

## The Purity of Illinois Seed Stocks as Revealed by Seed Analysis Studies

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The Illinois Law on agricultural seeds applies to the seeds of small seeded legumes, grasses, rape and seed corn. Little attention has been given to seed corn because of the limited facilities of the laboratory. This discussion is limited to the seeds of our common meadow and pasture crops.

Between July 1, 1934 and April 23, 1935, the Illinois Seed Testing Laboratory analyzed 7,828 samples of seeds used in meadows and pastures. Of this number 1,045 samples or 13.2 per cent were unsalable for seeding purposes in Illinois. Section 5 of the Illinois Seed Law states that: "It shall be unlawful to sell, offer or expose for sale for seeding purposes within the State of Illinois any agricultural seeds or mixtures of same containing Canada thistle in greater numbers in the aggregate than one to fifty grams; quack grass, dodder, wild mustard, wild carrot, buckhorn, dock, field sorrel, ox-eye daisy or Johnson grass, in greater numbers in the aggregate than the proportion of 1 to 1,000. Provided, however, that the proportion of field sorrel in alsike, timothy and white clover be not greater than 1 to 500."

To comply with section 2 of the law any container of agricultural seed must have a tag or label showing the approximate number per ounce of each kind of the seeds of the following named noxious weeds, except Canada thistle, which are present singly or collectively, as follows: (1) in excess of one seed in each five grams of red clover, mammoth clover, white clover alsike clover, sweet clover, alfalfa, lespedezas, timothy, blue grasses, bromegrass, orchard grass, red top, fescues, oat grass and rye grasses; (2) one in twenty-five grams of rape, sudan grass and millets; (3) one in one hundred grams of vetches. Noxious weed seeds are defined as seeds of buckhorn, field sorrel, Canada thistle, quack grass, docks, ox-eye daisy, dodders, wild mustard, Johnson grass, wild carrot.

If this requirement is met, the law provides a very liberal tolerance. It allows the sale of seed containing nine Canada thistle seeds per pound in any kind of seeds. In this instance the limitation is expressed in weight. Other noxious weeds are tolerated in the ratio of one to one thousand. On this basis, the number of noxious weed seeds per pound varies. Alfalfa may contain 208 noxious weed seeds per pound, blue grass, 2,192, red top 3,372, timothy 1,216, red clover 304, sweet clover 368 and lespedeza 264. It is quite obvious that at the average rate of seeding for these crops from 2,000 to 33,000 weed seeds may be sown per acre and yet be within the law.

A further tolerance in favor of the dealer or seller of seeds is provided in section 2, paragraph d of the seed law; for example Canada thistles may be present in a smaller proportion than 1 to 50 grams or other seeds may contain as many as 96 noxious weed seeds per pound without the information being given on the tag. Seed that complies with the requirements of the Illinois Seed Law is not always pure seed. The law establishes

a maximum amount of weed seeds that may be present in seed to be sold for seeding purposes in Illinois. The analyses of all the samples of the principle crop seeds show a wide range of purity. The following table shows the total samples of each crop analyzed and the percentage unsalable:

	Total	Percentage unsalable
Red Clover .....	4,170	16.1
Sweet Clover .....	1,173	4.4
Alfalfa .....	786	5.3
Alsike .....	259	10.3
Timothy .....	753	15.4
Lespedeza .....	747	18.3
Total .....	7,888	Av. 13.2

The percentage of unsalable samples per year varied from 9.9 per cent to 15 per cent with an average of 11.7 per cent for the last 7 years. Seasonal effects on the quality of the seed and weed growth may account for the variation. With the great improvement in seed cleaning machinery and its distribution throughout the State, an improvement in the quality of seed is anticipated.

There are three sources of seed supply for Illinois purchasers. First, the producer, second the Illinois seed dealer, and third the seed dealer outside of the State of Illinois, chiefly mail order houses. Section 12 of the Illinois Seed Law specifies that only samples of recleaned seed may be submitted to the laboratory for purity analysis. Consequently the analyses made by the laboratory are of samples purported to represent seed which has been cleaned. It is well known that many farmers and some dealers do not take cognizance of the seed law. Many illicit sales have been made. Very frequently such sales are discovered by inspectors who take official samples and submit them to the laboratory for analysis. These are designated as inspector's samples and 35 per cent of them have been unsalable. The total number of sales of this nature is hard to estimate, but we can say that seed from this source is usually of inferior quality due to the presence of weed seeds and inert matter. Recently a sample of alfalfa representing such a sale showed 27 per cent weed seeds and 4 per cent inert matter. It is interesting to note that in this instance there are no noxious weed seeds present. Many other examples may be given to convince one that this source of seed is unreliable.

Since the service of the Illinois Seed Laboratory is furnished free of charge, we feel that a producer or dealer who sells seed without a proper analysis shows lack of responsibility to agriculture and contempt for the seed law, consequently a number of prosecutions have been made during the past season.

Producers especially in Northern and Central Illinois have been making use of the seed testing laboratory in increasing numbers. Of all farmers' samples submitted during the past year, 13.6 per cent were unsalable compared to 6.9 per cent of all samples submitted by recognized wholesalers in Illinois and 2.9 per cent for out of state dealers.

The unfavorable showing of the Illinois dealers when compared to dealers from other states is due to the fact that many Illinois wholesalers submit samples of farm-cleaned seed for analysis before purchasing from the producer. While some dealers from other states have supplied only seed of high quality, the "out of state" dealers are the principle source of low quality seed so far as the records of the laboratory reveal. For example, the supply of one mail order house is represented by 15 mixtures, all containing noxious weed seeds, with seven of them unsalable; 12 samples of alfalfa with 10 containing noxious weed seeds and 2 unsalable. The average germination of the alfalfa was 55 per cent; of sweet clover 48 per cent

with the other crops running from 15 to 30 per cent below standard. The average germination on all seeds from Illinois dealers is 93 per cent and of all Illinois farmers' samples 86 per cent. Of 22 lots of alfalfa taken from Illinois wholesale dealers none were unsalable; 4 showed the presence of noxious weed seeds and the average germination was 80.5 per cent. Of 10 lots of sweet clover, none were unsalable, 3 contained noxious weeds and the average germination was 83 per cent.

To give briefly, an idea of the purity of seed stocks in Illinois the following table is presented—100 salable samples of each crop taken at random are considered:

TABLE 1

	Per cent purity	Percent weed seeds by weight	Per cent inert	No. of samp. containing noxious weeds
Red Clover.....	97.69	.50	1.33	50
Sweet Clover.....	97.4	.58	1.8	24
Alfalfa.....	98.0	.57	1.93	21
Timothy.....	98.0	.41	1.12	66
Lespedeza.....	97.58	1.18	1.16	53
Alsike.....	97.01	.25	2.05	40

From the data submitted, it appears that wholesalers equipped with modern seed cleaning machinery are the best source of seed supply. However, farmers who avail themselves of good custom cleaning facilities may supply seed of high quality. Without question the mail order house supplies seed of lowest quality.

The production of high quality seed is largely a matter of weed control and it is important that Illinois become weed conscious.