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**I. A. BENTON, G. A. P. D.**  
SALT LAKE CITY, UTAH

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# AGRICULTURE

## VITALITY OF WEED SEEDS IN MANURE.

It is well known that there is considerable risk of introducing new weeds by the purchase of manure and hay and other feeding stuffs (see below). E. I. Oswald, of the Maryland Station, undertook to obtain more definite information on this point, especially as regards dissemination through manure, by studying the effect of the fermentation of manure handled in different ways and of passing through the digestive systems of animals on the vitality of various weed seeds, including seeds of about fifty of the worst weeds found in Maryland.

In experiments in which the manure remained (1) for six months in a barnyard heap, and (2) for a short while in piles as when shipped in car-load lots from cities, it was found that in the first case there was no danger and in the second case little danger of distributing live weed seeds. In the experiments in which the weed seeds were fed to yearling steers and the manure handled in various ways it was found that—

(1) Where the manure was hauled directly from the stable as a top dressing an average of only 12.8 per cent of the seeds fed to animals germinated.

(2) Where manure was hauled directly from the stable upon the land and plowed under 2.3 per cent of the seeds fed to animals came up.

(3) Where the droppings remained on the pasture fields unadulterated as they fell an average of only 3.1 per cent of the seeds fed to animals germinated.

The results indicate that in general it is safe to assume that the vitality of weed seeds is destroyed in well-rotted manure, but that many pass unharmed through the digestive tracts of animals and may be carried to the land if the manure is not well rotted before use.

### Weed Seeds in Feeding Stuff.

Several of the experiment stations having charge of feeding stuffs inspection have called attention to the danger of dissemination of noxious weeds through the use of feeding stuffs containing weed seeds. Atten-

tion has especially been called to this matter by the Maine and Vermont stations. That the danger from this source is quite serious is shown by the fact that it was found on examination at the Maine Station that live weed seeds were found in considerable numbers in many different kinds of feeding stuffs, including bran, middlings, brewers' and distillers' grains, malt sprouts, mixed feeds, chops, stock and dairy feeds, molasses feeds, flax feeds, etc. In some cases as high as 50 per cent of the feed consisted of weed seeds. "It is quite certain that many of these weed seeds would pass unharmed through the digestive organs of the animals to which they were fed and would find their way to the fields of the owner."

In a bulletin of the Vermont Station J. L. Hills and C. H. Jones, discussing this subject, say:

It is a matter of common knowledge that there are sold yearly hundreds of carloads of wheat screenings (which being interpreted means in the main weed seeds screened from wheat prior to the milling process). Sheep and poultry handle them well, but the digestive system of neither horse nor cow is able to destroy them.

In the examinations made at the Vermont Station weed seeds were found to be especially abundant in certain samples of oat feed, mixed wheat feed, and molasses feeds. It is estimated that "the buyer of a ton of one brand of these molasses feeds purchased therein three weed seeds for every square foot of a hundred-acre farm, 129,000,000 weed seeds to a ton, bought and paid for by the farmer who wonders why he is pestered by so many weeds." The Maine Station also found that certain of the molasses feeds were flagrant offenders in the matter of carrying live weed seeds.

The Maine Station calls attention to a particularly objectionable kind of weed seed which is especially likely to occur in injurious amounts in wheat feeds and by-products, viz, cockle. A feed which contains as much of this seed as was found in some of the samples examined by the Maine Station "is objectionable not only on account of the crop of plants

which might be grown, but because of its possible injury to stock."

It is thus made clear that the tendency to introduce foul seeds into the seeds and by-products used as feeding stuffs is a serious one.

For the most part there is little known as to the nutritive qualities of these weed seeds; occasionally, notably the case with corn cockle, they are poisonous. They are a great menace to clean fields. Naturally the use of these feeds high in foreign weed seeds will tend to the introduction of undue numbers of undesirable plants and sometimes of plants unknown to the State. In some of the feeding stuffs in the method of preparation they are heated to a high enough temperature to kill the seeds.

The national food and drug law forbids the presence of poisonous weed seeds in poultry and cattle foods. Director Woods of the Maine Station is of the opinion that in addition to enforcing this prohibition of the national law regarding poisonous seeds, it would be desirable and probably practicable for the States to also place a limit to the amount of weed seeds of any kind that should be allowed in feeding stuffs. He says:

It would seem unwise to attempt to regulate the amount of weed seeds that are present in grass seeds and allow an unrestricted sale of feeding stuffs carrying in some cases more dangerous seeds than grass seeds carry.

## HOW TO BENEFIT FARM LIFE.

Very likely there will be a good many answers to the question: "How can farm life be bettered?" That is, broadly, the question President Roosevelt has asked, and if the people of the nation do not give the right answer, it will be their own fault. Here is a definite and intelligent effort to ascertain. A commission of three uncommonly capable men go about the country and hold meetings at which their sole business is to find what the people—farmers especially—have to complain about, what they have to be glad about, and how their condition could be improved.

Probably Professor Merrill of the Agricultural College came as near the right suggestion as any man before the commission when he said the farmers need good roads. Nothing