up of micro-organism activity. Whatever the reason may be, there is little doubt that a properly kept deep litter presents a suitably hygienic environment to poultry.

MANURIAL VALUE

The manurial value of deep litter holds particular interest to those farmers who wish to obtain full value for this poultry by-product. Under the deep litter system, a poultry farmer handles a considerable bulk of organic material. Apart from the fertiliser requirements of his own green-feed plot and vegetable garden, most of this material is sold for horticultural use and it is keenly sought after by market gardeners, orchardists, vignerons, and graziers. Besides containing good levels of nitrogen, phosphorus, potassium, and calcium, and a wide variety of other elements, it supplies large quantities of organic material to the soil. It is, therefore, particularly useful as a general fertiliser in building up the fertility of soils deficient in organic matter and lacking many of the elements necessary for plant growth.

THE DEVELOPMENT AND MANAGEMENT OF DEEP LITTER

The term “deep litter” was originally applied when a good depth of litter material was used in the initial development. Built-up litter, on the other hand, is produced by commencing with only a shallow layer of material and adding fresh material to this whenever the capacity to absorb moisture diminishes. The method adopted locally is to commence with a layer of dry sawdust or shavings 1in. to 2in. deep and this, incorporated with the droppings, is left to accumulate for 12 months, when it is removed. With this method, difficulty is usually encountered in maintaining the litter in a dry and friable condition during the winter.
Fig. 3.—Cleaning-out operations have commenced in this large intensive shed. All the deep litter will be removed and sold, the perches and woodwork near the floor sprayed with creosote, the cement floor disinfected with 2% caustic soda solution and liberally sprinkled with hydrated lime prior to adding 2in. of clean, dry litter material whenever fresh litter material is added. As a guide, a total of 2 lb. of hydrated lime per 10 sq. ft. can be applied over three or more dressings during the first three months. Thereafter, further liming may not contribute very much towards keeping the litter dry, but usually a light application is made whenever the litter is turned over, as this assists in keeping it in a friable state. If the farmer uses the litter for fertilising his own land, it is a good scheme to occasionally apply a superphosphate dressing rather than hydrated lime. Experiments conducted in U.S.A. indicate that the addition of superphosphate reduces the escape of ammonia and thus the nitrogen content of the litter is retained, making it more valuable as a fertiliser.

CAUSES OF DAMP LITTER

Damp litter can present a serious hazard to poultry. Apart from the disease element, harmful and obnoxious fumes are evolved when the litter becomes damp. During wet weather it is often difficult to maintain the litter in a dry condition, and this depends largely on the construction of the poultry house. Driv­ing rain, spillage from water vessels, insufficient ventilation and overcrowding are the most common causes of the litter being damp and difficult to work. The farmer should look to these possible causes and rectify them even if it means modifying the structure of the shed.

(To be continued.)

Fig. 4.—Several tons of deep litter are developed over 12 months and this market gardener had little diffi­culty in obtaining a truck-load. Where poultry are run in conjunction with horticulture the deep litter from the poultry sheds is of considerable value to the farmer.
"For years I wanted to pay by Cheque, but I thought my Account would be too small for any bank to handle. Recently I was with a friend when she paid an account by Cheque. When I expressed my surprise she said that the "R. & I." didn't mind how small an Account was: it was a friendly bank and she has banked with them for years. And now, I too, have my own "R. & I." Cheque Book of which I am very proud."

Open a Cheque Account with... The R&I Bank

RURAL & INDUSTRIES BANK OF WESTERN AUSTRALIA
HEAD OFFICE: 555-573 Hay Street, PERTH.
Branches at 4-6 Forrest Place, Perth; 14 Market Street, Fremantle, and in leading country towns throughout Western Australia

Please mention the "Journal of Agriculture, W.A.," when writing to advertisers.