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GREEN FEEDS AND GREEN FEED SUBSTITUTE FOR ARIZONA POULTRY

By
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GREEN FEEDS AND GREEN FEED SUBSTITUTE FOR ARIZONA POULTRY

BY

CLYDE F. ROWE*

INTRODUCTION

The primary object of this circular is to bring to the attention of Arizona poultrymen the importance of including green feed, or a substitute, in the rations fed to poultry. Green feed, or its equivalent, is one of the most vital parts of the poultry ration. It has been the observation of the writer that in those parts of Arizona where green feed grows most abundantly, poultrymen are inclined to be careless about its use. Instances have been observed where poultry flocks were confined to bare yards adjoining alfalfa fields yet were suffering from a deficiency disease due to a lack of Vitamin A found in green feed. Numerous birds have been autopsied which showed characteristic symptoms of Vitamin A deficiency where the owners thought their flocks were getting sufficient amounts of green feeds. Undoubtedly, if poultrymen realized the absolute necessity of green feed, or its equivalent, for promoting better growth, health, livability, egg production, and hatchability, more attention would be given to this phase of their feeding program.

VITAMINS

Research workers are agreed that six of the known vitamins are essential in a poultry ration to meet the bird’s requirements. While the chemical nature of vitamins is unknown, their absence in a poultry ration is evidenced by the development of certain deficiency conditions in a bird. Of all the known vitamins, the one most likely to be deficient in the average Arizona poultry ration is Vitamin A.

Vitamin A and Its Relation to Health

Vitamin A bears a direct relation to the health of a poultry flock as its absence for a short period of time lowers the resistance of the birds and makes them subject to other diseases, especially respiratory diseases. Its absence over a long period of time also causes the development of a disease condition known as Avitaminosis A, commonly known as nutritional roup. Inasmuch as external symptoms are frequently lacking, the average poultryman may find it difficult to make an accurate diagnosis.

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Frequently the condition is confused with ocular roup. In the case of nutritional roup the exudate, which sometimes forms in the eyes, is of a whitish color, odorless, and is easily squeezed out of the eye whereas in the ocular roup the exudate formed has a yellow tinge, carries with it a foul odor, and is not easily removed from the eye without cutting. A more accurate method of diagnosing nutritional roup is to examine the esophagus (gullet) where in mature birds small grayish bead-like nodules are found in advanced cases. These nodules are not generally developed in young chicks suffering from Vitamin A deficiency. It has also been shown by workers at the Kansas Agricultural Experiment Station that birds, receiving large amounts of Vitamin A, were less severely affected by roundworm infestation than were those fed rations deficient in this vitamin.

Vitamin A and Its Relation to Growth

Vitamin A is sometimes called the growth vitamin because animals, which are fed a ration deficient in Vitamin A, do not make satisfactory growth even though the ration may contain all other necessary ingredients in a perfectly balanced form.

Vitamin A and Egg Production

The effect of Vitamin A on egg production was strikingly demonstrated by tests conducted at the U. S. Poultry Experiment Station at Glendale, Arizona. In these tests a series of groups of twenty-five mature White Leghorn pullets, which had been matured on alfalfa range, was used. These groups were placed in laying pens where no feed, other than that given, was available. The basal diet was an all-in-one mash which was practically free from Vitamin A. Various Vitamin A feeds were used as supplements to the basal diet. One group, which received no supplement to the basal diet, was used as a check to measure the effect of Vitamin A on egg production.

During the first twenty-eight-day period the check pen produced 193 eggs while the pen receiving fresh green alfalfa as a supplement produced 237 eggs. At the end of eighty-four days the check pen had produced 508 eggs, and the pen which had received the green alfalfa supplement produced 817 eggs. The experiment was conducted over a period of 364 days during which time the no-supplement pen produced only 682 eggs while the pen receiving fresh green alfalfa produced 3,021 eggs. It is interesting to note that during the period of this experiment all birds in the no-supplement pen died whereas only six died in the pen receiving fresh green alfalfa.

Vitamin A and Hatchability

Although there are a number of other factors, such as inheritance, that affect the hatchability of eggs, the Vitamin A content of the ration also plays an important part. In general, hatchabil-
ity is directly proportional to the Vitamin A content of the ration—that is, the less Vitamin A in the feeds given to breeders, the lower the hatchability of the eggs produced.

**SOURCES OF VITAMIN A**

**Fresh Green Feeds**

Fresh green feeds seem to be the most economical source of Vitamin A for Arizona poultry although in some instances biologically tested cod-liver oil, certain root crops, and dried greens are used to advantage. Yellow corn is also fairly rich in this vitamin.

The green feeds most commonly used are alfalfa, barley, oats, wheat, lettuce, Swiss chard, Sudan grass, kale, Johnson grass, and, to some extent, other grasses. In the lower altitudes of Arizona one or more of these crops can be grown throughout the entire year, while in the higher altitudes it would be necessary to sprout grains, such as oats or barley, during the winter months if fresh green feed was desired.

In all cases, fresh green feeds should be used before they reach the hard, woody stage. As an example, barley, oats, or Sudan grass should be planted in plots separated from the poultry yard and cut with a lawn mower when they reach a height of 4 or 5 inches. If so cut, they will continue to produce over a long period of time without becoming woody or going to seed. If the green feeds are finely chopped, then placed in wooden or earthenware containers and covered with water, the freshness, or succulence, can be maintained for a long period of time. Bulletins and other information relative to the growing of these crops can be obtained from the county agricultural agent, or from the University of Arizona.

Some green feeds, such as Swiss chard and lettuce, are so palatable that if fed in excessive quantities, lessened mash consumption and an accompanying lower egg production may result. In general, 5 or 6 pounds of fresh green feed should be given daily to each one hundred mature birds. There are some green feeds, such as cabbage or members of the mustard family, which are sources of Vitamin A, but which should not be fed because of their undesirable effect on the flavor of the egg. It is frequently thought by poultrymen that fresh green alfalfa causes bad flavors and watery whites. However, the flavors obtained in eggs from flocks on alfalfa range are probably due to weeds which grow in alfalfa while some watery whites in fresh eggs are believed to be due to inherited factors. While finely chopped Johnson grass can be used, it would not be desirable to plant it for the sole purpose of providing fresh green feed for poultry. It grows and spreads so rapidly that it frequently becomes a nuisance on the farm.
Cod-Liver Oils

There are several cod-liver oils on the market which are good sources of Vitamin A, but some fish oils are prepared principally as a source of Vitamin D. It is, therefore, very essential that poultrymen investigate the Vitamin A content and buy only those oils which are biologically tested for that vitamin if the cod-liver oil is to be used as a green feed substitute. Inasmuch as Vitamin A is unstable, it is important that mashes containing these oils should not be allowed to remain in storage over a long period of time if their Vitamin A content is to be preserved.

Root Crops

Yellow or red carrots are practically the only root crops that are used as a green feed substitute for poultry, and they should be ground or chopped into small pieces before being fed. White carrots, turnips, and mangel beets are valueless in a poultry ration except insofar as they may furnish variety or add succulence. Yellow or red carrots are excellent green feed substitutes in the higher altitudes since they may be grown in the summer months and harvested and stored for winter use.

Dried Greens

The dried greens most commonly used are alfalfa meal, alfalfa leaf meal, and cured alfalfa hay. The term alfalfa meal is generally used to designate the product manufactured by grinding to a fine state the entire dried alfalfa plant. In the manufacture of alfalfa leaf meal the larger stems are removed, leaving the smaller stems and leaves which are ground to a fine state. Thus, alfalfa meal contains a higher percentage of fiber and a lower percentage of protein than alfalfa leaf meal. In view of the fact that practically all of the Vitamin A content of the alfalfa plant is found in the leaves, alfalfa leaf meal is much more valuable than alfalfa meal in the poultry ration. The Vitamin A content of the cured alfalfa plant is dependent upon a number of factors over which the poultryman has no control, namely, the time of the year at which the alfalfa was cut, the length of time in curing, weather conditions, such as exposure to sun, rain, and heavy dews, and to some extent the length of time held in storage.

In view of the fact that there is a wide variation in the Vitamin A content of alfalfa products, poultrymen should be extremely careful to examine each bag for freshness, bright green color, and freeness from excessive stems. Two types of these products are available in most markets, namely: dehydrated, in which the plant is artificially dried a short time after it is cut, and sun-cured, in which the plant is allowed to remain exposed in the field until it is dry.
Alfalfa Hay

The use of alfalfa hay as a green feed substitute is a common practice among Arizona poultrymen. This practice is somewhat hazardous since there is a wide variation in the Vitamin A content of alfalfa hay, depending upon the conditions under which it is produced and handled. Only bright green leafy hay should be used. The hay should be placed in some form of feed rack constructed of poultry wire or slats to avoid wastage. The practice of placing an unbroken bale of hay in the poultry yard is not recommended. Alfalfa hay may be ground and placed in containers similar to those recommended for green feed and covered with water to increase its palatability.

Grains

Yellow corn is the only grain commonly used in poultry rations which contains any appreciable amount of Vitamin A. Most poultry rations do not contain sufficient amounts of this feed to supply the required amount of Vitamin A. Some of the green feeds or substitutes must be supplied even though the ration contains yellow corn. Yellow milo and hegari, two grains often used in place of yellow corn by Arizona poultrymen, contain less Vitamin A than yellow corn, and green feeds or a substitute must also be supplied when they are the principal ingredients in the poultry feed.

The exact amount of green feed substitutes to be used in a poultry ration varies according to the amounts and the Vitamin A content of the grains used. When from 40 to 50 per cent of the ration is composed of yellow corn, about 5 per cent of the total feed intake should be good quality alfalfa leaf meal. If the ration contains from 40 to 50 per cent of red milo or hegari, alfalfa leaf meal should constitute from 8 to 10 per cent of the total feed intake. In view of the fact that some of the birds may not eat fresh greens, it is advisable under any system of feeding to include at least 5 per cent alfalfa leaf meal in the mash. When cod-liver oil is used as a green feed substitute, it should be used as recommended along with 5 per cent alfalfa leaf meal.