THE EFFECT OF DIFFERENT METHODS OF STORING CHICKEN MANURE ON THE VIABILITY OF CERTAIN WEED SEEDS

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Many weeds seeds are carried in hay, straw, and feeds which eventually find their way into manure and are later hauled to the land. This is especially true in the case of poultry manure where grain containing weed seeds is fed in the litter as scratch feed. The rapid increase in poultry raising in Utah has resulted in large quantities of this manure, with its accompanying benefits and hazards. Farmers would not hesitate to use the manure if the weed dangers could be eliminated, but many refuse to use it under present conditions. Morning glory seeds (C. arvensis L.) have been known to remain in the soil for 40 years (7) and still retain their viability. Once the soil is infested, the dangers may remain for long periods of time.

REVIEW OF LITERATURE

Experiments have been conducted to determine the viability of seeds under various conditions and for various periods of time. Only those pertaining directly to the study reported are reviewed.

Substances such as alfalfa, casein, peptone, and sugar were added to a silt loam soil in which seeds of alfalfa, buckwheat, castor bean, red clover, corn, cotton, flax, hemp, white lupine, mustard, oats, serradella, soybean, sunflower, sweet pea, and wheat were planted (8). It was found that the nitrogenous substances did not seriously injure germination unless used in excessive amounts. Sugar increased bacterial growth and retarded the rate of germination; and when used in large amounts, the percentage of germination was decreased.

The viability of many seeds was destroyed after being buried in silage (3, 12). However, morning glory and velvet leaf gave a higher germination than seed which had not been placed in the silo.

As early as 1879, Beal (1) at East Lansing, Michigan, buried 23 species of seeds in sand at a depth of approximately 20 inches. At the end of a 40-year period, 10 of the 23 species produced sprouts (5). In 1902, Duvel (6) set up an experiment using Beal's general plan. He used 109 species, representing 84 genera and 34 families. These seeds were buried in well-baked earthen pots at three different depths. It was concluded that seeds of most weeds when plowed under, during the period of normal crop rotation, do not perish and that weed seeds survive better than crop seeds (9). In experiments at Rothamsted (2), it was found that while certain seeds appear to lie dormant in the soil for long periods, they may germinate under favorable conditions. Similar results were obtained in Iowa (4). Green manure may also injure the germination of certain seeds (7).

1Contribution from Department of Agronomy, Utah Agricultural Experiment Station, Logan, Utah. Publication authorized by the Director. Received for publication December 20, 1933.
2Graduate Student, Assistant Agronomist, and Agronomist, respectively.
3Figures in parenthesis refer to "Literature Cited," p. 609.